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2015
5–9 JANUARY 2015
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FINAL PROGRAM
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SCITECH 2015

Welcome

We are excited to welcome you to the AIAA Science and Technology Forum and Exposition 2015 — the largest event for aerospace research, development, and technology in the world. We are confident that you will be informed, inspired, and motivated, as you take part in shaping the future of aerospace!

Over the coming days you will have the opportunity to hear from thought leaders in our community, learn about the latest technical breakthroughs, collaborate with an unparalleled group of peers, and gain knowledge and insight with each session and event that you attend.

Our organizing committee has worked hard to ensure that our plenary sessions will examine the most critical issues in aerospace today: investment trends and strategies for science and technology policy and R&D; how globalization will impact the aerospace economy; the future of aerospace design; climate change and the use of big data to gain a better understanding of Earth's climate cycles; and how best to construct the future workforce.

As always, our panel discussions will build on the themes and discussions of each day's opening plenary session, adding a layer of content and context that will enhance the value of your forum experience. These discussions will also give you time to interact with industry leaders in more intimate settings, enabling meaningful communication, and stimulating greater insight into the critical issues of the day.

We also have built a premier technical program that is second to none in terms of the scope, breadth, and depth of the cutting-edge aerospace research being presented—material that you will be unable to find anywhere else. We thank the Technical Program Committee for working so hard to assemble this program.

AIAA SciTech 2015 will energize, enlighten, and illuminate your continuing efforts to advance the state of the art in aerospace engineering, science, and technology development. The forum will launch what we know will be an amazing year of discovery and innovation, and we are happy that you made the choice to be here with us this week to take part in this most important gathering.

AIAA SciTech 2015 is proud to feature the following conferences:

- 23rd AIAA/AHS Adaptive Structures Conference
- 53rd AIAA Aerospace Sciences Meeting
- AIAA Atmospheric Flight Mechanics Conference
- AIAA Infotech @ Aerospace
- AIAA Guidance, Navigation, and Control Conference
- AIAA Modeling and Simulation Technologies Conference
- 17th AIAA Non-Deterministic Approaches Conference
- 8th Symposium on Space Resource Utilization
- 2nd AIAA Spacecraft Structures Conference
- 56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference
- 33rd Wind Energy Symposium

Organizing Committee

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Richard Ruff, MathWorks

Jeanette L. Domber, Ball Aerospace & Technologies Corporation

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Adaptive Structures
David McGowan, NASA Langley Research Center

Aeroacoustics
Lysbeth S. Lieber, Honeywell Aerospace

Aerodynamic Measurement Technology
Philippe (Phil) Lavoie, University of Toronto

Air Breathing Propulsion Systems Integration
Charles Gaharan, Lockheed Martin Aeronautics

Aircraft Design
Gil Crouse, Sierra Nevada Corporation

Applied Aerodynamics
Doug Lacy, The Boeing Company

Atmospheric Flight Mechanics
Francis Priolo, Millenium Engineering

Communications Systems
Jim Dragonas Dimarogonas, The MITRE Corporation

Computer Systems
Joe Collins, Naval Research Laboratory

Design Engineering
E. Russ Althof, Raytheon Missile Systems

Digital Avionics
Jim Rankin, University of Arkansas

Fluid Dynamics
Jesse Little, University of Arizona

Gas Turbine Engines
Jason Smith, General Electric Aviation

Green Engineering
Franz-Josef Kahlen, University of Cape Town

Ground Test
Roman Paryz, NASA Langley Research Center

Guidance, Navigation, and Control
John Reed, United Launch Alliance

High Speed Air Breathing Propulsion
Ronald R. Springer, Johns Hopkins University Applied Physics Laboratory

History
William P. Barry, NASA

Information and Command & Control Systems
Mike Sotak, Kratos Defense & Security Solutions

Intelligent Systems
Kevin Kochersberger, Virginia Polytechnic Institute and State University

Materials
John Matlik, Rolls-Royce

Meshing, Visualization, and Computational Environments
Hugh Thornburg, High Technology Services Group, Engility Corporation

Modeling and Simulation Technologies
Dan Keating, Draper Labs

Multi-Disciplinary Design Optimization
Timothy Takahashi, Arizona State University

Non-Deterministic Approaches
Markus P. Rumpfkeil, University of Dayton

Plasmadynamics and Lasers
Joseph Wang, University of Southern California

Propellants and Combustion
Chris Cadou, University of Maryland

Sensor Systems
Dan Clancy, Lockheed Martin Aeronautics Company

Small Satellites
Jeremy Straub, University of North Dakota

Society and Aerospace Technology
Steve Justice, Georgia Center of Innovation for Aerospace

Software
Stephen Blanchette, Software Engineering Institute

Space Resources Utilization Symposium
Julie Kleinhenz, NASA Glenn Research Center

Space Operations and Support
Shirley Tseng

Spacecraft Structures
Jon Hinkle, ILC Dover

Structural Dynamics
Anubhav Datta, NASA Ames Research Center

Structures
Alex Selvarathinam, Lockheed Martin

Survivability
Julian Rimoli, Georgia Institute of Technology

Systems Engineering
John Hsu, California State University, Long Beach

Terrestrial Energy
Ryo Amano, University of Wisconsin–Milwaukee

Thermophysics
Alina Alexeenko, Purdue University

Unmanned Systems
Richard Stansbury, Embry-Riddle Aeronautical University

Wind Energy Symposium
D. Todd Griffith, Sandia National Laboratories

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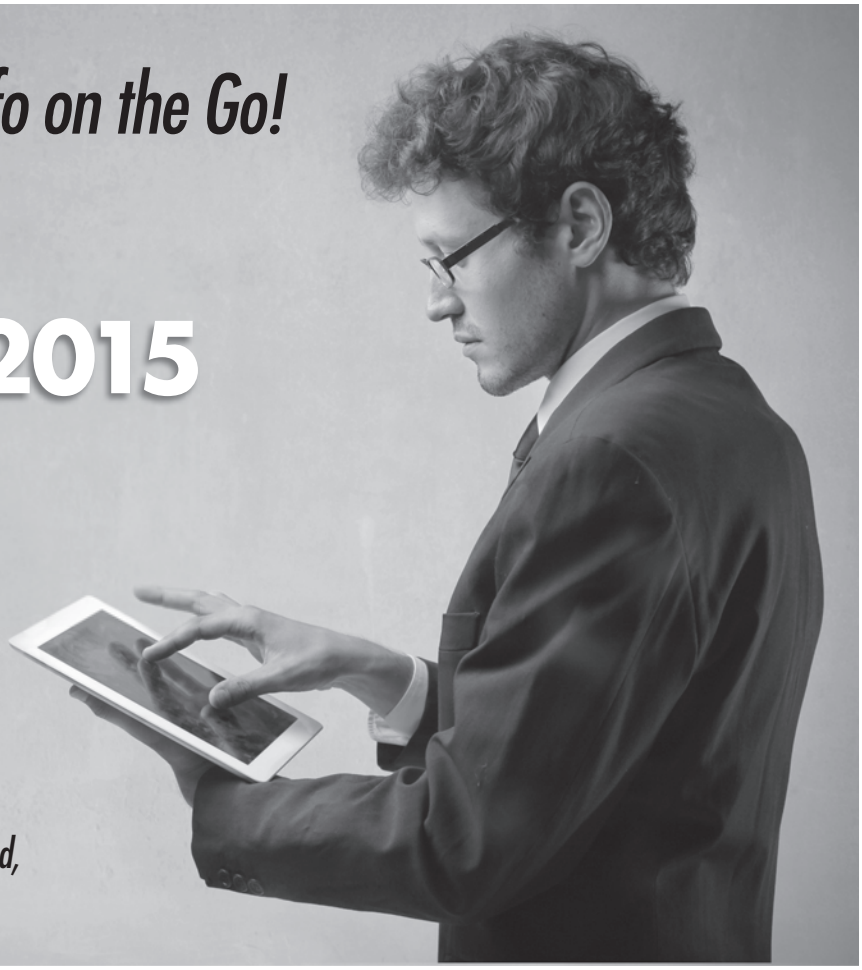

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Forum Overview

Plenary Panels and Keynotes

Get the big picture from industry, academia, and government leaders when they share their perspectives on the new challenges, future opportunities, and emerging trends in the global aerospace industry. Plenary sessions examine some of the most critical issues in aerospace today.

Forum 360

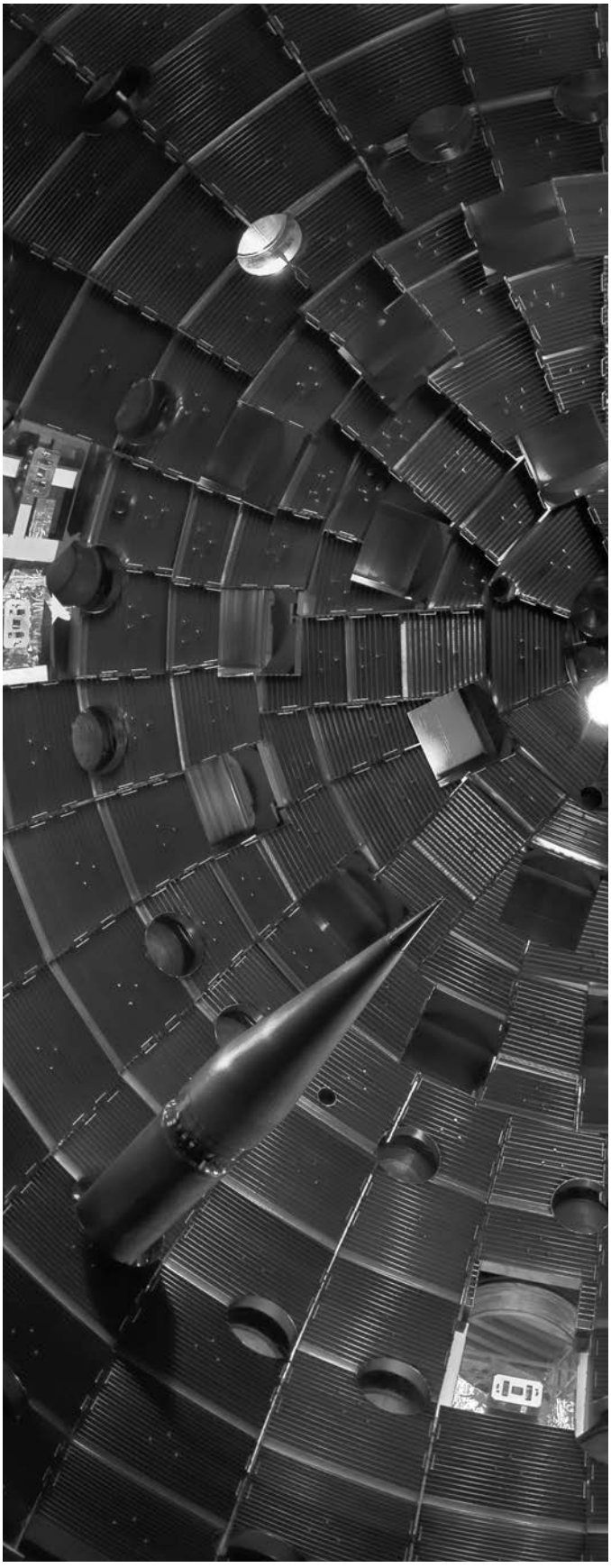
These conversations build on the themes and discussions of each day's opening plenary session, adding a layer of content and context that enhances the value of your forum experience. They also give you time to interact with industry leaders in more intimate settings, enabling meaningful communication, and stimulating greater insight into subjects like big data analytics, advanced manufacturing effects on design, climate change and defense —just to name a few.

Technical Program

This is the nuts and bolts, quite literally. The technical program contains more than **2,000 technical papers** from about **800 government, academic, and private institutions** in **40 countries** reporting on the latest in aerospace research, and offering scores of opportunities for collaboration and discussion on about **300 high-impact topics.**

This week you will:

- **Present** recent advances before a knowledgeable international audience
- **Educate** customers and providers on the latest research and product developments
- **Learn** about the latest technology and research in the field from industry experts
- **Discover** what lies ahead as senior industry leaders discuss their program and business challenges during keynote and panel sessions
- **Network** to engage new contacts and refresh old ones
- **Recognize** significant achievements from within the community



Forum Overview

	SATURDAY/SUNDAY 3–4 January	MONDAY 5 January			TUESDAY 6 January			
0700 hrs		Networking Coffee						
0730 hrs			Speakers' Briefing		Speakers' Briefing			
0800 hrs	Continuing Education Courses and Workshop 0815–1700 hrs	Opening Keynote			Keynote			
0830 hrs								
0900 hrs		Networking Break			Networking Break in Exposition Hall			
0930 hrs		SSC Lecture	Technical Sessions	Forum 360	ASC Lecture	Technical Sessions	Forum 360	Exposition Hall Open
1000 hrs								
1030 hrs								
1100 hrs								
1130 hrs								
1200 hrs								
1230 hrs			Durand Lecture and Luncheon Sponsored by Lockheed Martin		Recognition Luncheon: Celebrating Achievments in Aerospace Sciences and Information Systems		Networking Lunch On Own	Hall Closed
1300 hrs								
1330 hrs								
1400 hrs		NDA Lecture	Technical Sessions	Forum 360		Technical Sessions	Forum 360	Exposition Hall Open
1430 hrs								
1500 hrs								
1530 hrs		Networking Break			Networking Break			
1600 hrs					Rising Leaders Speed Geek (1600–1715 hrs)			Hall Closed
1630 hrs								
1700 hrs								
1730 hrs					Dryden Lecture			
1800 hrs	Sunday Student Reception		Rising Leaders Reception					
1830 hrs		Associate Fellows Reception			Reception in Exposition Hall			
1900 hrs								
1930 hrs		AIAA Associate Fellows Recognition Ceremony and Dinner (Tickets Required)						
2000 hrs								
2030 hrs								
2100 hrs								
2130 hrs								
2200 hrs								
2230 hrs								

Forum Overview

	WEDNESDAY 7 January	THURSDAY 8 January	FRIDAY 9 January
0700 hrs			
0730 hrs	Speakers' Briefing	Speakers' Briefing	Speakers' Briefing
0800 hrs	**Plenary Panel**	**Plenary Panel**	**Keynote**
0830 hrs			
0900 hrs	Networking Break in Exposition Hall	Networking Break in Exposition Hall	Networking Break
0930 hrs	**Technical Sessions**	**Technical Sessions**	**Technical Sessions**
1000 hrs			
1030 hrs	**Forum 360**	**Forum 360**	
1100 hrs			
1130 hrs			
1200 hrs	**Exposition Hall Open**	**Recognition Luncheon: Celebrating Achievements in Aerospace Design/Structures and Literary Excellence**	**Exposition Hall Open**
1230 hrs	**Luncheon in Exposition Hall**	Networking Lunch On Own	**Rising Leaders Luncheon/ Panel**
1300 hrs			
1330 hrs			
1400 hrs	**Technical Sessions**	**Technical Sessions**	**Forum 360**
1430 hrs			
1500 hrs	**Forum 360**		
1530 hrs	Networking Break	Networking Break	
1600 hrs			
1630 hrs	**Rising Leaders Leadership Exchange (1615–1745 hrs)**		
1700 hrs			
1730 hrs	**Corporate Member Reception**		**Women at SciTech Happy Hour and Keynote**
1800 hrs	**SDM Lecture**		
1830 hrs			
1900 hrs			
1930 hrs			
2000 hrs			
2030 hrs			
2100 hrs			
2130 hrs			

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Keynote Speakers and Plenary Sessions

Get the big picture on space/aviation/propulsion and energy/science and technology/defense from the leading authorities in the field during these high-level discussions and presentations.

Monday, 5 January

0800-0900 hrs **Osceola Ballroom CD**

Opening Keynote

Science and Technology Policy

Robie Samanta-Roy, Vice President, Technology and Innovation, Lockheed Martin Corporation

Tuesday, 6 January

0800-0900 hrs **Osceola Ballroom CD**

Tuesday Morning Keynote

International Trends in Aerospace: Up, Up and Away? To Where?

James N. Miller, President, Adaptive Strategies, LLC

Wednesday, 7 January

0800-0900 hrs **Osceola Ballroom CD**

Plenary Panel

The Future of Design

Moderator: **Richard Christiansen,** Vice President, Sierra Lobo, Inc.

Panelists:

Juan Alonso, Associate Professor, Department of Aeronautics, Stanford University

Robert Liebeck, Senior Technical Fellow, The Boeing Company

Mark Maughmer, Professor of Aerospace Engineering, The Pennsylvania State University

Thursday, 8 January

0800-0900 hrs **Osceola Ballroom CD**

Plenary Panel

Diversity & Inclusion in the Aerospace Workforce

Moderator: **Sandra H. Magnus,** Executive Director, American Institute of Aeronautics and Astronautics

Panelists:

Wesley Harris, Charles Stark Draper Professor of Aeronautics & Astronautics, Massachusetts Institute of Technology

Julio Navarro, Senior Technical Fellow, The Boeing Company

Alton Romig, Vice President, Advanced Development Programs, The Skunk Works, Lockheed Martin Aeronautics

Tom Shih, Professor and Head of Aeronautics and Astronautics, Purdue University

Yvette Weber, Director C-5 Program, United States Air Force

Friday, 9 January

0800-0900 hrs **Osceola Ballroom CD**

Friday Morning Keynote

Entrepreneurial Aerospace

George Whitesides, CEO, Virgin Galactic and The Spaceship Company

Forum 360

FORUM 360°

These conversations will cover a spectrum of timely topics including programs, systems, policy, operations, applications, platforms and more!

Monday, 5 January

0930–1130 hrs **Osceola Ballroom B**

U.S. Government Aerospace Technology Roadmaps

Moderators: **Mark Lewis,** Director, IDA Science & Technology Policy Institute

Panelists:

Thomas Beutner, Head, Naval Air Warfare and Weapons, Office of Naval Research

Dennis Filler, Director, FAA William J. Hughes Technical Center

David Miller, Chief Technologist, NASA

Robie Samanta-Roy, Vice President, Technology and Innovation, Lockheed Martin Corporation

Morley Stone, Chief Technologist, Air Force Research Laboratory, Wright-Patterson AFB

1400–1600 hrs **Osceola Ballroom B**

Climate Change and National Security

Moderator: **John Lanicci,** Professor, Embry-Riddle Aeronautical University

Panelists:

Chad Briggs, Strategy Director, Global Interconnections, LLC

Roger Handberg, Professor, Political Science, College of Sciences, Prelaw Advisor, University of Central Florida

Peter Jacques, Associate Professor, Department of Political Science, University of Central Florida

Cathy Snyder, Vice President, Energy & Environment, Lockheed Martin Corporation

David Titley, Director, Center for Solutions to Weather and Climate Risk, The Pennsylvania State University

Tuesday, 6 January

0930-1130 hrs **Osceola Ballroom B**

Improving Business Skills and Business Processes for the Aerospace Technical Community

Moderator: **Andy White,** Director, University of Tennessee Aerospace & Defense Business Institute

Panelists:

Jeff Babione, Vice President and Deputy GM, Joint Strike Fighter Program, Lockheed Martin Corporation

Robert Lightfoot, Associate Administrator, NASA

Alex Miller, William B. Stokely Chair in Management and former Associate Dean, UT Haslam College of Business Administration

Bobby Smart, Deputy Assistant Secretary, Air Force Acquisition Integration

1400–1600 hrs **Osceola Ballroom B**

Big Data Analytics in Aerospace

Moderator: **Ashok Srivastava,** Chief Data Scientist, Verizon

Panelists:

Eric Feron, Professor, School of Aerospace Engineering, Georgia Institute of Technology

John Kelly, Technical Lead, Data Analytics Initiatives, Corporate Engineering, Technology, & Operations, Lockheed Martin Corporation

Melanie Lorang, Associate Technical Fellow, The Boeing Company

Nikunj Oza, Leader, Data Sciences Group, NASA Ames Research Center

Wednesday, 7 January

0930–1130 hrs **Osceola Ballroom B**

Advanced Manufacturing and its Impact on the Design Process of the Future

Moderator: **Graeme Kennedy,** Assistant Professor, School of Aerospace Engineering, Georgia Institute of Technology

Panelists:

Steven Betza, Corporate Director, Advanced Manufacturing and Development, Lockheed Martin Corporation

Andrew Bicos, Director, Manufacturing Technology Domain, Enterprise Technology Strategy, Office of the CTO, The Boeing Company

David Rosen, Morris M. Bryan, Jr. Professor and Associate Chair for Administration, The George W. Woodruff School of Mechanical Engineering, Georgia Institute of Technology

Mark Shaw, Additive Programs Leader, GE Aviation

Arthur Weiss, Executive Director, Defense Advanced Programs, Aerojet Rocketdyne

(continued)

Wednesday, 7 January (continued)

1400–1600 hrs **Osceola Ballroom B**

The Digital System Model - The New Frontier in Aerospace & Defense Acquisition

Moderator: **Edward Kraft,** Technical Advisor, Aerospace Ground Testing, Air Force Test Center, Arnold Air Force Base

Kristen Baldwin, Principal Deputy, Office of the Deputy Assistant Secretary of Defense for Systems Engineering

Jeffery Holland, Director of Research and Development and Chief Scientist, Director of the U.S. Army Engineer Research and Development Center, U.S. Army Corps of Engineers

David Walker, Deputy Assistant Secretary of the Air Force for Science, Technology, and Engineering, Office of the Assistant Secretary of the Air Force for Acquisition

Thursday, 8 January

0930–1130 hrs **Osceola Ballroom B**

Aerospace Vehicles Technology Trends

Moderator: **Alton Romig,** Vice President, Advanced Development Programs, The Skunk Works, Lockheed Martin Aeronautics

Panelists:

Frank L. Culbertson, Jr., Executive Vice President and General Manager, Advanced Programs Group, Orbital Sciences Corporation

Eric Schrock, Deputy – Technology and Product Innovation, Lockheed Martin Aeronautics

John Tracy, Chief Technology Officer and Senior Vice President, Engineering, Operations, and Technology, The Boeing Company

Steve Weiner, Chief Engineer, Sikorsky Innovations

1400–1600 hrs **Osceola Ballroom B**

NASA Research Plans for Assured Autonomy for Aviation Transformation

Moderator: **Sanjay Garg,** Chief, Intelligent Control and Autonomy Branch, NASA Glenn Research Center

Panelists:

John Cavolowsky, Program Director, Airspace Operations and Safety Program, Aeronautics Research Mission Directorate, National Aeronautics and Space Administration

Jay Dryer, Program Director, Advanced Air Vehicles Program, Aeronautics Research Mission Directorate, National Aeronautics and Space Administration

Robert Pearce, Director – Strategy, Architecture and Analysis, Aeronautics Research Mission Directorate, National Aeronautics and Space Administration

Doug Rohn, Program Director, Transformative Aeronautics Concepts Program, Aeronautics Research Mission Directorate, National Aeronautics and Space Administration

Ed Waggoner, Program Director, Integrated Aviation Systems Program, Aeronautics Research Mission Directorate, National Aeronautics and Space Administration

Forum 360

The multidimensional program features a leadership exchange/speed mentoring, panel session, Q&A with top industry leaders, and multiple opportunities for networking. These exciting and energetic activities will provide access to top aerospace leaders and their perspectives, with subject matter relevant to your career.

Sunday, 4 January

1900–2100 hrs **Wrecker's Sports Bar**

Meet and Greet

This will be a casual event in the sports bar. A small section will be reserved so that you can come and meet other people who will be participating in the Rising Leaders in Aerospace activities throughout the week. All food and beverages will be at your own expense, but it will be a great way to meet people in a relaxed environment.

Monday, 5 January

1800–1900 hrs **Osceola Ballroom A**

Reception

The reception will kick off the Rising Leaders in Aerospace events and is a perfect opportunity for young leaders to mingle with others who will be participating at AIAA SciTech 2015 as attendee, presenter, or veteran professional. Come meet other participants in a casual environment. You're bound to see them again at Speed Geek, the Leadership Exchange, or the Young Professional Panel.

Tuesday, 6 January

1600–1715 hrs **Osceola Ballroom A**

Speed Geek

A half-dozen or more speakers provide a 5-minute overview on a particular, diverse technical topic with 5 additional minutes of questions. Small groups travel from speaker to speaker over the course of the event in a structured way such that, at the end of the event, you've been briefed and interacted with speakers in a small group setting on a variety of subjects.

Wednesday, 7 January

1615–1745 hrs **Osceola Ballroom A**

Leadership Exchange and Speed Networking

A networking event for young aerospace leaders, age 35 and under.

Mentors include:

Allen Arrington, Sierra Lobo, Inc.
Kathleen Atkins, Lockheed Martin Corporation
Jay Dryer, NASA Headquarters
Sanjay Garg, NASA Glenn Research Center
Wes Harris, Massachusetts Institute of Technology
Jeffery Holland, U.S. Army Corps of Engineers
Tom Irvine, AIAA
Sandy Magnus, AIAA
Dimitri Mavris, Georgia Institute of Technology
Laura McGill, Raytheon Company
Robert Pearce, NASA Headquarters
Tom Shih, Purdue University
Clayton Smith, General Atomics
Annalisa Weigel, Panoptes Systems Corporation

Thursday, 8 January

1200–1330 hrs **Osceola Ballroom A**

How to Plan and Achieve Long-Term Career Success

Drs. Romig and Tracy have had amazing and fruitful careers in aerospace. In this session they will give the attendees an overview of their careers, discuss major career crossroad decisions they had to make, discuss how career paths may be different for young professionals today, and provide insight on how to be successful in your career. They will also provide career planning tips and answer questions from the audience.

Presenters:

Alton Romig, Vice President, Advanced Development Programs, The Skunk Works, Lockheed Martin Aeronautics

John Tracy, Chief Technology Officer and Senior Vice President, Engineering, Operations, and Technology, The Boeing Company

Special Sessions and Events

Monday, 5 January

1230–1400 hrs **Osceola Ballroom CD**

Durand Lecture for Public Service and Public Policy Luncheon

Making an Impact in Public Service

Michael W. Wynne, Former Secretary of the Air Force, Senior Advisor to the President of The Stevens Institute

The luncheon is first-come, first-served.

Sponsored by: LOCKHEED MARTIN

Monday, 5 January

Reception: 1830–1930 **Osceola Foyer**
Dinner: 1930–2230 **Osceola Ballroom C**

2015 Associate Fellows Recognition Ceremony and Dinner (Ticketed Event)

Please support your colleagues, and join us for the induction of AIAA Associate Fellows – Class of 2015. Tickets are available on a first-come, first-served basis and can be purchased via the AIAA SciTech 2015 registration form or onsite based on availability. Business attire is requested.

1630–1800 hrs **Osceola Ballroom B**

Complex Aerospace Systems Exchange (CASE) Panel Discussion

Moderator: **Thomas Irvine,** Managing Director, Content Development, American Institute of Aeronautics and Astronautics

Panelists:

David Dress, Deputy Director for Space Technology, Space Technology and Exploration Directorate, NASA Langley Research Center

Laura McGill, Deputy Vice President – Engineering, Raytheon Missile Systems

Mark Melanson, Manager, Integrated Operations Labs & Technical Services, Lockheed Martin Aeronautics

Sophia Bright, Senior Manager, The Boeing Company

Tuesday, 6 January

1730–1830 hrs **Osceola Ballroom CD**

Dryden Lecture in Research

Aeroacoustics

Ann P. Dowling, President, Royal Academy of Engineering, London, England

Thursday, 8 January

1730–1930 hrs **Osceola Ballroom B**

Women at SciTech Happy Hour and Keynote

Stephanie Bednarek, Government Affairs Manager, SpaceX

Women are underrepresented in the engineering sciences and industry, and this event will provide an opportunity to meet informally, network, discuss experiences and identify women who are leaders in their fields for possible special recognition by AIAA. There is no charge to attend this event.

Educational Events

AIAA is committed to keeping aerospace professionals at their technical best, and provides an ongoing source of learning, community, professional connections, and career development. Gain the knowledge you need to excel in your field or to move confidently into a new one. Learn how to interact with students and teachers, and help inspire the next generation of aerospace leaders.

Monday, 5 January

St. George Room 112 and 114

International Student Conference

Come see the leaders of tomorrow as the first-place winners of the Regional Student Papers Conferences compete to be best overall in their category.

International Student Conference Sponsored by the AIAA Foundation

- 0900–1230 hrs—Undergraduate Division
- 1000–1200 hrs—Community Outreach Division
- 1400–1730 hrs—Masters Division
- 1400–1730 hrs—Team Division

Tuesday, 6 January

1400–1700 hrs **St. George 106**

Verification and Validation Best Practices for Integrated Computational Materials Engineering

This tutorial will benefit a broad cross section of ICME stakeholders, such as materials researchers, educators, design and manufacturing engineers, and program managers who seek to understand how to assess the accuracy of computational materials science and engineering simulations. There is no charge to attend this session.

Networking Events

Understanding the importance of networking with colleagues new and old, a series of activities have been planned that will help you connect with current colleagues and new acquaintances.

AIAA Student Welcome Reception

Sunday, 4 January **Orange Blossom Ballroom**
1800-1930 hrs

Mingle with your peers and hear from AIAA Executive Director Sandy Magnus. This reception provides you with the opportunity to meet your fellow students and learn more about the opportunities available to you as an AIAA student member.

Sponsored by: BOEING

Networking Coffee Breaks

Coffee breaks allow even more time for making new contacts, continuing discussions from sessions, visiting the Exposition Hall, or checking emails and voicemails to keep in touch with the office while you are at the forum. Coffee breaks will be located in the following locations and times:

Monday, 5 January	**0900, 1530 hrs; Osceola Lobby**
Tuesday, 6 January	**0900, 1530 hrs; Exposition Hall**
Wednesday, 7 January	**0900, 1530 hrs; Exposition Hall**
Thursday, 8 January	**0900 hrs; Exposition Hall** **1530 hrs; Osceola Lobby**
Friday, 9 January	**0900 hrs; Osceola Lobby**

Welcome Reception

Tuesday, 6 January **Exposition Hall**
1830–2000 hrs

Take this opportunity to engage new contacts and refresh old ones. A ticket for the reception is required and included in the registration fee where indicated. Additional tickets for guests may be purchased upon registration or on site, as space is available.

Luncheon in the Exposition Hall

Wednesday, 7 January **Exposition Hall**
1230–1400 hrs

A ticket is required and included in the registration fee where indicated.

Infotech@Aerospace Meet and Greet

Wednesday, 7 January **Osceola 1**
1830–2000 hrs

Women at SciTech Happy Hour and Keynote

Thursday, 8 January **Osceola Ballroom B**
1730–1930 hrs

Women are underrepresented in the engineering sciences and industry, and this event will provide an opportunity to meet informally, network, discuss experiences and identify women who are leaders in their fields for possible special recognition by AIAA. There is no charge to attend this event.

Recognition Events

AIAA celebrates our industry's discoveries and achievements from the small but brilliantly simple innovations that affect everyday lives to the major discoveries and missions that fuel our collective human drive to explore and accomplish amazing things.

Monday, 5 January

0930–1030 hrs **Osceola Ballroom A**

Spacecraft Structures Lecture

Advanced Solar Arrays for NASA Electric Propulsion Missions

Tom Kerslake, Power System Engineer, NASA Glenn Research Center, Cleveland, Ohio

1400–1500 hrs **Osceola Ballroom A**

Non-Deterministic Approaches Lecture

The Building Block Approach in the 21st Century — The Role of ICME & UQ

Rolland Dutton, Chief, Manufacturing and Industrial Technologies Division, AFRL/RXM, Wright-Patterson AFB

Reception: 1830–1930 hrs **Osceola Foyer**
Dinner: 1930–2230 hrs **Osceola Ballroom C**

2015 Associate Fellows Recognition Ceremony and Dinner

A ticket for the dinner is required and not included in the registration fee. Additional tickets for guests may be purchased upon registration or on site, as space is available.

Tuesday, 6 January

0900–1100 hrs **St. George 106**

AIAA Foundation Student Awards Breakfast (By Invitation Only)

This awards breakfast is by invitation only. The winners of the AIAA Foundation International Student Conference will be announced. Also the recipients of the following awards will be recognized by Steve Gorrell, Vice President, Education:

Fanny Besem, Orville and Wilbur Wright Graduate Award

Giuseppe Cataldo, Orville and Wilbur Wright Graduate Award

Armando Gomez-Farias, Zarem Award for Distinguished Achievement

Arturo Montoya, Zarem Award for Distinguished Achievement (Faculty Advisor)

0930–1030 hrs **Osceola Ballroom A**

Adaptive Structures Lecture

Micro Aerial Vehicles (MAV): Challenges and Opportunities

Inderjit Chopra, Alfred Gessow and Distinguished University Professor, University of Maryland

1230–1400 hrs **Osceola Ballroom CD**

Recognition Luncheon—Celebrating Achievements in Aerospace Sciences and Information Systems

A ticket for the luncheon is required and included in the registration fee where indicated. Additional tickets for guests may be purchased upon registration or on site, as space is available.

The following awards will be presented:

Aerospace Software Engineering Award

Karen Gundy-Burlet
Flight Software Lead LADEE
NASA Ames Research Center
Moffett Field, California

"For over thirty years of significant research and innovations in the software engineering simulations of computational fluid dynamics and efficient spacecraft flight control software."

(continued)

Recognition Events

deFlorez Award For Flight Simulation

Cleve Moler

Chief Mathematician, Chairman and Co-Founder
MathWorks
Natick, Massachusetts

"For significant impact to the science of flight simulation through development of computational algorithms underlying an environment now used widely to create multi-domain models and operational software."

Faculty Advisor Award

Joseph Majdalani

Chair, Department of Aerospace Engineering
Auburn University
Auburn, Alabama

"For unwavering devotion to student success in the AIAA Southeast Region yielding eight regional and two national AIAA awards, with eight-out-of-eight best papers within five years."

J. Leland Atwood Award

John Valasek

Professor, Aerospace Engineering
Texas A&M University
College Station, Texas

"For outstanding contributions to the aerospace profession and deep commitment to the education and professional development of aerospace engineering students."

Lawrence Sperry Award

Jeremy T. Pinier

LaRC SLS Lead for Aerosciences
Configuration Aerodynamics Branch
NASA Langley Research Center
Hampton, Virginia

"For significant technical accomplishments and leadership in the aerodynamic design and development of the next U.S. crew and heavy-lift launch vehicles."

Sustained Service Award

David Klyde

Vice President, Research and Engineering Services
System Technology, Inc.
Hawthorne, California

"For nearly two decades of service to AIAA including technical committee leadership, distinguished lecturer, journal associate editor, and corporate member advisory committee."

Certificate of Merit for Best Papers:

Atmospheric Flight Mechanics Best Paper

"Robust Modal Filtering and Control of the X-56A Model with Simulated Fiber Optic Sensor Failures," AIAA 2014-2053, Peter Suh and Alexander Chin, NASA Dryden Flight Research Center; and Dimitri N Mavris, Georgia Institute of Technology.

Modeling & Simulation Best Papers

"Frequency-Domain Method for Automated Simulation Updates based on Flight Data," AIAA 2014-0472, Eugene Morelli, NASA Langley Research Center and Jared Cooper, Baron Associates.

"An Evaluation of Several Stall Models for Commercial Transport Training," AIAA 2014-1002, Jeffrey Schroeder, FAA; Judith Burki-Cohen, USDOT-RITA-Volpe Center; David Shikany, The Boeing Company; David Gingras, Bihrle Applied Research Inc.; and Paul Desrochers, Test Pilot, Inc.

Intelligent Systems Best Paper

"Robust Trajectory Planning for Autonomous Parafoils under Wind Uncertainty," AIAA 2013-4584, Brandon Luders, Ian Sugel, and Jonathan How, Massachusetts Institute of Technology.

Announcement of Student Competition Winners:

Atmospheric Flight Mechanics Student Paper

Guidance, Navigation, and Control Student Paper

Intelligent Systems Student Paper

Wednesday, 7 January

1800–1900 hrs **Osceola Ballroom B**

Structures, Structural Dynamics and Materials Lecture

Aerospace Structural Design and Safety: Do We Need Fewer Tests or More?

Raphael Haftka, Distinguished Professor, University of Florida

Recognition Events

Thursday, 8 January

1200–1400 hrs **Osceola Ballroom CD**

Recognition Luncheon—Celebrating Achievements in Aerospace Design/Structures and Literary Excellence

Commercial Spaceflight: What Has Changed

Speaker: **Christopher J. Ferguson,** Director, Crew and Mission Systems, Commercial Crew Program, Boeing Space Exploration

A ticket for the luncheon is required and included in the registration fee where indicated. Additional tickets for guests may be purchased upon registration or on site, as space is available.

The following awards will be presented:

Walter J. and Angeline H. Crichlow Trust Prize

Satya N. Atluri

Distinguished Professor, Mechanical and Aerospace Engineering, The Henry Samueli School of Engineering and Director, Center For Aerospace Research and Education
University of California-Irvine
Irvine, California

"For lasting contributions to airframe structural integrity and durability analysis using novel computational methods (MLPG meshless methods) and micromechanics of materials genome."

Children's Literature Award

Margaret A. Weitekamp

Curator, Space History Department
Smithsonian National Air and Space Museum
Washington, D.C.

"Pluto's Secret: An Icy World's Tale of Discovery"

History Manuscript Award

Frederick Johnsen

Former U.S. Air Force Historian and
Retired Director of the Air Force Flight Test Center Museum
Edwards Air Force Base, California

"Sweeping Forward"

Gardner-Lasser Aerospace History Literature Award

Dennis R. Jenkins

Aerospace Historian
Cape Canaveral, Florida

"Dressing For Altitude"

Pendray Aerospace Literature Award

Antony Jameson

Thomas V. Jones Professor of Engineering
Department of Aeronautics and Astronautics
Stanford University
Stanford, California

"For seminal and high-impact research papers in the field of computational fluid dynamics and aerodynamic optimization."

Certificate of Merit for Best Papers:

ASME/Boeing Best Paper

"In-Flight Aeroelastic Stability of the Thermal Protection System on the NASA HIAD, Part I: Linear Theory" AIAA 2014-1520, Benjamin Goldman and Earl Dowell, Duke University; and Robert Scott, NASA Langley Research Center.

Collier Research Hypersizer/AIAA Structures Best Paper

"Internally Reinforced Adhesively Bonded Metal to Composite Joints," AIAA 2014-1530, Stephen Clay, Air Force Research Laboratory and Vipul Ranatunga, Miami University.

Spacecraft Structures Best Paper

"Testing and Application of Numerically Determined Expandable and Foldable Space Structures" AIAA 2014-1511, Daniel Kling, Jonathan Hinkle, Ryan Cook and Cliff Willey, ILC Dover; and William Doggett, NASA Langley Research Center.

Announcement of Student Competition Winners:

Jefferson Goblet Student Paper Award

The Harry H. and Lois G. Hilton Student Paper Award in Structures

Lockheed Martin Student Paper Award in Structures

American Society for Composites Student Paper in Composites Award

Southwest Research Institute Student Paper Award in Non-Deterministic Approaches

Exposition Hall

The Exposition Hall is the hub of activity during this event—from seeing exhibitor displays to enjoying networking breaks and other functions. All the major networking events are held in the Exposition Hall to give attendees and exhibitors an opportunity to connect with partners, industry thought leaders, and collaborators who can help move your business forward. The Exposition Hall is located on the lower level of the Convention Center, two floors below AIAA registration.

Exposition Hall Hours

Tuesday, 6 January	**0900–1230 hrs**
	1400–1600 hrs
Reception*	**1830–2000 hrs**
Wednesday, 7 January	**0900–1600 hrs**
Luncheon*	**1230–1400 hrs**
Thursday, 8 January	**0900–1200 hrs**

*A ticket is required to attend.

AIAA Pavilion

Stop by the AIAA Pavilion, located in the Exposition Hall, to browse publications and merchandise, learn about your membership benefits, and meet AIAA staff.

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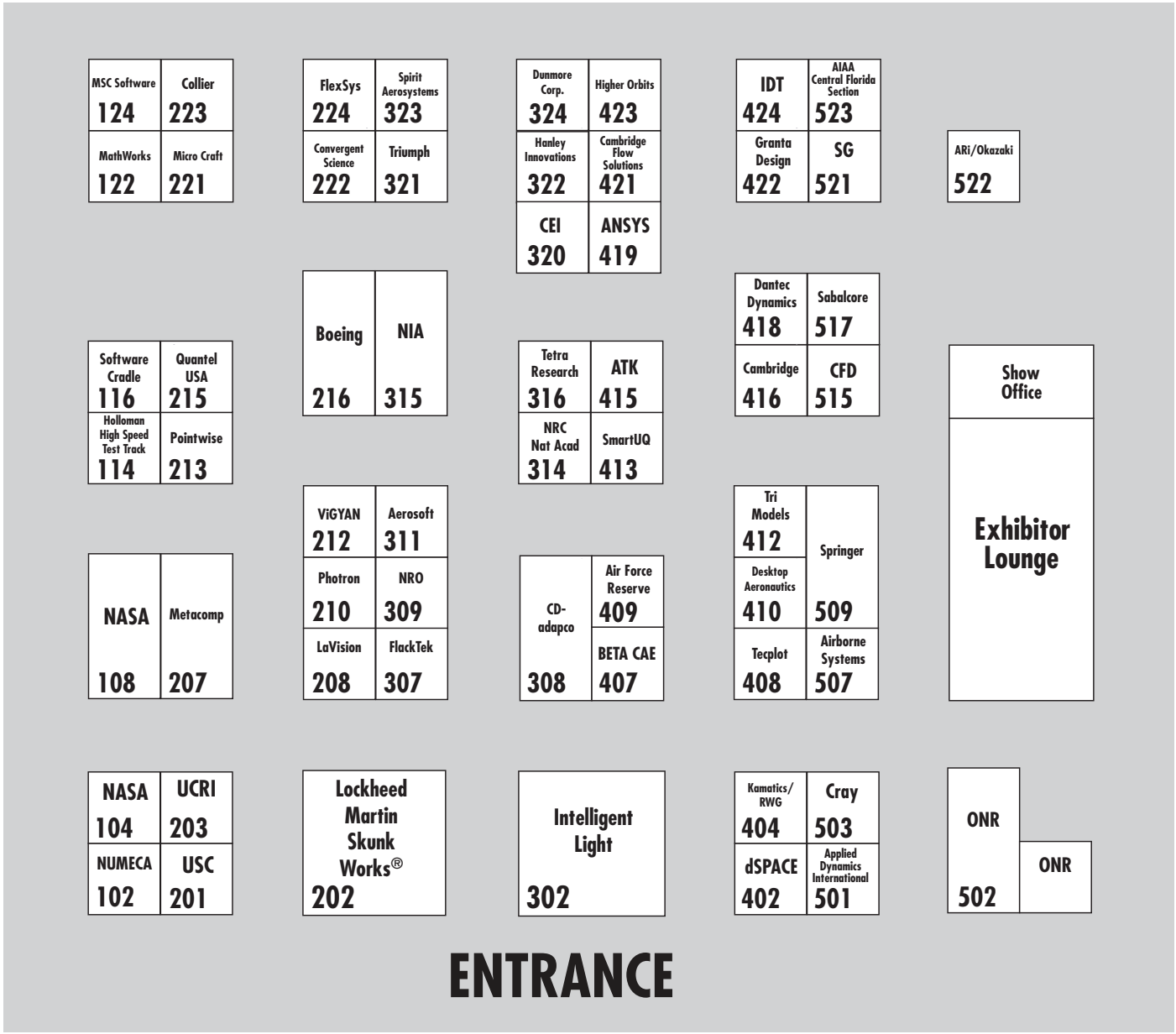
Meet the Author Sessions

Thomas R. Yechout
Introduction to Aircraft Flight Mechanics, 2E
Tuesday, 6 January
AIAA Pavilion
Opening Reception

Daniel P. Raymer
Aircraft Design, 5E **and** *RDSWin Student*
AIAA Pavilion
Wednesday, 7 January
AM Networking Coffee Break
Exposition Hall Luncheon

Exposition Hall



Exposition Hall

Exhibitors by Booth Number

311	Aerosoft, Inc
523	AIAA Central Florida Section
507	Airborne Systems
419	ANSYS, Inc.
501	Applied Dynamics International (ADI)
522	ARi/Okazaki
415	ATK
407	BETA CAE Systems USA, Inc.
216	Boeing Technology Services
421	Cambridge Flow Solutions Ltd.
416	Cambridge University Press
308	CD-adapco
320	Computational Engineering International
222	Convergent Science, Inc.
503	Cray
418	Dantec Dynamics, Inc.
410	Desktop Aeronautics, Inc.
402	dSPACE
324	DUNMORE Corporation
515	Ennova-CFD
307	FlackTek
224	FlexSys
422	Granta Design
322	Hanley Innovations
423	Higher Orbits
114	Holloman High Speed Test Track
223	HyperSizer® - Collier Research Corporation
424	Integrated Design Tools, Inc (IDT)
302	Intelligent Light
404	Kamatics/RWG
208	LaVision, Inc.
202	Lockheed Martin Skunk Works®
122	MathWorks
207	Metacomp Technologies
221	Micro Craft, Inc
124	MSC Software
108	NASA/Kennedy Space Center Public Affairs
104	NASA Space Technology Mission Directorate
315	National Institute of Aerospace (NIA)
309	National Reconnaissance Office (NRO)
314	National Research Council of the National Academies
102	NUMECA USA, Inc.
502/503	Office of Naval Research
210	Photron
213	Pointwise, Inc.
215	Quantel, USA
517	Sabalcore Computing Inc.
413	SmartUQ
116	Software Cradle
521	SG — Space and Ground Engineering Solutions
323	Spirit Aerosystems
509	Springer
408	Tecplot, Inc.
316	Tetra Research Corporation
412	Tri Models, Inc.
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203	University of Cincinnati Research Institute (UCRI)
201	University of Southern California (USC)
212	ViGYAN, Inc.

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Exhibitors

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Exhibitors

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General Information

AIAA Registration and Information Center Hours

The AIAA Registration and Information Center will be located on the ballroom level of the Convention Center.

Sunday, 4 January	**1500–1900 hrs**
Monday, 5 January –Thursday, 8 January	**0700–1730 hrs**
Friday, 9 January	**0700–1300 hrs**

Wi-Fi Internet Access On Site

AIAA is providing limited Wi-Fi service for attendees to use while on site. To keep this service available and optimized for all attendees, please do not download files larger than 2MB, create multiple sessions across multiple devices, or download multiple files in one session. If you receive an error message that an AIAA server is blocking your current IP address, please inform the AIAA registration desk.

AIAA Livestream Channel

Visit www.livestream.com/aiaa to view selected keynotes, plenaries, and Forum 360 sessions. Share the link with colleagues who couldn't attend the conference so they can watch live or view later. AIAA SciTech 2015 Livestream channel is sponsored by Airbus.

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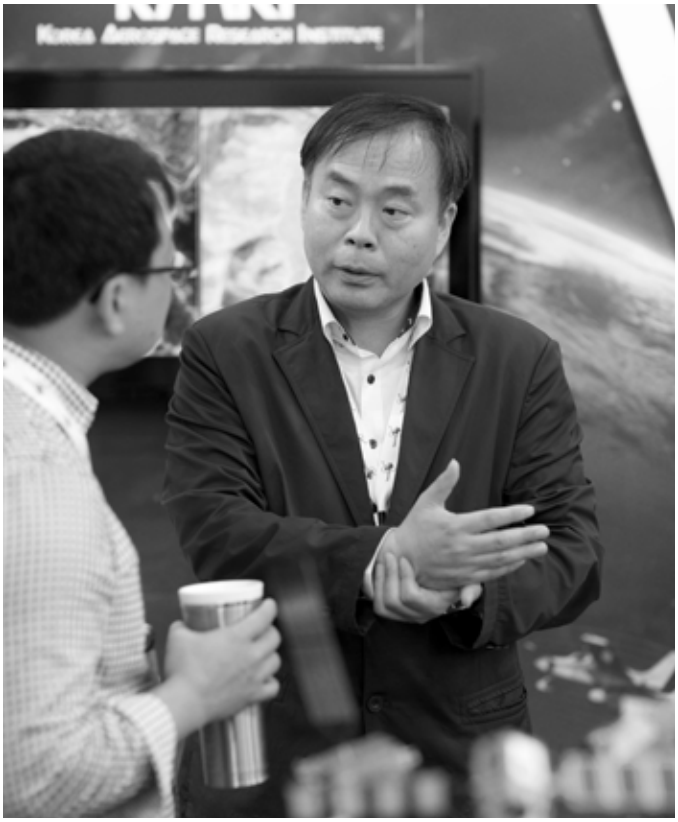

Conference Proceedings

Proceedings for the forum will be available online. The cost is included in the registration fee where indicated. Online proceedings will be available on Monday, 5 January.

Instructions to Access Proceedings:

1. To view proceedings, visit www.aiaa.org >ARC>Meeting Papers.
   a. Log in with the link at the top right of the page.
   b. Select the appropriate conference from the list.
   c. Search for individual papers with the Quick Search toolbar in the upper-right corner of the page:
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2. All manuscript files submitted by four days prior to the conference are currently in the proceedings. Files submitted after that date, both original and revised manuscripts, will not be available until the final proceedings update, which may take up to 15 business days after the last day of the conference.
3. Direct any questions concerning access to proceedings and/or ARC to **arcsupport@aiaa.org**.

Manuscript Revisions

1. Manuscript revision is open for all presenting authors from 0900 hrs Eastern Time, Monday, 5 January through 2000 hrs Eastern Time, Wednesday, 21 January.
2. Revisions submitted for manuscripts already online **will not refresh until after the proceedings have been updated**, which may take up to 15 business days after the last day of the conference.

Certificate of Attendance

Certificates of Attendance are available for attendees who request documentation at the forum itself. Please request your copy at the AIAA Registration and Information Center. AIAA offers this service to better serve the needs of the professional community. Claims of hours or applicability toward professional education requirements are the responsibility of the participant.

General Information

Employment Opportunities

AIAA members can post and browse resumes, browse job listings, and access other online employment resources by visiting the AIAA Career Center at **http://careercenter.aiaa.org.**

Membership

AIAA is your vital lifelong link to the collective creativity and brainpower of the aerospace profession and a champion for its achievements – and nonmembers who pay the full conference registration fee will receive their first year's AIAA membership at no additional cost! Students who are not yet members may apply their registration fee toward their first year's student member dues. (Free membership is not included in discounted group-rate registration.)

Young Professional Guide for Gaining Management Support

Young professionals have the unique opportunity to meet and learn from some of the most important people in the business by attending conferences and participating in AIAA activities. A detailed online guide, published by the AIAA Young Professional Committee, is available to help you gain support and financial backing from your company. The guide explains the benefits of participation, offers recommendations, and provides an example letter for seeking management support and funding, and shows you how to get the most out of your participation. The online guide can be found on the AIAA website at **www.aiaa.org/YPGuide**.

Badge Policy

AIAA forum badges are provided to those attendees who have paid for a registration to the event (and must be worn at all times to participate in all forum activities). Badges are not provided for committee meetings. In order to obtain a badge, one must register for the event.

Nondiscriminatory Practices

AIAA accepts registrations irrespective of race, creed, gender, color, sexual orientation, physical handicap, and national or ethnic origin.

Restrictions

Photography or the video or audio recording of sessions or exhibits, as well as the unauthorized sale of AIAA-copyrighted material, is prohibited.

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AIAA speakers and attendees are reminded that some topics discussed in the conference could be controlled by the International Traffic in Arms Regulations (ITAR). U.S. nationals (U.S. citizens and permanent residents) are responsible for ensuring that technical data they present in open sessions to non-U.S. nationals in attendance or in conference proceedings are not export restricted by the ITAR. U.S. nationals are likewise responsible for ensuring that they do not discuss ITAR export-restricted information with non-U.S. nationals in attendance.

General Information

Author and Session Chair Information

Speakers' Briefings in Session Rooms

Authors who are presenting papers will meet with session chairs and co-chairs in their session rooms for a short 30-minute briefing on the day of their sessions to exchange bios and review final details prior to the session. Please attend on the day of your session(s). Laptops preloaded with the Speaker Briefing preparation slides will be provided in each session room. Speaker's Briefing schedule is as follows:

Monday, 5 January–Friday, 9 January: 0730 hrs

Speakers' Practice Room

Speakers who wish to practice their presentations may do so in Osceola Reg rooms 3 and 4, and Sun Reg rooms 3 and 4. A sign-up sheet will be posted on the door. In consideration of others, please limit practice time to 30-minute increments.

Session Chair Reports

All session chairs are asked to complete a session chair report to evaluate their session for future planning. AIAA has partnered with Canvas Solutions to provide an electronic Session Chair Report form. You can download the FREE mobile app in your App Store, AppWorld, or Marketplace by searching for "Canvas Solutions, Inc." The mobile app is free, so please be sure to download it. Detailed instructions will be provided in the session rooms. If you do not have a tablet or a smartphone, simply use the report form as a guide and enter your session chair report information at the session chair reporting computer station located on site near the AIAA registration area. Report data will be collected and used for future planning purposes, including session topics and room allocations. Please submit your session chair report electronically by Friday, 9 January.

Audiovisual

Each session room will be preset with the following: one LCD projector, one screen, one microphone and sound system (if necessitated by room size), and one laser pointer. **Laptop computers will also be provided.** You may also use your own computer. Any additional audiovisual equipment requested onsite will be at cost to the presenter. Please note that AIAA does not provide security in the session rooms and recommends that items of value not be left unattended.

"No Paper, No Podium" and "No Podium, No Paper" Policy

If a written paper is not submitted by the final manuscript deadline, authors will not be permitted to present the paper at the forum. Also, if the paper is not presented at the forum, it will be withdrawn from the proceedings. It is the responsibility of those authors whose papers or presentations are accepted to ensure that a representative attends the conference to present the paper. These policies are intended to improve the quality of the program for attendees.

Journal Publication

AIAA has prior publication rights to any paper presented at its conferences. Authors who are seeking the opportunity for peer-reviewed publication are encouraged to submit their papers for consideration by one of the Institute's archival journals: *AIAA Journal; Journal of Aircraft; Journal of Guidance, Control, and Dynamics; Journal of Propulsion and Power; Journal of Spacecraft and Rockets; Journal of Thermophysics and Heat Transfer;* or *Journal of Aerospace Information Systems.* You may now submit your paper online at **http://mc.manuscriptcentral.com/aiaa**

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Committee Meetings and Events

Time	Title	Location
	Saturday, 3 January 2015	
0800-1700 hrs	**Aircraft and Rotorcraft System Identification**	Daytona 1
0800-1700 hrs	**Third International Workshop on High Order CFD Methods**	Daytona 2
0800-1700 hrs	**Best Practices in Wind Tunnel Testing**	Miami 1
	Sunday, 4 January 2015	
0800-1700 hrs	**Aircraft and Rotorcraft System Identification**	Daytona 1
0800-1700 hrs	**Third International Workshop on High Order CFD Methods**	Daytona 2
0800-1700 hrs	**Best Practices in Wind Tunnel Testing**	Miami 1
0900-1200 hrs	**TAC Director/Deputy Director Training**	Tallahassee 3
0900-1200 hrs	**TAC TC/PC Chair Training**	Osceola Ballroom 1/2
1200-1700 hrs	**TAC Workshop**	Osceola Ballroom 3/4
1430-1500 hrs	**APATC Liaisons Subcommittee**	Sanchez Boardroom
1500-1600 hrs	**APATC Education Subcommittee**	Sanchez Boardroom
1500-1600 hrs	**APATC Honors & Awards Subcommittee**	St George 102
1500-1600 hrs	**APATC Membership & Nominations Subcommittee**	Emerald 5
1400-1500 hrs	**GTTC Steering Subcommittee**	St George 112
1500-1600 hrs	**GTTC New Member and Mentors Meeting**	St George 112
1500-1600 hrs	**APATC Planning Subcommittee**	Emerald 7
1500-1600 hrs	**APATC Publicity & Publications Subcommittee**	Hemingway Boardroom
1600-1700 hrs	**GTTC Introduction/Overview**	St George 112
1600-1700 hrs	**APATC Technical Activities Subcommittee**	Sanchez Boardroom
1700-1800 hrs	**APATC Steering Committee**	Sanchez Boardroom
1700-1800 hrs	**GTTC Program Subcommittee**	St George 112
1730-2030 hrs	**Structures TC**	St George 108
1800-1930 hrs	**Student Reception**	Orange Blossom Ballroom
1800-2100 hrs	**Applied Aerodynamics TC**	St George 114
1800-2100 hrs	**Atmospheric Flight Mechanics TC**	St George 104
1800-1900 hrs	**GTTC Publications Subcommittee**	St George 112
1800-2200 hrs	**GNC Graduate Student Paper Competition**	Tallahassee 2
1830-2100 hrs	**GNCTC Undergraduate Conference Experience**	Emerald 2
1900-2100 hrs	**FDTC Transition DG**	St George 106
1900-2100 hrs	**TAC Aerospace Design & Structures Group Meeting**	Sanchez Boardroom
1900-2100 hrs	**TAC Aircraft & Atmospheric Systems Group Meeting**	Hemingway Boardroom
1900-2100 hrs	**TAC Engineering & Technology Management Group Meeting**	St George 102
1900-2200 hrs	**TAC Program Committees Group Meeting**	Emerald 4
1900-2100 hrs	**TAC Propulsion & Energy Group Meeting**	Emerald 1
1900-2100 hrs	**TAC Space & Missiles Group Meeting**	Emerald 3
1900-2000 hrs	**GTTC Conferences Subcommittee**	St George 112
2000-2200 hrs	**TAC Information Systems Group Meeting**	Emerald 5

Committee Meetings and Events

Time	Title	Location
	Monday, 5 January 2015	
0800-1600 hrs	**Governance Workshop**	St George 108
0900-1000 hrs	**ABPTCs Steering Committee**	St George 106
0900-1600 hrs	**National Institute of Aerospace**	Suite 6095
1000-1100 hrs	**ABPSITC Meeting**	St George 106
1000-1100 hrs	**GTETC Meeting**	St George 102
1000-1100 hrs	**HSABPTC Meeting**	St George 104
1100-1400 hrs	**Academic Affairs Committee**	St George 102
1100-1200 hrs	**PDLTC Steering Committee**	Sanchez Boardroom
1200-1300 hrs	**ABPTCs Conference Subcommittee**	St George 106
1230-1400 hrs	**Durand Lecture in Public Service / Public Policy Luncheon**	Osceola Ballroom CD
1230-1400 hrs	**FDTC Steering Committee**	Sanchez Boardroom
1300-1500 hrs	**Education Series Editorial Advisory Board**	Hemingway Boardroom
1400-1700 hrs	**Honors and Awards Committee**	St George 104
1400-1500 hrs	**ABPTCs Honors and Awards Subcommittee**	St George 106
1500-1600 hrs	**FDTC Free Shear and Mixing Layer Control DG**	Hemingway Boardroom
1500-1700 hrs	**Progress Series Editorial Advisory Board**	Sanchez Boardroom
1500-1600 hrs	**ABPTCs Education Subcommittee**	St George 106
1600-1800 hrs	**Space Operations & Support TC**	Hemingway Boardroom
1600-1700 hrs	**ABPTCs Communications Subcommittee**	St George 106
1630-1730 hrs	**FDTC Flow Control Technology: Barriers/Challenges to Tech Transition DG**	Suite 5095
1630-1730 hrs	**AMTTC New Member Orientation**	Suite 6123
1700-1800 hrs	**ABPTCs Membership Subcommittee**	St George 106
1700-1900 hrs	**ABPTCs Working Group**	Suite 6095
1730-1830 hrs	**FDTC Turbulence Modeling Benchmarks WG**	Sanibel 3
1730-1900 hrs	**APATC Validation of Numerical Models DG**	Osceola Ballroom 5
1800-1900 hrs	**FDTC Future of Fluids SC**	Sanchez Boardroom
1800-1900 hrs	**Rising Leaders in Aerospace Reception**	Osceola Ballroom A
1830-2230 hrs	**Associate Fellows Reception/Dinner**	Osceola Foyer/Osceola Ballroom C
1830-2000 hrs	**AMTTC Award Subcommittee**	Suite 5095
1830-1930 hrs	**GTTC Committee on Standards**	Miami 2
1830-2130 hrs	**Aerospace @ Illinois Alumni Reception**	St George 114
1900-2030 hrs	**Penn State Alumni Reception**	Marlin Dock
1900-2130 hrs	**Propellants & Combustion TC**	Emerald 8
1900-2200 hrs	**Terrestrial Energy Systems TC**	St George 106
1900-2100 hrs	**FDTC Fundamentals of Flow Phenomena Subcommittee**	Emerald 6
1900-2100 hrs	**FDTC CFD Methods Subcommittee**	St George 102
1900-2200 hrs	**TAC Aerospace Sciences Group Meeting**	St George 108
1900-2100 hrs	**SDTC Aeroelastic Prediction Workshop Meeting**	Emerald 4
1900-2100 hrs	**FDTC Flow Control and Fluid Applications SC**	Emerald 5
1900-2100 hrs	**ABPTCs Group Meeting**	Miami 1
1930-2030 hrs	**GTTC Awards Subcommittee**	Miami 2
2030-2130 hrs	**GTTC Education and Student Activities Subcommittees**	Miami 2

Committee Meetings and Events

Time	Title	Location
	Tuesday, 6 January 2015	
0700-1000 hrs	**GTTC Dual Reference Nozzle WG**	St George 112
0800-1500 hrs	**GTTC WT Model Attitude and Deformation Measurement WG**	St George 114
0800-1600 hrs	**GTTC Internal Balance WG**	Gainesville 2
0800-1200 hrs	**Public Policy Committee**	St George 108
0800-1000 hrs	**2016 Associate Fellows Committee**	St George 102
0800-1700 hrs	**Systems Engineering TC**	Palm Beach
0800-0945 hrs	**RAC V Meeting**	Suite 6095
0800-0930 hrs	**Audit Committee Meeting**	Hemingway Boardroom
0800-1000 hrs	**Books Subcommittee**	Sanchez Boardroom
0900-1100 hrs	**ISC Award Brunch**	St George 106
0900-1000 hrs	**SRTC Subcommittee**	St George 104
0930-1130 hrs	**Finance Committee Meeting**	Orange Blossom Ballroom
1000-1100 hrs	**SciTech 2016 Executive Steering Committee**	Clearwater
1000-1230 hrs	**RAC I Meeting**	Sanchez Boardroom
1000-1100 hrs	**RAC IV Meeting**	Suite 6095
1000-1200 hrs	**Solid Rockets TC**	St George 104
1000-1200 hrs	**International Activities Committee**	St George 112
1000-1100 hrs	**TAC PEG Operations Group**	Hemingway Boardroom
1100-1200 hrs	**TAC PEG Technical Products Group**	St George 102
1115-1430 hrs	**RAC II Meeting**	Suite 6095
1200-1300 hrs	**Compensation Committee**	Sales Boardroom
1200-1400 hrs	**Education Activities Committee**	Hemingway Boardroom
1400-1700 hrs	**Board of Directors Meeting**	Orange Blossom Ballroom
1400-1700 hrs	**Aircraft Design TC**	St George 104
1500-1600 hrs	**TPTC Best Paper Subcommittee**	Suite 6095
1500-1730 hrs	**Aerospace Cybersecurity WG**	St George 114
1500-1600 hrs	**TPTC Awards Subcommittee**	St George 102
1500-1700 hrs	**Journal of Thermophysics and Heat Transfer Editorial Advisory Board**	Hemingway Boardroom
1600-1800 hrs	**GTTC FoGT Experimental and Computational Aero Development**	St George 102
1600-1700 hrs	**TPTC Publications Subcommittee**	Suite 6095
1600-1700 hrs	**TPTC Conference Subcommittee**	Suite 6123
1600-1700 hrs	**Book Authors Reception**	St George 106
1600-1700 hrs	**GEPC Conference Subcommittee**	Sanchez Boardroom
1600-1715 hrs	**Rising Leaders in Aerospace-Speed Geek**	Osceola Ballroom A
1700-1900 hrs	**AIAA Ethics Committee**	Gainesville 2
1700-1800 hrs	**TPTC Nominations Subcommittee**	Suite 6123
1700-1800 hrs	**TPTC Education Subcommittee**	Suite 5095
1700-1800 hrs	**GEPC Leadership Team**	Sanchez Boardroom
1730-2000 hrs	**SCSTC Publications Subcommittee**	Hemingway Boardroom
1730-1930 hrs	**APATC Aerodynamic Design Optimization DG**	St George 112
1730-1830 hrs	**Dryden Lecture in Research**	Osceola Ballroom CD

Committee Meetings and Events

Time	Title	Location
	Tuesday, 6 January 2015 (continued)	
1800-1900 hrs	**TPTC Publicity Subcommittee**	Suite 5095
1800-2200 hrs	**Sensor Systems and Information Fusion TC**	Naples 1
1800-2130 hrs	**Software TC**	St George 114
1830-2100 hrs	**SciTech 2015 Executive Dinner (by invitation only)**	Old Hickory Steakhouse
1830-2130 hrs	**Pressure Gain Combustion PC**	Osceola Ballroom 1
1830-2130 hrs	**Legal Aspects of Aeronautics and Astronautics**	Sanchez Boardroom
1830-2130 hrs	**History TC**	Sanibel 1
1830-2130 hrs	**Survivability TC**	Miami 2
1830-2130 hrs	**ASME Wind Energy TC**	Miami 1
1900-2200 hrs	**Aerodynamics Technical Working Group**	Emerald 2
1900-2100 hrs	**CFD Committee on Standards**	Palm Beach
1900-2100 hrs	**Career and Professional Development Committee**	Suite 5095
1900-2200 hrs	**Small Satellite TC**	Sanibel 3
1900-2200 hrs	**Unmanned Systems PC**	St George 102
1900-2200 hrs	**Aerodynamic Measurement Technology TC**	Sarasota 1/2
1900-2200 hrs	**Materials TC**	Osceola Ballroom 2
1900-2200 hrs	**Fluid Dynamics TC**	Osceola Ballroom 5/6
1900-2200 hrs	**Plasmadynamics and Lasers TC**	St George 108
1900-2200 hrs	**Meshing, Visualization and Computational Environments TC**	Maimi 3
1900-2200 hrs	**Aeroacoustics TC**	St George 106
1900-2200 hrs	**Thermophysics TC**	Orange Blossom Ballroom
1900-2100 hrs	**CASE 2015 Planning Meeting**	Naples 2
1900-2200 hrs	**Aerospace Department Chair Association (ADCA) Meeting**	Sun Ballroom C
1900-2100 hrs	**Embry-Riddle Alumni Reception**	Captiva 1/2
1930-2200 hrs	**Adaptive Structures TC**	Naples 3
1930-2200 hrs	**Structures TC**	Osceola Ballroom 3/4
	Wednesday, 7 January 2015	
0700-1330 hrs	**Region & Section Activities Committee (RAC)**	St George 104
0700-1200 hrs	**GTTC Dual Flow Reference Nozzle WG- Day 2**	Gainesville 2
0800-0930 hrs	**Standards Executive Council (SEC)**	Suite 6095
0800-1200 hrs	**GTTC FoGT WG**	St George 114
0800-1000 hrs	**Journals Subcommittee**	Hemingway Boardroom
0900-1200 hrs	**Student Activities Committee**	St George 112
0900-1200 hrs	**TAC Executive Board**	St. George 106
0930-1230 hrs	**DETC Subcommittees**	Sanchez Boardroom
0930-1130 hrs	**Foundation Board of Trustees**	St George 102
1000-1100 hrs	**SciTech 2016 Technical Program Committee**	Clearwater
1000-1300 hrs	**Journals Editors-in-Chief**	Hemingway Boardroom
1200-1700 hrs	**Lockheed Meeting**	Suite 6123
1200-1500 hrs	**EOAESPC Leadership Team**	St George 102
1200-1500 hrs	**EOAESPC Leadership Team**	St George 102

Committee Meetings and Events

Time	Title	Location
	Wednesday, 7 January 2015 (Continued)	
1300-1500 hrs	**Aircraft Electric Propulsion Path Forward**	Sanchez Boardroom
1300-1500 hrs	**Publications Planning and Review Subcommittee**	Hemingway Boardroom
1300-1600 hrs	**Corporate Member Committee**	St George 114
1400-1800 hrs	**Design Engineering TC**	Suite 6095
1400-1700 hrs	**IDC**	St George 112
1400-1600 hrs	**AIAA Journal Editorial Advisory Board**	St George 106
1400-1500 hrs	**HyTASPPC Steering Meeting**	Gainesville 2
1400-1700 hrs	**TAC New Initiatives Subcommittee**	St George 104
1500-1700 hrs	**LM Aeronautics Company Meeting**	Palm Beach
1500-1700 hrs	**HyTASP PC**	Gainesville 2
1500-1700 hrs	**Publications Ethical Standards Subcommittee**	Sanchez Boardroom
1600-1730 hrs	**Corporate Member/Exhibitor Reception (by invitation only)**	Exhibit Hall
1600-1800 hrs	**Emerging Technologies Committee**	Clearwater
1600-1800 hrs	**Journal of Aircraft Editorial Advisory Board**	St George 106
1615-1745 hrs	**Rising Leaders in Aerospace-Leadership Exchange**	Osceola Ballroom A
1700-1815 hrs	**Reception Honoring 2015 Crichlow Prize Recipient (by invitation only)**	St George 108
1730-1800 hrs	**TPTC New Member Meeting**	Suite 6123
1730-1930 hrs	**APATC Low Boom DG**	Miami 3
1730-2000 hrs	**Green Engineering PC**	St George 114
1730-1830 hrs	**AMTTC Nominations Subcommittee**	Sanchez Boardroom
1730-1800 hrs	**GNCTC New Member Orientation**	St George 102
1730-1830 hrs	**FDTC Large Eddy Simulation DG**	St George 104
1730-1830 hrs	**FDTC Nonequilibrium Flows DG**	St George 112
1730-1830 hrs	**FDTC Student Outreach SC**	Suite 5095
1800-2000 hrs	**APATC Rotorcraft Simulations & Performance Predictions DG**	St George 106
1800-2100 hrs	**V/STOL Aircraft Systems TC**	Gainesville 2
1800-2000 hrs	**UK Reception**	Osceola Ballroom 6
1830-1930 hrs	**FDTC Low Re Aerodynamics DG**	Emerald 7
1830-2200 hrs	**Guidance, Navigation and Control TC**	Sun Ballroom B
1830-2130 hrs	**Society and Aerospace Technology TC**	Destin 2
1830-2030 hrs	**AMTTC Update Presentation/Student Event**	Osceola Ballroom 3/4
1830-1930 hrs	**APATC Missile & Projectile Aeroprediction DG**	St George 112
1830-2000 hrs	**ISG Meeting and Greet**	Osceola Ballroom 1
1830-1930 hrs	**Sneak Peak Into The Skunk Works**	Orange Blossom Ballroom
1900-2100 hrs	**Intelligent Light**	Captiva 1/2
1900-2030 hrs	**University of Cincinnati College of Engineering and Applied Science Reception**	Naples 1/2
1900-2030 hrs	**FDTC Solver Technology for Turbulent Flows DG**	St George 104
1900-2030 hrs	**University of Michigan Reception**	Sanibel 3
1900-2100 hrs	**ASME Structures and Materials TC**	Daytona 2

Committee Meetings and Events

Time	Title	Location
	Wednesday, 7 January 2015 (Continued)	
1900-2200 hrs	**Spacecraft Structures TC**	Tallahassee 1/2
1900-2000 hrs	**APATC Low Reynolds Number Aerodynamic Modeling & Test DG**	St George 102
1900-2200 hrs	**Non-Deterministic Approaches TC**	Sanibel 1/2
1900-2200 hrs	**Structural Dynamics TC**	Sun Ballroom A
2000-2200 hrs	**Intelligent Systems TC**	Osceola Ballroom 2
	Thursday, 8 January 2015	
0700-1200 hrs	**GTTC Wind Tunnel Flow Quality WG**	St George 102
0800-1700 hrs	**Lockheed Meeting**	Hemingway Boardroom
0800-1200 hrs	**Publications Committee**	St George 108
0800-1200 hrs	**GTTC Uncertainty Analysis WG**	St George 112
0900-1600 hrs	**Technical Activities Committee**	St George 114
1200-1330 hrs	**Rising Leaders in Aerospace Luncheon Panel**	Osceola Ballroom A
1200-1400 hrs	**V/STOL Aircraft Systems TC/Transformational Flight PC Joint Meeting**	Sanchez Boardroom
1230-1330 hrs	**FDTC SBLI Shock Boundry Layer Interaction DG**	Daytona 1
1300-1500 hrs	**AIAA/Boeing Partnership Meeting**	St. George 102
1500-1700 hrs	**Journal of Guidance, Control and Dynamics Editorial Advisory Board**	Gainesville 2
1730-2000 hrs	**SCSTC High Strain Composites Subcommittee**	Hemingway Boardroom
1730-2030 hrs	**Ground Testing TC**	Osceola Ballroom A
1800-2100 hrs	**Modeling and Simulation TC**	St George 102
1830-2130 hrs	**Transformational Flight PC**	Gainesville 2
1830-2030 hrs	**PDLTC Plasma Aerodynamics DG**	St George 104
1900-2200 hrs	**Information and Command and Control Systems TC**	St George 108

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Aeroacoustics				
AA-1	**Computational Aeroacoustics I**	5-Jan	0930 hrs	1230 hrs	Miami 2
AA-2	**Jet Noise Measurements I**	5-Jan	1400 hrs	1730 hrs	Miami 2
AA-3	**Computational Aeroacoustics II**	6-Jan	0930 hrs	1230 hrs	Miami 2
AA-4	**Jet Noise Prediction I**	6-Jan	0930 hrs	1230 hrs	Sun Ballroom C
AA-5	**Jet Noise Measurements II**	6-Jan	1400 hrs	1730 hrs	Miami 2
AA-6	**General Acoustics**	6-Jan	1400 hrs	1730 hrs	Sun Ballroom C
AA-7	**Jet Noise Prediction II**	7-Jan	0930 hrs	1230 hrs	Miami 2
AA-8	**Airframe Noise and Shielding**	7-Jan	1400 hrs	1730 hrs	Miami 2
	Air Breathing Propulsion Systems Integration				
ABPSI-1	**Propulsion Integration and Controls**	8-Jan	0930 hrs	1230 hrs	Emerald 2
ABPSI-2	**Inlets and Nozzles**	8-Jan	1400 hrs	1730 hrs	Emerald 2
	Aircraft Design				
ACD-1	**Aircraft Design Optimization**	6-Jan	0930 hrs	1230 hrs	Naples 3
ACD-2	**High Speed Aircraft Design**	7-Jan	0930 hrs	1230 hrs	Tallahassee 2
ACD-3	**Aircraft Design Tools**	7-Jan	0930 hrs	1230 hrs	Naples 3
ACD-4	**Conceptual Aircraft Design Working Group (CADWG21) Panel: How much fidelity in conceptual aircraft design?**	8-Jan	0930 hrs	1230 hrs	Naples 3
ACD-5	**Propulsion Integration for Aircraft Design**	8-Jan	1400 hrs	1730 hrs	Emerald 8
ACD-6	**Aircraft Design Methodology**	8-Jan	1400 hrs	1730 hrs	Osceola Ballroom 3
ACD-7	**Transport Aircraft Design**	9-Jan	0930 hrs	1300 hrs	Osceola Ballroom 3
ACD-8	**Aircraft Design Case Studies**	9-Jan	0930 hrs	1300 hrs	Osceola Ballroom 4
	Atmospheric Flight Mechanics				
AFM-1	**AFM Best Student Paper Competition I**	5-Jan	0930 hrs	1230 hrs	Captiva 1
AFM-2	**Aircraft Flight Dynamics, Handling Qualities and Performance I**	5-Jan	0930 hrs	1230 hrs	Captiva 2
AFM-3	**AFM Best Student Paper Competition II**	5-Jan	1400 hrs	1730 hrs	Captiva 1
AFM-4	**Aircraft Flight Dynamics, Handling Qualities and Performance II**	5-Jan	1400 hrs	1730 hrs	Captiva 2
AFM-5	**Aerodynamic Prediction Methods**	6-Jan	0930 hrs	1230 hrs	Captiva 2
AFM-6	**Atmospheric Entry, Hypersonic Flight and Aeroassist Technology**	6-Jan	0930 hrs	1230 hrs	Captiva 1
AFM-7	**AFM Best Student Paper Competition III**	6-Jan	1400 hrs	1730 hrs	Captiva 1
AFM-8	**Aircraft Flight Dynamics, Handling Qualities and Performance III**	6-Jan	1400 hrs	1730 hrs	Captiva 2
AFM-9	**Launch Vehicle, Missile, and Projectile Flight Mechanics I**	7-Jan	0930 hrs	1230 hrs	Captiva 2
AFM-10	**Air Launch to Orbit (Invited)**	7-Jan	0930 hrs	1230 hrs	Sun Ballroom B
AFM-11	**Flight Test and System Identification**	8-Jan	0930 hrs	1230 hrs	Captiva 1
AFM-12	**MAV, UAV and Aeroservoelastic Vehicles**	8-Jan	1400 hrs	1730 hrs	Captiva 1
AFM-13	**Seven Axioms of Good Engineering (Invited Session)**	8-Jan	1400 hrs	1700 hrs	Captiva 2
AFM-15	**Launch Vehicle, Missile, and Projectile Flight Mechanics II**	9-Jan	0930 hrs	1230 hrs	Captiva 2

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Aerodynamic Measurement Technology				
AMT-1	**Pressure Sensitive Paint (PSP) and Novel Measurement Techniques**	5-Jan	0930 hrs	1230 hrs	Tallahassee 1
AMT-2	**Laser Diagnostics for Reacting Flows**	6-Jan	0930 hrs	1230 hrs	Tallahassee 1
AMT-3	**Novel Diagnostics in Reacting Flows**	7-Jan	0930 hrs	1230 hrs	Tallahassee 1
AMT-4	**Laser Based Aerodynamic Diagnostic Tools**	7-Jan	1400 hrs	1730 hrs	Tallahassee 1
AMT-5	**Aerodynamic Diagnostics Tool for High Speed Flows**	8-Jan	0930 hrs	1230 hrs	Tallahassee 1
AMT-6/GT-7	**Background-Oriented Schlieren: Recent Advancements and Applications in Ground Test Facilities**	8-Jan	1400 hrs	1730 hrs	Sun Ballroom C
AMT-7	**Spectroscopy and Schlieren**	8-Jan	1400 hrs	1730 hrs	Tallahassee 1
AMT-8	**Aerodynamic Diagnostics Tool for Supersonic and Hypersonic Flows**	9-Jan	0930 hrs	1300 hrs	Tallahassee 1
AMT-9	**Aerodynamic Surface Measurements**	9-Jan	0930 hrs	1300 hrs	Tallahassee 2
	Applied Aerodynamics				
APA-1	**Aerodynamic Design: Analysis, Methodologies & Optimization Techniques I**	5-Jan	0930 hrs	1230 hrs	Destin 1
APA-2	**Icing or Roughness Effects on Vehicle Aerodynamics I**	5-Jan	0930 hrs	1230 hrs	Destin 2
APA-3	**Special Session: Low Reynolds Number Flight at a Crossroads**	5-Jan	0930 hrs	1230 hrs	Naples 1
APA-4	**Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-up Air Vehicles I**	5-Jan	0930 hrs	1230 hrs	Naples 2
APA-5	**Aerodynamic Testing: Wind Tunnel & Flight Testing I**	5-Jan	1400 hrs	1730 hrs	Destin 1
APA-6	**Aerodynamic-Structural Dynamics Interaction I**	5-Jan	1400 hrs	1730 hrs	Destin 2
APA-7	**Unsteady Aerodynamics**	5-Jan	1400 hrs	1730 hrs	Naples 1
APA-8	**Special Session: Aerodynamic Design Optimization of Benchmark Cases I**	5-Jan	1400 hrs	1730 hrs	Naples 2
APA-9/NDA-1	**Frontiers of Uncertainty Management for Complex Aerospace Systems**	5-Jan	1500 hrs	1730 hrs	Osceola Ballroom 5
APA-10	**Icing or Roughness Effects on Vehicle Aerodynamics II**	6-Jan	0930 hrs	1230 hrs	Destin 2
APA-11	**Other Topics in Applied Aerodynamics**	6-Jan	0930 hrs	1230 hrs	Destin 1
APA-12	**High-Angle-of-Attack, High-lift and Vortical Flow Aerodynamics**	6-Jan	0930 hrs	1230 hrs	Sun Ballroom A
APA-13	**Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-up Air Vehicles II**	6-Jan	0930 hrs	1230 hrs	Naples 2
APA-14	**Special Session: Space Launch System (SLS) I**	6-Jan	0930 hrs	1230 hrs	Naples 1
APA-15	**Aerodynamic Design: Analysis, Methodologies & Optimization Techniques II**	6-Jan	1400 hrs	1730 hrs	Destin 1
APA-16	**Aerodynamic-Structural Dynamics Interaction II**	6-Jan	1400 hrs	1730 hrs	Destin 2
APA-17	**Airfoil/Wing/Configuration Aerodynamics I**	6-Jan	1400 hrs	1730 hrs	Naples 2
APA-18	**Special Session: Space Launch System (SLS) II**	6-Jan	1400 hrs	1730 hrs	Naples 1
APA-19/FD-19	**Flow Control: Fluidic Oscillators**	6-Jan	1400 hrs	1730 hrs	Sun Ballroom A
APA-20	**Propeller/Rotorcraft/Wind Turbine Aerodynamics I**	7-Jan	0930 hrs	1230 hrs	Naples 2
APA-21	**Airfoil/Wing/Configuration Aerodynamics II**	7-Jan	0930 hrs	1230 hrs	Destin 2

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Applied Aerodynamics (continued)				
APA-22	**Flow Control Applications & Demonstrations (Active & Passive) I**	7-Jan	0930 hrs	1230 hrs	Naples 1
APA-23	**Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-up Air Vehicles III**	7-Jan	0930 hrs	1230 hrs	Destin 1
APA-24	**Special Session: Low Boom Activities I**	7-Jan	0930 hrs	1230 hrs	Miami 3
APA-25	**Aerodynamic Testing: Wind Tunnel & Flight Testing II**	7-Jan	1400 hrs	1730 hrs	Destin 1
APA-26	**Applied CFD & Numerical Correlations with Experimental Data I**	7-Jan	1400 hrs	1730 hrs	Destin 2
APA-27	**Flow Control Applications & Demonstrations (Active & Passive) II**	7-Jan	1400 hrs	1730 hrs	Naples 1
APA-28	**Special Session: Simulation of Rotor in Hover - Rotorcraft DG I**	7-Jan	1400 hrs	1730 hrs	Naples 2
APA-29	**Special Session: Low Boom Activities II**	7-Jan	1400 hrs	1730 hrs	Miami 3
APA-30	**Aerodynamic Design: Analysis, Methodologies & Optimization Techniques III**	8-Jan	0930 hrs	1230 hrs	Naples 1
APA-31	**Propeller/Rotorcraft/Wind Turbine Aerodynamics II**	8-Jan	0930 hrs	1230 hrs	Naples 2
APA-32	**Applied CFD & Numerical Correlations with Experimental Data II**	8-Jan	0930 hrs	1230 hrs	Destin 1
APA-33	**High-Angle-of-Attack & High-lift Aerodynamics**	8-Jan	0930 hrs	1230 hrs	Sun Ballroom A
APA-34	**Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-up Air Vehicles IV**	8-Jan	0930 hrs	1230 hrs	Destin 2
APA-35	**Hypersonic Aerodynamics**	8-Jan	1400 hrs	1730 hrs	Destin 1
APA-36	**Flow Control Applications & Demonstrations (Active & Passive) III**	8-Jan	1400 hrs	1730 hrs	Naples 1
APA-37	**Special Session: Simulation of Rotor in Hover - Rotorcraft DG II**	8-Jan	1400 hrs	1730 hrs	Naples 2
APA-38	**Special Session: Aerodynamic Design Optimization of Benchmark Cases II**	8-Jan	1400 hrs	1730 hrs	Destin 2
APA-39	**Weapons Aerodynamics: Missile/Projectile/Guided-Munitions, Carriage & Store Separation**	9-Jan	0930 hrs	1230 hrs	Naples 1
APA-40	**Applied CFD & Numerical Correlations with Experimental Data III**	9-Jan	0930 hrs	1230 hrs	Destin 2
APA-41	**Low speed, Low Reynolds Number & VSTOL/STOL Aerodynamics**	9-Jan	0930 hrs	1300 hrs	Naples 3
APA-42	**Transonic & Supersonic Aerodynamics**	9-Jan	0930 hrs	1230 hrs	Naples 2
APA-43	**Special Session: Aerodynamic Design Optimization of Benchmark Cases III**	9-Jan	0930 hrs	1300 hrs	Destin 1

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Adaptive Structures				
AS-1	**Aerodynamics of Adaptive Structures**	5-Jan	1400 hrs	1730 hrs	Osceola Ballroom 6
AS-2	**Shape Memory Alloy Applications**	6-Jan	1030 hrs	1230 hrs	Osceola Ballroom 6
AS-3	**Morphing Applications**	6-Jan	1400 hrs	1730 hrs	Osceola Ballroom 6
AS-4	**Compliant Structures**	7-Jan	0930 hrs	1230 hrs	Osceola Ballroom 6
AS-5	**Adaptive Actuation**	7-Jan	1400 hrs	1730 hrs	Osceola Ballroom 6
AS-6	**Space Applications**	8-Jan	0930 hrs	1230 hrs	Osceola Ballroom 6
AS-7	**Smart and Multifunctional Materials Applications**	8-Jan	1400 hrs	1730 hrs	Osceola Ballroom 6
	Computer Systems				
CMS-1	**High Performance and Embedded Computing Technologies for Aerospace**	9-Jan	0930 hrs	1230 hrs	Osceola Ballroom 2
	Digital Avionics				
DA-1	**Digital Avionics**	6-Jan	1400 hrs	1730 hrs	Osceola Ballroom 3
	Design Engineering				
DE-1	**Design Engineering**	6-Jan	0930 hrs	1230 hrs	Sarasota 2
DE-2	**Design Education/Design Process**	6-Jan	1400 hrs	1730 hrs	Sarasota 2
DE-3	**Wildlife Conservation UAV Challenge (wcUAVc)**	8-Jan	0930 hrs	1230 hrs	Sun Ballroom D
	Education				
EDU-1	**Advancing Aerospace Education I**	8-Jan	0930 hrs	1200 hrs	Emerald 6
	Fluid Dynamics				
FD-1	**Bio-Inspired Flow**	5-Jan	0930 hrs	1230 hrs	Daytona 1
FD-2	**CFD Methods I**	5-Jan	0930 hrs	1230 hrs	Sanibel 1
FD-3	**Discontinuous Galerkin Methods for Turbulent Flows**	5-Jan	0930 hrs	1230 hrs	Daytona 2
FD-4	**Experimental and Numerical Investigations of Blunt Leading Edge Separation for a 53 Degree Swept Diamond Wing (STO AVT-183) I (Invited)**	5-Jan	0930 hrs	1230 hrs	Sanibel 2
FD-5	**Shock-Dominated Flows I**	5-Jan	0930 hrs	1230 hrs	Sanibel 3
FD-7	**Boundary Layer Transition: Roughness and 3D Flow Effects**	5-Jan	1400 hrs	1730 hrs	Tallahassee 1
FD-8	**CFD Methods II**	5-Jan	1400 hrs	1730 hrs	Sanibel 1
FD-9	**Experimental and Numerical Investigations of Blunt Leading Edge Separation for a 53 Degree Swept Diamond Wing (STO AVT-183) II (Invited)**	5-Jan	1400 hrs	1730 hrs	Sanibel 2
FD-10	**High-Order Methods I**	5-Jan	1400 hrs	1730 hrs	Daytona 1
FD-11	**Jet Flows and Control**	5-Jan	1400 hrs	1730 hrs	Daytona 2
FD-12/PDL-1	**Plasma Flow Control**	5-Jan	1400 hrs	1730 hrs	Sun Ballroom A
FD-13	**RANS/LES Applications**	5-Jan	1400 hrs	1730 hrs	Sanibel 3
FD-14	**CFD Methods III**	6-Jan	0930 hrs	1230 hrs	Sanibel 1
FD-15	**Discontinuous Galerkin Methods I**	6-Jan	0930 hrs	1230 hrs	Sanibel 2
FD-16	**Experiments in Energy Exchange in High Speed Flows (Invited)**	6-Jan	0930 hrs	1230 hrs	Daytona 1
FD-17	**Shock-Dominated Flows II**	6-Jan	0930 hrs	1230 hrs	Sanibel 3
FD-18	**Stability and Transition Modeling**	6-Jan	0930 hrs	1230 hrs	Daytona 2
FD-20	**Actuators and Active Flow Control**	6-Jan	1400 hrs	1730 hrs	Tallahassee 2

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Fluid Dynamics (continued)				
FD-21	**CFD Methods IV**	6-Jan	1400 hrs	1730 hrs	Sanibel 1
FD-22	**Discontinuous Galerkin Methods II**	6-Jan	1400 hrs	1730 hrs	Sanibel 2
FD-23	**Flow Control (Fundamentals and Technology) I**	6-Jan	1400 hrs	1730 hrs	Sanibel 3
FD-24	**High-Order Methods II**	6-Jan	1400 hrs	1730 hrs	Daytona 1
FD-25	**Hypersonic Boundary Layer Transition I**	6-Jan	1400 hrs	1730 hrs	Tallahassee 1
FD-26	**Jets, Plumes, & Reacting Flows**	6-Jan	1400 hrs	1730 hrs	Daytona 2
FD-28	**Current Challenges for Computational Fluid Dynamics, Industry and Government Interests I (Invited)**	7-Jan	0930 hrs	1230 hrs	Sun Ballroom A
FD-29	**Flow Control (Fundamentals and Technology) II**	7-Jan	0930 hrs	1230 hrs	Sanibel 3
FD-30	**Hypersonic Flows**	7-Jan	0930 hrs	1230 hrs	Daytona 1
FD-31	**Unsteady Flow I**	7-Jan	0930 hrs	1230 hrs	Sun Ballroom 6
FD-32	**CFD Methods V**	7-Jan	1400 hrs	1730 hrs	Sanibel 2
FD-33	**Current Challenges for Computational Fluid Dynamics, Industry and Government Interests II (Invited)**	7-Jan	1400 hrs	1730 hrs	Sun Ballroom A
FD-34	**Flow Control (Fundamentals and Technology) III**	7-Jan	1400 hrs	1700 hrs	Sanibel 3
FD-35	**Fundamental Vortex Flows and Channel Flows**	7-Jan	1400 hrs	1730 hrs	Tallahassee 2
FD-36	**Multiphase Flows**	7-Jan	1400 hrs	1730 hrs	Daytona 2
FD-37	**Turbulence Modeling I**	7-Jan	1400 hrs	1730 hrs	Captiva 2
FD-38	**Unsteady Flow II**	7-Jan	1400 hrs	1730 hrs	Sun Ballroom 6
FD-39	**Wing Aerodynamics I**	7-Jan	1400 hrs	1730 hrs	Daytona 1
FD-40	**Swept and 3D Shock Boundary Layer Interactions**	8-Jan	0930 hrs	1230 hrs	Daytona 1
FD-41	**Turbulence**	8-Jan	0930 hrs	1230 hrs	Tallahassee 3
FD-42	**Turbulence Modeling II**	8-Jan	0930 hrs	1230 hrs	Sanibel 3
FD-43	**Turbulent Flow Solutions for NACA 0012 and Other Test Cases from the Turbulence Model Resource Website: Residual and Grid Convergence I (invited)**	8-Jan	0930 hrs	1230 hrs	Sanibel 2
FD-44	**Unsteady Flow III**	8-Jan	0930 hrs	1230 hrs	Sun Ballroom 6
FD-45/PDL-9	**DBD Plasma Actuators**	8-Jan	1400 hrs	1730 hrs	Sun Ballroom A
FD-46	**Hypersonic Boundary Layer Transition II**	8-Jan	1400 hrs	1730 hrs	Sanibel 3
FD-47	**Overset/Deforming/Moving Meshes**	8-Jan	1400 hrs	1730 hrs	Daytona 2
FD-48	**Turbulent Flow Solutions for NACA 0012 and Other Test Cases from the Turbulence Model Resource Website: Residual and Grid Convergence II (Invited)**	8-Jan	1400 hrs	1730 hrs	Sanibel 2
FD-49	**Wing Aerodynamics II**	8-Jan	1400 hrs	1730 hrs	Daytona 1
FD-50	**CFD Solution Adaptation & Optimization**	9-Jan	0930 hrs	1300 hrs	Miami 2
FD-51/PDL-12	**Plasma Actuators and Flow Control**	9-Jan	0930 hrs	1300 hrs	Sun Ballroom A
FD-52	**Separated Flows**	9-Jan	0930 hrs	1230 hrs	Sanibel 2
FD-53	**Shear Layers**	9-Jan	0930 hrs	1230 hrs	Tallahassee 3
FD-54	**Shock Boundary Layer Interaction**	9-Jan	0930 hrs	1300 hrs	Daytona 2
FD-55	**Turbulence Modeling III**	9-Jan	0930 hrs	1300 hrs	Sanibel 3
FD-56	**Turbulent Boundary Layers**	9-Jan	0930 hrs	1230 hrs	Daytona 1
FD-57	**New and Revolutionary Approaches in High Speed Flow Turbulence Modeling**	5-Jan	0930 hrs	1230 hrs	Sun Ballroom A
FD-58	**Transition Open Forum**	9-Jan	0930 hrs	1300 hrs	Sun Ballroom C

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Green Engineering				
GEPC-1	**N+3 Configuration Concepts and Enabling Technologies in NASA's Fixed Wing Project**	5-Jan	0930 hrs	1230 hrs	Sun Ballroom C
GEPC-2	**Status/Progress of Environmentally Responsible Aviation Project**	5-Jan	1400 hrs	1730 hrs	Sun Ballroom C
GEPC-3	**NASA Transformational Tools and Technologies (T3) Project Recent Modeling Advances**	8-Jan	0930 hrs	1230 hrs	Sun Ballroom C
GEPC-4/SAT-1	**Green Engineering/Society and Aerospace Technology**	7-Jan	1400 hrs	1730 hrs	Sun Ballroom C
	Guidance, Navigation, and Control				
GNC-1	**Aerospace Robotics and Autonomous/Unmanned Systems I**	5-Jan	0930 hrs	1200 hrs	Sun Ballroom 3
GNC-2	**Flight Experience of Cassini Spacecraft Attitude Control at Saturn**	5-Jan	0930 hrs	1230 hrs	Miami 1
GNC-3	**GNC Sensor Systems I**	5-Jan	0930 hrs	1230 hrs	Sun Ballroom 4
GNC-4	**Missile Guidance I**	5-Jan	0930 hrs	1230 hrs	Sun Ballroom 6
GNC-5	**Novel Navigation, Estimation, and Tracking Methods I**	5-Jan	0930 hrs	1230 hrs	Sun Ballroom 5
GNC-6	**Aerospace Robotics and Autonomous/Unmanned Systems II**	5-Jan	1400 hrs	1730 hrs	Sun Ballroom 3
GNC-7	**Lander Technology Development at NASA I**	5-Jan	1400 hrs	1730 hrs	Miami 1
GNC-8	**GNC Sensor Systems II**	5-Jan	1400 hrs	1730 hrs	Sun Ballroom 4
GNC-9	**Missile Guidance II**	5-Jan	1400 hrs	1700 hrs	Sun Ballroom 6
GNC-10	**Novel Navigation, Estimation, and Tracking Methods II**	5-Jan	1400 hrs	1730 hrs	Sun Ballroom 5
GNC-11	**Aerospace Robotics and Autonomous/Unmanned Systems III**	6-Jan	0930 hrs	1230 hrs	Sun Ballroom 3
GNC-12	**Advances in GN&C of Multi-Agent Autonomous Systems**	6-Jan	0930 hrs	1230 hrs	Miami 1
GNC-13	**Guidance and Control of Autonomous/Unmanned Systems**	6-Jan	0930 hrs	1230 hrs	Sun Ballroom 5
GNC-14	**Adaptive Control of Flight Vehicles**	6-Jan	0930 hrs	1230 hrs	Sun Ballroom 4
GNC-15	**Missile Guidance III**	6-Jan	0930 hrs	1230 hrs	Sun Ballroom 6
GNC-16	**Aerospace Robotics and Autonomous/Unmanned Systems IV**	6-Jan	1400 hrs	1700 hrs	Sun Ballroom 3
GNC-17	**Lander Technology Development at NASA II**	6-Jan	1400 hrs	1730 hrs	Miami 1
GNC-18	**Control and Diagnostics of Air Vehicles and UAVs**	6-Jan	1400 hrs	1730 hrs	Sun Ballroom 4
GNC-19	**Missile Autopilot and Integrated Control**	6-Jan	1400 hrs	1730 hrs	Sun Ballroom 6
GNC-20	**Spacecraft Guidance, Navigation, and Control I**	6-Jan	1400 hrs	1700 hrs	Sun Ballroom 5
GNC-21	**Advances in UAS Technologies I**	7-Jan	0930 hrs	1230 hrs	Miami 1
GNC-22	**Trajectory Planning and Optimization I**	7-Jan	0930 hrs	1230 hrs	Sun Ballroom 3
GNC-23	**Optimization Based Methods for Estimation and Control of Flight Vehicles**	7-Jan	0930 hrs	1230 hrs	Sun Ballroom 4
GNC-24	**Spacecraft Guidance, Navigation, and Control II**	7-Jan	0930 hrs	1230 hrs	Sun Ballroom 5
GNC-25	**Robust and Fault Tolerant Control**	7-Jan	1400 hrs	1730 hrs	Miami 1
GNC-26	**Trajectory Planning and Optimization II**	7-Jan	1400 hrs	1700 hrs	Sun Ballroom 3
GNC-27	**Nonlinear Control of Aircraft/UAV**	7-Jan	1400 hrs	1730 hrs	Sun Ballroom 4
GNC-28	**Guidance, Navigation and Control Concepts in Air Traffic Control Systems I**	7-Jan	1400 hrs	1730 hrs	Sun Ballroom 2
GNC-29	**Spacecraft Guidance, Navigation, and Control III**	7-Jan	1400 hrs	1730 hrs	Sun Ballroom 5
GNC-30	**Advances in UAS Technologies II**	8-Jan	0930 hrs	1230 hrs	Miami 1

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
Guidance, Navigation, and Control (continued)					
GNC-31	**Loss of Control Mitigation and Recovery**	8-Jan	0930 hrs	1230 hrs	Sun Ballroom 3
GNC-32	**Guidance, Navigation and Control Concepts in Air Traffic Control Systems II**	8-Jan	0930 hrs	1030 hrs	Sun Ballroom 4
GNC-33	**Mini/Micro Air Vehicle GNC I**	8-Jan	0930 hrs	1230 hrs	Sun Ballroom 4
GNC-34	**Spacecraft Guidance, Navigation, and Control IV**	8-Jan	0930 hrs	1230 hrs	Sun Ballroom 5
GNC-35	**Novel Algorithms in Aircraft GNC**	8-Jan	1400 hrs	1730 hrs	Sun Ballroom 3
GNC-36	**Robust Control of Uncertain Flight Systems**	8-Jan	1400 hrs	1730 hrs	Miami 1
GNC-37	**Mini/Micro Air Vehicle GNC II**	8-Jan	1400 hrs	1730 hrs	Sun Ballroom 6
GNC-38	**Space Exploration and Transportation GNC**	8-Jan	1400 hrs	1730 hrs	Sun Ballroom 4
GNC-39	**Spacecraft Guidance, Navigation, and Control V**	8-Jan	1400 hrs	1700 hrs	Sun Ballroom 5
GNC-40	**Intelligent Systems in GNC**	9-Jan	0930 hrs	1230 hrs	Miami 1
GNC-41	**Design and Analysis of Aircraft Control Laws**	9-Jan	0930 hrs	1230 hrs	Sun Ballroom 6
GNC-42	**Control of Satellites, Spacecrafts and Missiles**	9-Jan	0930 hrs	1230 hrs	Sun Ballroom 3
GNC-43	**Multi-Vehicle Control**	9-Jan	0930 hrs	1230 hrs	Sun Ballroom 4
GNC-44	**Spacecraft Guidance, Navigation, and Control VI**	9-Jan	0930 hrs	1230 hrs	Sun Ballroom 5
Ground Testing					
GT-1	**New Capabilities in Ground Test Facilities I**	5-Jan	0930 hrs	1230 hrs	Miami 3
GT-2	**The NASA CRM Model & High Reynolds Number Aerodynamics and Testing (Invited)**	6-Jan	0930 hrs	1230 hrs	Miami 3
GT-3	**ETW Test on Separated Wing Flow within the EU FP7 ESWIRP Project (Invited)**	7-Jan	0930 hrs	1230 hrs	Sanibel 1
GT-4	**Hypersonic Test Capabilities I (Invited)**	7-Jan	1400 hrs	1730 hrs	Sanibel 1
GT-5	**High Reynolds Number Aerodynamics and Testing (Invited)**	8-Jan	0930 hrs	1230 hrs	Sanibel 1
GT-6	**Unique or Innovative Uses of Existing GTF and Support Systems**	8-Jan	0930 hrs	1230 hrs	Miami 3
GT-8	**Hypersonic Test Capabilities II (Invited)**	8-Jan	1400 hrs	1730 hrs	Sanibel 1
GT-9	**International Symposium on Strain-Gage Balances (Invited)**	8-Jan	1400 hrs	1730 hrs	Miami 3
GT-10	**New Capabilities in Ground Test Facilities II**	9-Jan	0930 hrs	1300 hrs	Sanibel 1
GT-11	**Advances in Test Techniques, Test Management, & EFD/CFD Integration**	9-Jan	0930 hrs	1300 hrs	Miami 3
Gas Turbine Engines					
GTE-1	**Gas Turbine Combustion I**	5-Jan	0930 hrs	1230 hrs	Emerald 1
GTE-2	**Film Cooling**	5-Jan	1400 hrs	1730 hrs	Emerald 1
GTE-3	**Engine Systems I**	6-Jan	0930 hrs	1230 hrs	Emerald 1
GTE-4	**Engine Systems II**	6-Jan	1400 hrs	1730 hrs	Emerald 1
GTE-5	**Gas Turbine Combustion II**	7-Jan	0930 hrs	1230 hrs	Emerald 1
GTE-6	**Compressors**	7-Jan	1400 hrs	1730 hrs	Emerald 1
GTE-7	**Gas Turbine Combustion III**	8-Jan	0930 hrs	1230 hrs	Emerald 1

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	History				
HIS-1	**Topics in Aerospace History**	5-Jan	0930 hrs	1230 hrs	Tallahassee 2
HIS-2	**The NACA Centennial: An Assessment**	6-Jan	0930 hrs	1130 hrs	Tallahassee 2
	High Speed Air Breathing Propulsion				
HSABP-1	**High Speed Inlets**	5-Jan	0930 hrs	1230 hrs	Emerald 8
HSABP-2	**Premixed High Speed Combustion (Invited)**	5-Jan	1400 hrs	1730 hrs	Emerald 8
HSABP-3	**Pressure Gain Combustion - Rotating Detonation Engines I**	6-Jan	0930 hrs	1230 hrs	Emerald 3
HSABP-4	**Numerical Analysis of High Speed Air-Breathing Propulsion**	6-Jan	0930 hrs	1230 hrs	Emerald 8
HSABP-5	**Pressure Gain Combustion - Rotating Detonation Engines II**	6-Jan	1400 hrs	1730 hrs	Emerald 3
HSABP-6	**High Speed Air-Breathing Combustors I**	6-Jan	1400 hrs	1730 hrs	Emerald 8
HSABP-7	**Pressure Gain Combustion - Rotating Detonation Engines III**	7-Jan	0930 hrs	1230 hrs	Emerald 3
HSABP-8	**High Speed Air-Breathing Combustors II**	7-Jan	0930 hrs	1230 hrs	Emerald 8
HSABP-9/GTE-8	**Pressure Gain Combustion - Pulse Detonation Engines**	7-Jan	1400 hrs	1730 hrs	Emerald 3
	Information and Command & Control Systems				
ICC-1	**C2 and Beyond: A Look into the Future of Complex Aerospace Command and Control Systems**	6-Jan	0930 hrs	1230 hrs	Osceola Ballroom 2
	Intelligent Systems				
IS-1	**Intelligent Systems Special Session-Student Paper Competition**	5-Jan	0930 hrs	1230 hrs	Osceola Ballroom 3
IS-2	**Augmenting Adaptive Algorithms for Aircraft Control I**	5-Jan	0930 hrs	1230 hrs	Osceola Ballroom 2
IS-3	**Intelligent Collaborative Control of Multi-Agent Systems**	5-Jan	1400 hrs	1730 hrs	Osceola Ballroom 2
IS-4	**Making Aerospace Operations Intelligent**	5-Jan	1400 hrs	1730 hrs	Osceola Ballroom 1
IS-5	**Invited Panel Discussion - Autonomy Research for Civil Aviation: Toward a New Era of Flight**	6-Jan	0930 hrs	1230 hrs	Osceola Ballroom 3
IS-6	**Realizing the Potential for Genetic Fuzzy Systems**	6-Jan	1400 hrs	1730 hrs	Osceola Ballroom 1
IS-7	**Intelligent Interactions between Humans and Machines**	7-Jan	0930 hrs	1230 hrs	Osceola Ballroom 3
IS-8	**Model-Based Systems and Software Engineering for Complex Aerospace Systems**	7-Jan	0930 hrs	1230 hrs	Osceola Ballroom 2
IS-9	**Invited Panel Discussion - Roadmap for Intelligent Systems**	7-Jan	1400 hrs	1700 hrs	Osceola Ballroom 3
IS-10	**Big Data & Analytics in Aerospace**	8-Jan	0930 hrs	1230 hrs	Osceola Ballroom 3
IS-11	**Augmenting Adaptive Algorithms for Aircraft Control II**	8-Jan	0930 hrs	1230 hrs	Osceola Ballroom 1
IS-12	**Enhancing Safety using Systems Health Management**	8-Jan	1400 hrs	1730 hrs	Osceola Ballroom 1
IS-13	**Intelligent System Approach to Quadcopter Obstacle Avoidance**	9-Jan	0930 hrs	1230 hrs	Osceola Ballroom 1
	International Student Conference				
ISC-1	**International Student Conference (Undergraduate Category)**	5-Jan	0900 hrs	1230 hrs	St. George 112
ISC-2	**International Student Conference (Masters Category)**	5-Jan	1400 hrs	1730 hrs	St. George 112
ISC-3	**International Student Conference (Team Category)**	5-Jan	1400 hrs	1730 hrs	St. George 114
ISC-4	**International Student Conference (Community Outreach Category)**	5-Jan	0930 hrs	1230 hrs	St. George 114

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Materials				
MAT-1	**Nanostructured Materials I**	5-Jan	0930 hrs	1230 hrs	Sarasota 1
MAT-2	**Advanced Materials and Processes**	5-Jan	0930 hrs	1230 hrs	Sarasota 2
MAT-3	**ICME Applications - Residual Stress Modeling and Measurement**	5-Jan	1400 hrs	1730 hrs	Sarasota 1
MAT-4	**Multi-Scale Modeling of Materials**	5-Jan	1400 hrs	1730 hrs	Sarasota 2
MAT-5	**ICME Panel**	6-Jan	0930 hrs	1230 hrs	Sun Ballroom D
MAT-6	**Nanostructured Materials II**	6-Jan	0930 hrs	1200 hrs	Sarasota 1
MAT-7	**Fatigue & Fracture I**	6-Jan	1400 hrs	1730 hrs	Sarasota 1
MAT-8	**Constitutive Modeling & Metallics**	7-Jan	0930 hrs	1230 hrs	Sarasota 1
MAT-9	**Materials Testing & Characterization I**	7-Jan	0930 hrs	1230 hrs	Sarasota 2
MAT-10	**Materials & Design for Additive Manufacturing**	7-Jan	1400 hrs	1730 hrs	Sarasota 1
MAT-11	**Fatigue & Fracture II**	7-Jan	1400 hrs	1730 hrs	Sarasota 2
MAT-12	**Fatigue & Fracture III**	8-Jan	0930 hrs	1230 hrs	Sarasota 1
MAT-13	**Materials Testing & Characterization II**	8-Jan	0930 hrs	1230 hrs	Sarasota 2
	Multidisciplinary Design Optimization				
MDO-1	**MDO: Aircraft Systems Design Applications**	5-Jan	0930 hrs	1230 hrs	Sarasota 3
MDO-2	**MDO: Fundamental Algorithms & Processes I**	5-Jan	0930 hrs	1230 hrs	Osceola Ballroom 5
MDO-3	**MDO: Wing Design Applications**	5-Jan	1400 hrs	1730 hrs	Sarasota 3
MDO-4	**MDO: Supersonic Applications**	6-Jan	0930 hrs	1230 hrs	Sarasota 3
MDO-5	**MDO: Fundamental Algorithms & Processes II**	6-Jan	1400 hrs	1730 hrs	Sarasota 3
MDO-6	**MDO: AeroStructure Design I**	7-Jan	0930 hrs	1230 hrs	Sarasota 3
MDO-7	**MDO: Decision Making/Value Driven Design**	7-Jan	1400 hrs	1730 hrs	Sarasota 3
MDO-8	**MDO: AeroStructure Design II**	8-Jan	0930 hrs	1230 hrs	Sarasota 3
MDO-9	**MDO: General Applications**	8-Jan	1400 hrs	1730 hrs	Sarasota 3
	Modeling and Simulation Technologies				
MST-1	**Air Traffic Management I**	5-Jan	0930 hrs	1230 hrs	Sun Ballroom 1
MST-2	**Hardware In the Loop Simulation**	5-Jan	0930 hrs	1230 hrs	Sun Ballroom 2
MST-4	**Modeling of Space Systems and Dynamics**	5-Jan	1400 hrs	1730 hrs	Sun Ballroom 2
MST-5	**Air Traffic Management II**	6-Jan	0930 hrs	1230 hrs	Sun Ballroom 1
MST-6	**Human Factors, Perception, and Cueing**	6-Jan	0930 hrs	1230 hrs	Sun Ballroom 2
MST-7	**Model Design and Development**	6-Jan	1400 hrs	1730 hrs	Sun Ballroom 1
MST-8	**Multi-Domain Modeling and Simulation**	6-Jan	1400 hrs	1730 hrs	Sun Ballroom 2
MST-9	**Modeling of Vehicle Dynamics I**	7-Jan	0930 hrs	1230 hrs	Sun Ballroom 1
MST-10	**Motion Systems, Visual Systems, Image Generation**	7-Jan	0930 hrs	1230 hrs	Sun Ballroom 2
MST-11	**MST Panel: Flight Simulation Training Device Qualification Testing**	7-Jan	1400 hrs	1700 hrs	Sun Ballroom 1
MST-12	**Modeling of Vehicle Dynamics II**	8-Jan	0930 hrs	1230 hrs	Sun Ballroom 1
MST-13	**Model and Simulation Verification and Validation**	8-Jan	0930 hrs	1230 hrs	Sun Ballroom 2
MST-14	**Unmanned Aerial Systems**	8-Jan	1400 hrs	1730 hrs	Sun Ballroom 1
MST-15	**Special Topics in Modeling and Simulation**	8-Jan	1400 hrs	1730 hrs	Sun Ballroom 2
MST-16	**Modeling of Vehicle Dynamics III**	9-Jan	0930 hrs	1230 hrs	Sun Ballroom 1

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
Meshing, Visualization, and Computational Environments					
MVC-2	**Grid Quality Metrics Related to Solution Accuracy Including Real-World Configurations**	5-Jan	1400 hrs	1730 hrs	Gainesville 2
MVC-4	**Meshing Techniques, Including Surface and Volume Grids, and Moving/Deforming Meshes**	6-Jan	1400 hrs	1730 hrs	Naples 3
MVC-5	**Visualization for Feature Detection, Integration Techniques and Frameworks, and Multi-Scale Models**	7-Jan	1400 hrs	1730 hrs	Naples 3
MVC-6	**Solution Adaptive Meshing, Error Estimation and Uncertainty Quantification Techniques**	9-Jan	0930 hrs	1230 hrs	Sun Ballroom D
Non-Deterministic Approaches					
NDA-3	**Uncertainty Quantification and Management I**	6-Jan	0930 hrs	1230 hrs	Osceola Ballroom 5
NDA-4	**Optimization under Uncertainty**	6-Jan	1400 hrs	1730 hrs	Osceola Ballroom 5
NDA-5	**Random Fatigue, Fracture and Life Prediction**	7-Jan	0930 hrs	1230 hrs	Osceola Ballroom 5
NDA-6	**Model Verification and Validation & Optimization under Uncertainty**	7-Jan	1400 hrs	1730 hrs	Osceola Ballroom 5
NDA-7	**Uncertainty Quantification and Management II**	8-Jan	0930 hrs	1230 hrs	Osceola Ballroom 5
NDA-8	**Non-Deterministic Methods**	8-Jan	1400 hrs	1730 hrs	Osceola Ballroom 5
Propellants and Combustion					
PC-1	**Plasma Assisted Combustion I: AFOSR MURI Reports**	5-Jan	0930 hrs	1230 hrs	Emerald 2
PC-2	**Advanced Combustion Concepts I**	5-Jan	0930 hrs	1230 hrs	Emerald 3
PC-3	**Spray and Droplet Combustion I**	5-Jan	0930 hrs	1230 hrs	Emerald 5
PC-4	**Turbulent Combustion I**	5-Jan	0930 hrs	1230 hrs	Emerald 7
PC-5	**Plasma Assisted Combustion II: AFOSR MURI Reports**	5-Jan	1400 hrs	1730 hrs	Emerald 2
PC-6	**Combustion Chemistry**	5-Jan	1400 hrs	1730 hrs	Emerald 3
PC-7	**Spray and Droplet Combustion II**	5-Jan	1400 hrs	1730 hrs	Emerald 5
PC-8	**Turbulent Combustion II**	5-Jan	1400 hrs	1730 hrs	Emerald 7
PC-9	**Advanced Combustion Concepts II**	6-Jan	0930 hrs	1230 hrs	Emerald 5
PC-10	**Turbulent Combustion III**	6-Jan	0930 hrs	1230 hrs	Emerald 7
PC-11	**Heterogeneous Combustion and Propellants**	6-Jan	1400 hrs	1730 hrs	Emerald 5
PC-12	**Turbulent Combustion IV**	6-Jan	1400 hrs	1730 hrs	Emerald 7
PC-13	**Advanced Combustion Concepts III**	7-Jan	0930 hrs	1230 hrs	Emerald 5
PC-14	**Combustion Diagnostics**	7-Jan	0930 hrs	1230 hrs	Emerald 7
PC-15	**Turbulent Combustion Models, their Foundations and Major Assumptions**	7-Jan	1400 hrs	1730 hrs	Emerald 2
PC-16	**Laminar Flames**	7-Jan	1400 hrs	1730 hrs	Emerald 7
PC-17	**Detonations, Explosions, and Supersonic Combustion I**	8-Jan	0930 hrs	1230 hrs	Emerald 3
PC-18	**Rocket and Air-Breathing Combustion I**	8-Jan	0930 hrs	1230 hrs	Emerald 7
PC-19	**Detonations, Explosions, and Supersonic Combustion II**	8-Jan	1400 hrs	1730 hrs	Emerald 3
PC-20	**Rocket and Air-Breathing Combustion II**	8-Jan	1400 hrs	1730 hrs	Emerald 7

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Plasmadynamics and Lasers				
PDL-2	**Aero-Optics**	6-Jan	0930 hrs	1230 hrs	Emerald 2
PDL-3	**Diagnostics and Experimental Techniques**	6-Jan	1400 hrs	1730 hrs	Emerald 2
PDL-5	**Plasma & Laser Physics I**	7-Jan	1400 hrs	1730 hrs	Emerald 5
PDL-6	**Astronautical Plasma Dynamics**	7-Jan	1400 hrs	1730 hrs	Emerald 8
PDL-7	**Plasma & Laser Propulsion**	8-Jan	0930 hrs	1230 hrs	Emerald 5
PDL-8	**Computational Methods**	8-Jan	0930 hrs	1230 hrs	Emerald 8
PDL-11	**Plasma & Laser Physics II**	8-Jan	1400 hrs	1730 hrs	Emerald 4
PDL-13	**Plasma & Laser Technology**	7-Jan	0930 hrs	1230 hrs	Emerald 2
	Small Satellites				
SATS-1	**Small Satellites - Technologies I**	6-Jan	1400 hrs	1730 hrs	Miami 3
SATS-2	**Small Satellites - Missions**	8-Jan	0930 hrs	1230 hrs	Captiva 2
SATS-3	**Small Satellites - Fusion**	8-Jan	1400 hrs	1730 hrs	Naples 3
SATS-4	**Small Satellites - Technologies II**	9-Jan	0930 hrs	1300 hrs	Osceola Ballroom 5
	Space Operations				
OPS-1	**Space Operations**	8-Jan	1400 hrs	1730 hrs	Emerald 1
	Spacecraft Structures				
SCS-1	**Spacecraft Booms and Trusses**	5-Jan	1100 hrs	1230 hrs	Osceola Ballroom 4
SCS-2	**Solar Sails and Tensioned Membranes**	5-Jan	1400 hrs	1730 hrs	Osceola Ballroom 4
SCS-3	**Packaging and Deployment of Spacecraft Structures**	6-Jan	0930 hrs	1230 hrs	Osceola Ballroom 4
SCS-4	**Composite Material for Spacecraft Structures**	6-Jan	1400 hrs	1730 hrs	Osceola Ballroom 4
SCS-6	**Analysis of Lightweight Spacecraft Structures**	7-Jan	0930 hrs	1230 hrs	Osceola Ballroom 4
SCS-7	**Spacecraft Antennas and Apertures**	7-Jan	1400 hrs	1730 hrs	Osceola Ballroom 4
SCS-8	**Inflatable Space Structures**	8-Jan	0930 hrs	1230 hrs	Osceola Ballroom 4
SCS-9	**Test and Qualification of Spacecraft Structures**	8-Jan	1400 hrs	1730 hrs	Osceola Ballroom 4
	Structural Dynamics				
SD-1	**Computational Aeroelasticity**	5-Jan	0930 hrs	1230 hrs	Tampa 2
SD-2	**Large-deformation Nonlinear Dynamics**	5-Jan	0930 hrs	1230 hrs	Tampa 3
SD-3	**Vehicle/Component Dynamic Environment and Loads**	5-Jan	0930 hrs	1230 hrs	Osceola Ballroom 6
SD-4	**Flutter, LCO and Aeroelastic Tailoring**	5-Jan	1400 hrs	1730 hrs	Tampa 2
SD-5	**Energy Harvesting, Health Monitoring and Multifunctional Structures**	5-Jan	1400 hrs	1730 hrs	Tampa 3
SD-6	**Supersonic/Hypersonic Systems I**	6-Jan	0930 hrs	1230 hrs	Tampa 2
SD-7	**Cable/Beam Modeling I**	6-Jan	0930 hrs	1230 hrs	Tampa 3
SD-8	**Special Session: Transformative Technologies for High-Speed/High-Efficiency Next-Gen Rotorcraft I**	6-Jan	1400 hrs	1730 hrs	Tampa 2
SD-9	**Cable/Beam Modeling II**	7-Jan	0930 hrs	1230 hrs	Tampa 3
SD-10	**Special Session: Adaptive Aeroelastic Wing Shaping Control I**	7-Jan	1400 hrs	1730 hrs	Sun Ballroom D
SD-11	**Special Session: Transformative Technologies for High-Speed/High-Efficiency Next-Gen Rotorcraft II**	7-Jan	1400 hrs	1730 hrs	Tampa 2
SD-12	**Flutter, LCO and Aeroelastic Instabilities**	7-Jan	1400 hrs	1730 hrs	Tampa 3
SD-13/GEPC-5	**Special Session: Subsonic Ultra Green Aircraft Research (SUGAR) Truss Braced Wing Aeroelasticity**	7-Jan	0930 hrs	1230 hrs	Sun Ballroom C

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Structural Dynamics (continued)				
SD-14	**Supersonic/Hypersonic Systems II**	8-Jan	0930 hrs	1230 hrs	Tampa 2
SD-15	**Active and Passive Damping Systems**	8-Jan	0930 hrs	1230 hrs	Tampa 3
SD-16	**Special Session: Adaptive Aeroelastic Wing Shaping Control II**	8-Jan	1400 hrs	1730 hrs	Sun Ballroom D
SD-17	**Gust and Turbulence Loads**	8-Jan	1400 hrs	1730 hrs	Tampa 1
SD-18	**Active Aeroelastic Control**	8-Jan	1400 hrs	1730 hrs	Tampa 2
SD-19	**Test and Evaluation and System Identification**	8-Jan	1400 hrs	1730 hrs	Tampa 3
SD-20	**Plate/Shell Modeling**	9-Jan	0930 hrs	1300 hrs	Sarasota 3
SD-21	**Computational Reduced Order Models**	9-Jan	0930 hrs	1300 hrs	Tampa 2
SD-22	**Advanced Measurement Techniques**	9-Jan	0930 hrs	1230 hrs	Tampa 3
	Systems Engineering				
SE-1	**Systems Engineering I**	8-Jan	0930 hrs	1230 hrs	Miami 2
SE-2	**Systems Engineering II**	8-Jan	1400 hrs	1730 hrs	Miami 2
	Sensor Systems				
SEN-1	**Information Fusion**	5-Jan	0930 hrs	1230 hrs	Osceola Ballroom 1
SEN-2	**Novel Sensor Systems**	7-Jan	1400 hrs	1730 hrs	Osceola Ballroom 1
	Software Systems				
SOF-1	**Software Challenges in Aerospace Workshop I**	8-Jan	0930 hrs	1230 hrs	Osceola Ballroom 2
SOF-2	**Software Challenges in Aerospace Workshop II**	8-Jan	1400 hrs	1730 hrs	Osceola Ballroom 2
	Space Resources Utilization				
SRE-1	**Lunar Resource Utilization**	7-Jan	0930 hrs	1230 hrs	Daytona 2
SRE-2	**ISRU for Mars and Beyond**	8-Jan	0930 hrs	1230 hrs	Daytona 2
	Structures				
STR-1	**Special Sessions in Honor of Prof. Harry H. Hilton I**	5-Jan	0930 hrs	1230 hrs	Sun Ballroom D
STR-2	**ICME for Structures**	5-Jan	0930 hrs	1230 hrs	Tampa 1
STR-3	**Space Structures**	5-Jan	0930 hrs	1230 hrs	Tallahassee 3
STR-4	**Special Session: Composite Laminate Optimization**	5-Jan	1400 hrs	1730 hrs	Sun Ballroom D
STR-5	**Aircraft Structural Design**	5-Jan	1400 hrs	1730 hrs	Tampa 1
STR-6	**Failure Analysis and Prediction I**	5-Jan	1400 hrs	1730 hrs	Tallahassee 3
STR-7	**Special Session: Challenges in the Design of Joined Wings I**	6-Jan	0930 hrs	1230 hrs	Tampa 1
STR-8	**Special Sessions in Honor of Prof. Harry H. Hilton II**	6-Jan	0930 hrs	1230 hrs	Tallahassee 3
STR-9	**Special Session: Impact Damage in Composites**	6-Jan	1400 hrs	1730 hrs	Sun Ballroom D
STR-10	**Advanced Structures**	6-Jan	1400 hrs	1730 hrs	Tampa 1
STR-11	**Failure Analysis and Prediction II**	6-Jan	1400 hrs	1730 hrs	Tallahassee 3
STR-12	**Special Session: Challenges in the Design of Joined Wings II**	7-Jan	0930 hrs	1230 hrs	Tampa 1
STR-13	**Special Sessions in Honor of Prof. Harry H. Hilton III**	7-Jan	0930 hrs	1230 hrs	Tallahassee 3
STR-14	**Design, Test and Analysis I**	7-Jan	1400 hrs	1730 hrs	Tampa 1
STR-15	**Structural Stability**	7-Jan	1400 hrs	1730 hrs	Tallahassee 3
STR-17	**Design, Test and Analysis II**	8-Jan	1400 hrs	1730 hrs	Sarasota 1
STR-18	**Special Session: USAF Benchmarking of Composite Damage Prediction Methods**	8-Jan	1400 hrs	1730 hrs	Tallahassee 3
STR-19	**Special Session: Structural Joints & Repair I**	8-Jan	1400 hrs	1730 hrs	Sarasota 2

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Structures (continued)				
STR-20	**Special Session: Structural Joints & Repair II**	9-Jan	0930 hrs	1300 hrs	Sarasota 2
STR-21	**Finite Element Analysis**	9-Jan	0930 hrs	1300 hrs	Sarasota 1
	Survivability				
SUR-1	**Air and Space Survivability**	6-Jan	1400 hrs	1730 hrs	Tampa 3
	Terrestial Energy				
TES-1	**Thermal and Fluid Behavior in Power Systems**	7-Jan	1400 hrs	1730 hrs	Captiva 1
TES-2	**Clean and Alternative Fuels**	8-Jan	0930 hrs	1230 hrs	Tallahassee 2
TES-3	**Energy Efficiency and Waste Reduction**	8-Jan	1400 hrs	1730 hrs	Tallahassee 2
TES-4	**Topics in Terrestrial Energy**	9-Jan	0930 hrs	1230 hrs	Tampa 1
	Thermophysics				
TP-1	**Aerothermodynamics I**	5-Jan	0930 hrs	1230 hrs	Sun Ballroom B
TP-2	**Cryogenics**	5-Jan	1400 hrs	1730 hrs	Miami 3
TP-3	**Nonequilibrium Flows and Radiation I**	5-Jan	1400 hrs	1730 hrs	Sun Ballroom B
TP-4	**Heat Pipes/Heat Transfer I**	6-Jan	0930 hrs	1230 hrs	Sun Ballroom B
TP-5	**Nonequilibrium Flows and Radiation II**	6-Jan	1400 hrs	1730 hrs	Sun Ballroom B
TP-6	**Heat Transfer II**	7-Jan	0930 hrs	1230 hrs	Captiva 1
TP-7	**Ablation and Surface Catalysis**	7-Jan	1400 hrs	1730 hrs	Sun Ballroom B
TP-8	**DSMC and Non-Continuum Flows**	8-Jan	0930 hrs	1230 hrs	Sun Ballroom B
TP-9	**NASA Entry Systems Modeling Project**	8-Jan	1400 hrs	1730 hrs	Sun Ballroom B
TP-10	**Aerothermodynamics II/Other Thermophysics Topics**	9-Jan	0930 hrs	1300 hrs	Sun Ballroom 2
TP-11	**University Space Systems Programs and Microgravity Flight Activities**	9-Jan	0930 hrs	1230 hrs	Sun Ballroom B
	Unmanned Systems				
UMS-1	**UAS Integration: Detect and Avoid Technologies**	5-Jan	1400 hrs	1730 hrs	Osceola Ballroom 3
UMS-2	**Unmanned Systems: Technologies and Applications I**	6-Jan	0930 hrs	1230 hrs	Osceola Ballroom 1
UMS-3	**UAS Sensor Technologies**	6-Jan	1400 hrs	1730 hrs	Osceola Ballroom 2
UMS-4	**UAS Airspace Integration: Policies and Guidelines**	7-Jan	0930 hrs	1230 hrs	Osceola Ballroom 1
UMS-5	**Unmanned Systems: Technologies and Applications II**	7-Jan	1400 hrs	1730 hrs	Osceola Ballroom 2
	Wind Energy				
WE-1	**Wind Energy Aerodynamics and Aeroacoustics I**	5-Jan	0930 hrs	1230 hrs	Emerald 4
WE-2	**Wind Farm and Turbine Wake Interactions I**	5-Jan	0930 hrs	1230 hrs	Emerald 6
WE-3	**Wind Energy Blade and Turbine Design**	5-Jan	1400 hrs	1730 hrs	Emerald 6
WE-4	**Wind Energy Aerodynamics and Aeroacoustics II**	5-Jan	1400 hrs	1730 hrs	Emerald 4
WE-5	**Vertical Axis Wind Turbine (VAWT) Research**	6-Jan	0930 hrs	1230 hrs	Emerald 4
WE-6	**Wind Farm and Turbine Wake Interactions II**	6-Jan	0930 hrs	1230 hrs	Emerald 6
WE-7	**Wind Energy Aerodynamics and Aeroacoustics III**	6-Jan	1400 hrs	1730 hrs	Emerald 6
WE-8	**Wind Energy Materials, Mechanics, and Sensing**	6-Jan	1400 hrs	1730 hrs	Emerald 4
WE-9	**Offshore Wind Energy Systems**	7-Jan	0930 hrs	1230 hrs	Emerald 4
WE-10	**Wind Turbine Loads, Control, and Dynamics**	7-Jan	0930 hrs	1230 hrs	Emerald 6
WE-11	**Wind Turbine Aeroelasticity and Structural Dynamics**	7-Jan	1400 hrs	1730 hrs	Emerald 4
WE-12	**Wind Energy Atmospheric Physics and Inflow**	7-Jan	1400 hrs	1730 hrs	Emerald 6
WE-13	**Wind Energy Innovative Concepts**	8-Jan	0930 hrs	1230 hrs	Emerald 4

Monday, 5 January 2015

1-PLNRY-1 0800 - 0900 hrs	Opening Keynote	Osceola Ballroom CD

Robie Samanta-Roy
Vice President, Technology and Innovation
Lockheed Martin Corporation

Monday, 5 January 2015

2-ISC-1	International Student Conference (Undergraduate Category)					St. George 112
Chaired by: C. TAVARES, The Boeing Company						
0900 hrs AIAA-2015-0001 **Martian RHOVER Feasibility Study** J. Fuentes, R. Pankaja Kaluarachchi, Cornell University, Ithaca, NY	0930 hrs AIAA-2015-0002 **Satellite Formation Control using Differential Drag** S. Omar, J. Wersinger, Auburn University, Auburn, AL	1000 hrs AIAA-2015-0003 **Manufacturing of Triaxial Quasi-three-dimensional Composite Materials** G. Peterson, D. Liu, Michigan State University, East Lansing, MI	1030 hrs AIAA-2015-0004 **The Design, Fabrication, and Evaluation of Millimeter Wave Lenses for Beamed Energy Applications** S. Sloan, University of Colorado, Colorado Springs, Colorado Springs, CO	1100 hrs AIAA-2015-0005 **Colorimetric hydrogel-based microfluidic assay system to monitor malnutrition in a microgravity environment** J. Tsosie, New Mexico Institute of Mining and Technology, Socorro, NM	1130 hrs AIAA-2015-0006 **Significance of Constituent Chemical age on Solid Rocket Propellant Regression Rates** D. Dulin, G. Gibson, Arizona State University, Tempe, AZ	1200 hrs AIAA-2015-0007 **Aerodynamic Testing and Development of Sunswift eVe** S. Ambrose, University of New South Wales, New South Wales, Australia

Monday, 5 January 2015

3-AA-1	Computational Aeroacoustics I					Miami 2
Chaired by: W. EVERSMAN, Missouri University of Science and Technology						
0930 hrs AIAA-2015-0008 **A Computational Study of Flow Within Cavities with Complex Geometric Features** M. Barone, S. Arunajatesan, Sandia National Laboratories, Albuquerque, NM	1000 hrs AIAA-2015-0009 **Hybrid RANS/LES Acoustics Prediction in Supersonic Weapons Cavity** R. Harris, E. Sheta, CFD Research Corporation, Huntsville, AL; E. Luke, Mississippi State University, Mississippi State, MS; L. Ukeiley, University of Florida, Gainesville, Gainesville, FL	1030 hrs AIAA-2015-0010 **Numerical Study of Synthetic-Jet Actuation Effect on Leading and Trailing Edge Noise** L. Nguyen, V. Golubev, R. Mankbadi, M. Sansone, Embry-Riddle Aeronautical University, Daytona Beach, FL				

Monday, 5 January 2015

4-AFM-1	AFM Best Student Paper Competition I					Captiva 1
Chaired by: B. BURCHETT, Rose-Hulman Institute of Technology						
0930 hrs AIAA-2015-0011 **Effect of Trail Aircraft Size on Sweet Spot Location for a Conventional Aircraft Pair in Formation** W. Okolo, A. Dogan, University of Texas, Arlington, Arlington, TX; W. Blake, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2015-0012 **Lagrangian Flow Structures Around a Flapping Wing** M. MacFarlane, J. Humbert, University of Maryland, College Park, College Park, MD	1030 hrs AIAA-2015-0013 **Evaluation of Hovering Thrust Performance of Shrouded Rotors for Multi-rotor UAVs to Reduce Weight** H. Otsuka, K. Nagatani, K. Yoshida, Tohoku University, Sendai, Japan	1100 hrs AIAA-2015-0014 **Rapid Modeling of Ablative Shape Change for Conceptual Hypersonic Mission Design** H. Saranathan, P. Geldermans, M. Grant, Purdue University, West Lafayette, IN			

Monday, 5 January 2015						
5-AFM-2	Aircraft Flight Dynamics, Handling Qualities and Performance I					Captiva 2
Chaired by: K. SHWEYK, Boeing Engineering Operations & Technology and R. LIND, University of Florida						
0930 hrs AIAA-2015-0015 **Program to Calculate the Performance of Airplanes Driven by a Fixed-Pitch Propeller** P. Boschetti, P. Gonzalez, E. Cardenas, Simón Bolívar University, Naiguata, Venezuela, Bolivarian Republic of	1000 hrs AIAA-2015-0016 **Computational Analysis of the Blade Number Effect on the Performance of a Ducted Propeller** C. Echavarria, S. Poroseva, University of New Mexico, Albuquerque, Albuquerque, NM	1030 hrs AIAA-2015-0017 **Experiment Design for Complex VTOL Aircraft with Distributed Propulsion and Tilt Wing** P. Murphy, NASA Langley Research Center, Hampton, VA; D. Landman, Old Dominion University, Norfolk, VA	1100 hrs AIAA-2015-0018 **NTSB Investigation of an Icing-Related Aerodynamic Stall Incident and Pilot Response** M. Moler, D. Crider, R. Cox, National Transportation Safety Board, Washington, DC	1130 hrs AIAA-2015-0019 **Piloted Simulation Handling Qualities Assessment of a Business Jet Fly-By-Wire Flight Control System** T. Berger, University Affiliated Research Center, Moffett Field, CA; M. Tischler, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA; S. Hagerott, C. Eckhart, Cessna Aircraft Company, Wichita, KS	1200 hrs AIAA-2015-0020 **Controllability Analysis of a Mass-Actuated Airplane** S. Erturk, A. Dogan, University of Texas, Arlington, Arlington, TX	

Monday, 5 January 2015						
6-AMT-1	Pressure Sensitive Paint (PSP) and Novel Measurement Techniques					Tallahassee 1
Chaired by: C. KLEIN, DLR - German Aerospace Center and T. LIU, Western Michigan University						
0930 hrs AIAA-2015-0021 **Dynamic Response Characteristics of Polymer/Ceramic Pressure-Sensitive Paint** A. Pandey, J. Gregory, Ohio State University, Columbus, OH	1000 hrs AIAA-2015-0022 **Global Skin-Friction Measurements Using Particle Image Surface Flow Visualization and a Luminescent Oil-Film** N. Husen, Purdue University, West Lafayette, IN; T. Liu, Western Michigan University, Kalamazoo, MI; J. Sullivan, Purdue University, West Lafayette, IN	1030 hrs AIAA-2015-0023 **Application of Temperature and Pressure Sensitive Paints to DLR Hypersonic Facilities: "lessons learned"** W. Beck, C. Klein, U. Henne, J. Martinez Schramm, A. Wagner, K. Hannemann, German Aerospace Center (DLR), Göttingen, Germany; et al.	1100 hrs AIAA-2015-0024 **Application of PSP Technique to Near-Field Sonic Boom Measurements in a Ballistic Range** D. Numata, K. Asai, K. Ohtani, Tohoku University, Sendai, Japan	1130 hrs AIAA-2015-0025 **Unsteady PSP Measurement of Transonic Buffet on a Wing** Y. Sugioka, D. Numata, K. Asai, Tohoku University, Sendai, Japan; S. Koike, K. Nakakita, S. Koga, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1200 hrs AIAA-2015-0026 **Determining Aerodynamic Characteristics of an Unmanned Aerial Vehicle using a 3D Scanning Technique** O. Dantsker, University of Illinois, Urbana-Champaign, Urbana, IL	

Monday, 5 January 2015						
7-APA-1	Aerodynamic Design: Analysis, Methodologies & Optimization Techniques I					Destin 1
Chaired by: C. ROSEMA, US Army AMRDEC and E. WHALEN, Boeing Engineering Operations & Technology						
0930 hrs AIAA-2015-0027 **Lift and Drag Measurements of a Gull-Wing Configuration Aircraft** T. Davis, G. Spedding, University of Southern California, Los Angeles, CA	1000 hrs AIAA-2015-0028 **A Fast Approach to Model the Effects of Propeller Slipstream on Wing Load Distribution** C. Agostinelli, S. Simeone, University of Bristol, Bristol, United Kingdom; A. Rampurawala, Airbus, Bristol, United Kingdom; C. Allen, University of Bristol, Bristol, United Kingdom; F. Zhu, University of Sheffield, Sheffield, United Kingdom	1030 hrs AIAA-2015-0029 **Multi-Fidelity Multi-Disciplinary Propeller/Rotor Analysis and Design** N. Nigam, A. Tyagi, P. Chen, Intelligent Automation, Inc., Rockville, MD; J. Alonso, F. Palacios, Stanford University, Stanford, CA; M. Ol, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	1100 hrs AIAA-2015-0030 **Application of Simplified Numerical and Analytical Methods for Rapid Analysis in Atmospheric Entry Vehicle Design** W. Hinman, S. Wilson, C. Johansen, University of Calgary, Calgary, Canada	1130 hrs AIAA-2015-0031 **Flight Dynamics Modeling of a Supersonic Aircraft Concept** K. Biber, Bartin University, Bartin, Turkey		

Monday, 5 January 2015						
8-APA-2	**Icing or Roughness Effects on Vehicle Aerodynamics I**					**Destin 2**
Chaired by: J. GEORGE, Metrolaser Inc. and S. MORRIS, Engineering Systems, Inc.						
0930 hrs AIAA-2015-0032 **Feasibility Study of a Hybrid Ice Protection System Based on Passive Removal of Residual Ice** T. Strobl, Airbus, Munich, Germany; D. Thompson, Mississippi State University, Columbus, MS; M. Hornung, Technical University of Munich, Munich, Germany	1000 hrs AIAA-2015-0033 **High-Speed Imaging to Quantify the Transient Ice Accretion Process on a NACA 0012 Airfoil** R. Waldman, Y. Liu, K. Zhang, H. Hu, Iowa State University, Ames, IA	1030 hrs AIAA-2015-0034 **Optimization of the Morphogenetic Approach for In-flight Icing** M. Butnarasu, W. Habashi, M. Fossati, McGill University, Montréal, Canada	1100 hrs AIAA-2015-0035 **An Experimental Investigation on the Unsteady Heat Transfer Process Over an Ice Accreting NACA 0012 Airfoil** H. Hu, Y. Liu, R. Waldman, Iowa State University, Ames, IA			

Monday, 5 January 2015						
9-APA-3	**Special Session: Low Reynolds Number Flight at a Crossroads**					**Naples 1**
Chaired by: M. CHANG, Lockheed Martin Aeronautics and D. FINLEY, Lockheed Martin Aeronautics						
0930 hrs AIAA-2015-0036 **Safety-guaranteed Flight Test Environment for Micro Air Vehicles** D. Lee, J. Han, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1000 hrs AIAA-2015-0037 **Mission-Driven Design and Fabrication of Fixed-, Flapping-, and Rotary-Wing Micro Air Vehicles** B. Pipenberg, M. Maughmer, Pennsylvania State University, University Park, PA	1030 hrs Oral Presentation **Simulation and control of unsteady separated flows over wings at low Reynolds number** T. Colonius, California Institute of Technology, Pasadena, CA	1100 hrs AIAA-2015-0038 **Unsteady Aerodynamics of Low Reynolds Number Flight** L. Bernal, H. Yu, University of Michigan, Ann Arbor, Ann Arbor, MI			

Monday, 5 January 2015						
10-APA-4	**Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-up Air Vehicles I**					**Naples 2**
Chaired by: N. HARIHARAN, CREATE-AV and T. SHAFER, NAVAIR						
0930 hrs AIAA-2015-0039 **Kestrel Current Capabilities and Future Direction for Fixed Wing Aircraft Simulations** S. Morton, CREATE Kestrel Team, Eglin AFB, FL	1000 hrs AIAA-2015-0040 **Cartesian Adaptive Mesh Refinement with the HPCMP CREATE™-AV Kestrel Solver** T. Eymann, U.S. Air Force, Eglin AFB, FL; R. Nichols, University of Alabama, Birmingham, Birmingham, AL; T. Tuckey, U.S. Air Force, Eglin AFB, FL; D. McDaniel, University of Alabama, Birmingham, Birmingham, AL	1030 hrs AIAA-2015-0041 **Aeroelastic Simulations with Modal and Finite-Element Structural Solvers Using CREATE-AV/Kestrel v5** S. Lamberson, Secure Mission Solutions, North Charleston, SC; B. Hallissy, Naval Air Systems Command, Patuxent River, MD	1100 hrs AIAA-2015-0042 **HPCMP CREATE™-AV and the Air Force Digital Thread** E. Kraft, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2015-0043 **Firebolt c2.0 - Unstructured Grid Navier-Stokes Code for Airframe/ Propulsion Integration** R. Nichols, D. McDaniel, University of Alabama, Birmingham, Birmingham, AL; T. Tuckey, CREATE Kestrel Team, Eglin AFB, FL; R. Koomullil, Y. Ito, University of Alabama, Birmingham, Birmingham, AL; J. Klepprt, Aerospace Testing Alliance, Arnold AFB, TN	1200 hrs AIAA-2015-0044 **Application of 3D Strand Solver to Rotorcraft Hover** A. Wissink, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA; J. Sitaraman, University of Wyoming, Laramie, Laramie, WY; A. Katz, Utah State University, Logan, UT	

Monday, 5 January 2015						
11-FD-1	**Bio-Inspired Flow**					**Daytona 1**
Chaired by: K. GRANLUND, Air Force Research Laboratory and M. GREEN, Syracuse University						
0930 hrs AIAA-2015-0045 **Insect Kinematics in Trimmed Flight at Low Reynolds Numbers Using CFD** C. Badrya, J. Baeder, University of Maryland, College Park, College Park, MD	1000 hrs AIAA-2015-0046 **Experimental study of kinematics and fluid structure interaction of gravity driven falling plates** R. Tian, F. Shu, New Mexico State University, Las Cruces, NM	1030 hrs AIAA-2015-0047 **Three-Dimensional Separated Flow on a Flat Plate with Leading-Edge Serrations** M. Sakai, Y. Sunada, K. Rinoie, University of Tokyo, Tokyo, Japan	1100 hrs AIAA-2015-0048 **Effects of grooves on the formation of the LEV of an impulsively-started flat plate** R. Wahidi, A. Lang, J. Wilroy, University of Alabama, Tuscaloosa, Tuscaloosa, AL			

Monday, 5 January 2015						
12-FD-2	CFD Methods I					Sanibel 1
Chaired by: H. LUO, North Carolina State University and K. MOHSENI, University of Florida						
0930 hrs AIAA-2015-0049 **Launch Environment Water Flow Simulation Using Smoothed Particle Hydrodynamics** B. Vu, J. Berg, M. Harris, NASA Kennedy Space Center, Cape Canaveral, FL; A. Crespo, University of Vigo, Vigo, Spain	1000 hrs AIAA-2015-0050 **Towards the Implementation of Wind Turbine Simulations on Many-Core Systems** I. Venetis, N. Nikoloutsakos, E. Gallopoulos, J. Ekaterinaris, University of Patras, Patras, Greece	1030 hrs AIAA-2015-0051 **Observable Euler Equations for Inviscid Regularized Two Phase Flow Simulation** D. Lipinski, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1100 hrs AIAA-2015-0052 **Advanced Optimizations of An Implicit Navier-Stokes Solver on GPGPU** L. Luo, J. Edwards, H. Luo, F. Mueller, North Carolina State University, Raleigh, NC	1130 hrs AIAA-2015-0053 **Development of Robust Cryogenic Cavitation Modeling Capability in an Advanced CFD Solver** S. Thakur, J. Wright, Streamline Numerics, Inc., Gainesville, FL; C. Segal, University of Florida, Gainesville, Gainesville, FL	1200 hrs AIAA-2015-0054 **Subgrid Model for Shear Rate in Multiphase Simulations** P. Zhang, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	

Monday, 5 January 2015						
13-FD-3	Discontinuous Galerkin Methods for Turbulent Flows					Daytona 2
Chaired by: P. PERSSON, Tsinghua University and M. GALBRAITH						
0930 hrs AIAA-2015-0055 **A discontinuous Galerkin method for implicit LES of moderate Reynolds number flows** C. Carton de Wiart, K. Hillewaert, Cenaero, Gosselies, Belgium	1000 hrs AIAA-2015-0056 **Evaluation of a Discontinuous Galerkin Implementation of RANS and Spalart Allmaras Turbulence Model** C. Schrock, J. Benek, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Galbraith, Massachusetts Institute of Technology, Cambridge, MA; R. Knapke, M. Turner, University of Cincinnati, Cincinnati, OH	1030 hrs AIAA-2015-0057 **A Fourth Order Accurate Cellwise Relaxation Implicit Discontinuous Galerkin Scheme for Solving RANS Equations** H. Asada, Tohoku University, Sendai, Japan; K. Yasue, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; Y. Ogino, K. Sawada, Tohoku University, Sendai, Japan	1100 hrs AIAA-2015-0058 **Turbulent Flow Simulations with the High-Order DG Solver Aghora** F. Renac, M. de la Llave Plata, E. Martin, J. Chapelier, V. Couaillier, ONERA, Châtillon, France	1130 hrs AIAA-2015-0059 **A high-order Discontinuous Galerkin Chimera method for laminar and turbulent flows** M. Wurst, M. Kessler, E. Kraemer, University of Stuttgart, Stuttgart, Germany	1200 hrs AIAA-2015-0060 **Using LES in a Discontinuous Galerkin method with constant and dynamic SGS models** M. Brazell, M. Brazell, M. Stoellinger, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY	

Monday, 5 January 2015						
14-FD-4	Experimental and Numerical Investigations of Blunt Leading Edge Separation for a 53 Degree Swept Diamond Wing (STO AVT-183) I (Invited)					Sanibel 2
Chaired by: S. HITZEL, Airbus Defence & Space , Military Aircraft and R. CUMMINGS, US Air Force Academy						
0930 hrs AIAA-2015-0061 **A Reduced-Complexity Investigation of Blunt Leading-Edge Separation Motivated by UCAV Aerodynamics (Invited)** J. Luckring, NASA Langley Research Center, Hampton, VA; O. Boelens, National Aerospace Laboratory (NLR), Amsterdam, The Netherlands	1000 hrs AIAA-2015-0062 **Numerical and Theoretical Considerations for the Design of the AVT-183 Diamond-Wing Experimental Investigations (Invited)** O. Boelens, National Aerospace Laboratory (NLR), Amsterdam, The Netherlands; J. Luckring, NASA Langley Research Center, Hampton, VA; S. Deck, ONERA, Meudon, France	1030 hrs AIAA-2015-0063 **Leading-Edge Roughness Effects on the Flow Separation Onset of the AVT-183 Diamond Wing Configuration (Invited)** A. Hövelmann, F. Knoth, C. Breitsamter, Technical University of Munich, Garching, Germany	1100 hrs AIAA-2015-0064 **Experimental Analyses on the Flow Field Characteristics of the AVT-183 Diamond Wing Configuration (Invited)** A. Hövelmann, M. Grawunder, A. Buzica, C. Breitsamter, Technical University of Munich, Garching, Germany	1130 hrs AIAA-2015-0065 **Incompressible flow calculations of blunt leading edge separation for a 53 degree swept diamond wing (Invited)** M. Visonneau, E. Guilmineau, National Center for Scientific Research (CNRS), Nantes, France; S. Toxopeus, Maritime Research Institute Netherlands (MARIN), Wageningen, The Netherlands	1200 hrs AIAA-2015-0066 **Numerical Investigations of Flow Separation on the AVT-183 53 Degree Swept Diamond Wing Configuration** D. Daniel, Aerospace Testing Alliance, Arnold AFB, TN; D. Malloy, Arnold Engineering Development Complex, Arnold AFB, TN; D. Reasor, 412th Test Wing, Edwards AFB, CA; C. Morris, Aerospace Testing Alliance, Arnold AFB, TN	

Monday, 5 January 2015						
15-FD-5	Shock-Dominated Flows I					Sanibel 3
Chaired by: P. ORKWIS, University of Cincinnati and D. LEVIN, Pennsylvania State University						
0930 hrs AIAA-2015-0067 **Shock Wave-Boundary-Layer Interactions in Subsonic Intakes at High Incidence** T. Makuni, H. Babinsky, University of Cambridge, Cambridge, United Kingdom; M. Slaby, C. Sheaf, Rolls-Royce Group plc, Derby, United Kingdom	1000 hrs AIAA-2015-0068 **Numerical Investigation of Transonic Airfoil Buffet Suppression** Z. Zhang, Northwestern Polytechnical University, Xi'an, China; K. Qu, City University of New York, New York, NY	1030 hrs AIAA-2015-0069 **On the Drag Efficiency of Counterjets in Low Supersonic Flow** R. Lohner, George Mason University, Fairfax, VA; J. Baum, Applied Simulations, Inc., McLean, VA	1100 hrs AIAA-2015-0070 **Study of Shock-Shock Interactions for a Double Wedge Configuration Using the SUGAR Code** S. Sawant, B. Korkut, D. Levin, Pennsylvania State University, University Park, PA			

Monday, 5 January 2015		
16-FD-57 0930 - 1230 hrs	New and Revolutionary Approaches in High Speed Flow Turbulence Modeling	Sun Ballroom A

Chaired by: R. PONNAPPAN and G. BLAISDELL, Purdue University

Organized by Daniel Bodony, University of Illinois

Aerothermodynamics and Turbulence-Transition Programs - AFOSR Overview
Ivett Leyva

Emerging Experiments in Compressible Cavity Flows
Steven Beresh

The Effect of Compressibility on Shear Flow Instabilities in High-Speed Flows
Sharath S. Girimaji

Laminar-Turbulent Transition of Hypersonic Boundary Layer Affected by Surface Roughness
Xiaolin Zhong

Vortex ring and shock interaction in a supersonic turbulent boundary layer
Chaoqun Liu

Low-dimensional modeling of a transitional and turbulent boundary layer
Taraneh Sayadi

The effect of strong wall-cooling on high-speed turbulent boundary layers
Johan Larsson

Monday, 5 January 2015		
17-GEPC-1	N+3 Configuration Concepts and Enabling Technologies in NASA's Fixed Wing Project	Sun Ballroom C

Chaired by: R. WAHLS, NASA-Langley Research Center and N. MADAVAN, NASA-Ames

0930 hrs Oral Presentation **Final Results of the Subsonic Ultra Green Aircraft Research (SUGAR) Study** M. Bradley, The Boeing Company, Long Beach, CA; C. Droney, The Boeing Company, Huntington Beach, CA	1000 hrs Oral Presentation **Development and Assessment of the Conceptual Design for an Advanced Civil Transport: An Industry-NASA-University Collaborative Enterprise** A. Uranga, E. Greitzer, M. Drela, Massachusetts Institute of Technology, Cambridge, MA	1030 hrs Oral Presentation **Power Balance Assessment of BLI Benefits for Civil Aircraft** A. Huang, D. Hall, A. Uranga, E. Greitzer, Massachusetts Institute of Technology, Cambridge, MA	1100 hrs Oral Presentation **Boundary Layer Ingestion Benefit of the D8 Subsonic Transport** A. Uranga, M. Drela, E. Greitzer, N. Titchener, M. Lieu, N. Siu, Massachusetts Institute of Technology, Cambridge, MA; et al.	1130 hrs AIAA-2015-0071 **Engine Architecture for High Efficiency at Small Core Size** W. Lord, G. Suciu, J. Chandler, K. Hasel, Pratt & Whitney, East Hartford, CT		

Monday, 5 January 2015		
18-GNC-1	Aerospace Robotics and Autonomous/Unmanned Systems I	Sun Ballroom 3

Chaired by: L. POLLINI, University of Pisa; M. BALAS, Embry-Riddle Aeronautical University and Y. CHENG, Mississippi State University

0930 hrs AIAA-2015-0072 **Optimal Airborne Trajectories for Data Collection from Wireless Sensor Networks by Direct Collocation Methods** N. Jodeh, R. Cobb, Air Force Institute of Technology, Wright-Patterson AFB, OH; R. Livermore, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2015-0073 **Centrifugally Stiffened Rotor: A Complete Derivation and Simulation of the Inner Loop Controller** J. Selfridge, University of Virginia, Charlottesville, Charlottesville, VA	1030 hrs AIAA-2015-0074 **A Vision-Based Proportional Navigation Guidance Law for UAS Sense and Avoid** M. Clark, Z. Kern, R. Prazenica, Embry-Riddle Aeronautical University, Daytona Beach, FL	1100 hrs AIAA-2015-0075 **Human-In-The-Loop Control of Guided Airdrop Systems** M. Cacan, M. Ward, E. Scheuermann, M. Costello, Georgia Institute of Technology, Atlanta, GA	1130 hrs AIAA-2015-0076 **Neural Network Based Control of an Airplane UAV using Radial Basis Functions** S. Bhandari, J. Novak, California Polytechnic State University, Pomona, CA		

Monday, 5 January 2015		
19-GNC-2	Flight Experience of Cassini Spacecraft Attitude Control at Saturn	Miami 1

Chaired by: T. BURK, Jet Propulsion Laboratory and J. WEBSTER, Jet Propulsion Laboratory

0930 hrs Video Presentation **Ring World 3 - The Latest Discoveries of the Cassini Mission at Saturn** Produced by the Jet Propulsion Laboratory, Pasadena, CA.	1000 hrs AIAA-2015-0077 **Cassini Attitude and Articulation Control Subsystem Fault Protection Challenges During Saturn Proximal Orbits** D. Bates, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1030 hrs AIAA-2015-0078 **Inflight Characterization of the Cassini Spacecraft Propellant Slosh and Structural Frequencies** J. Stupik, A. Lee, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1100 hrs AIAA-2015-0079 **Titan Density Reconstruction Using Radiometric and Cassini Attitude Control Flight Data** L. Andrade, T. Burk, F. Pelletier, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1130 hrs AIAA-2015-0080 **Precise Pointing for Radioscience Occultations and Radar Mapping during the Cassini Mission at Saturn** T. Burk, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA		

Monday, 5 January 2015						
20-GNC-3	**GNC Sensor Systems I**					**Sun Ballroom 4**
Chaired by: S. FROST, NASA-Ames Research Center and S. RAMASAMY, RMIT University						
0930 hrs AIAA-2015-0081 **Sensitivity Analysis of Model-based Synthetic Air Data Estimators** F. Lie, D. Gebre-Egziabher, University of Minnesota, Minneapolis, Minneapolis, MN	1000 hrs AIAA-2015-0082 **Covariance Analysis of Sensors for Wind Field Estimation by Small Unmanned Aircraft** J. Elston, B. Argrow, University of Colorado, Boulder, Boulder, CO; M. Stachura, Black Swift Technologies, Boulder, CO	1030 hrs AIAA-2015-0083 **Biomimetic optical sensor for real-time aircraft wing deflection measurement** S. Frost, NASA Ames Research Center, Moffett Field, CA; C. Wright, M. Khan, University of Wyoming, Laramie, Laramie, WY	1100 hrs AIAA-2015-0084 **Analysis of the Accuracy of MEMS Magnetometers in Small UAS for use in State Estimation** T. Nichols, J. Elston, B. Argrow, University of Colorado, Boulder, Boulder, CO	1130 hrs AIAA-2015-0085 **Innovative Navigation and Guidance System for Small-to-Medium Size Unmanned Aircraft using Low-Cost Sensors** S. Ramasamy, RMIT University, Melbourne, Australia	1200 hrs AIAA-2015-0086 **Sensitivity Analysis of an Automated Formation Flight Based on GPS and Transmission Data Specifications** M. Kilic, M. Meiboom, Technical University of Braunschweig, Braunschweig, Germany	

Monday, 5 January 2015						
21-GNC-4	**Missile Guidance I**					**Sun Ballroom 6**
Chaired by: A. RATNOO and J. LAFLEUR, Sandia National Laboratories						
0930 hrs AIAA-2015-0087 **Velocity To Be Gained Guidance for a Generic 2D Course Correcting Fuze** P. Strömbäck, J. Robinson, Swedish Defense Research Agency (FOI), Stockholm, Sweden	1000 hrs AIAA-2015-0088 **Exo-Atmospheric Mid-Course Guidance** S. Gutman, S. Rubinsky, Technion-Israel Institute of Technology, Haifa, Israel	1030 hrs AIAA-2015-0089 **Near-Optimal Minimum Time Guidance under a Spatial Angular Constraint in Atmospheric Flight** N. Indig, J. Z. Ben-Asher, E. Sigal, Technion–Israel Institute of Technology, Haifa, Israel	1100 hrs AIAA-2015-0090 **Intercept Angle Guidance Under Time Varying Speed** I. Taub, Israel Aerospace Industries, Ltd., Ben-Gurion Airport, Israel	1130 hrs AIAA-2015-0091 **Look Angle Constrained Impact Angle Control Based on Proportional Navigation** K. Erer, ROKETSAN Missiles Industries, Inc., Ankara, Turkey; R. Tekin, ASELSAN, Inc., Ankara, Turkey; M. Ozgoren, Middle East Technical University, Ankara, Turkey	1200 hrs AIAA-2015-0092 **Precision Munition Guidance and Moving Target Position Estimation** S. Sreeja, Indian Institute of Technology Bombay, Mumbai, India	

Monday, 5 January 2015						
22-GNC-5	**Novel Navigation, Estimation, and Tracking Methods I**					**Sun Ballroom 5**
Chaired by: N. AHMED, CNRS & Université Paris-Sud and W. WHITACRE, Draper Laboratory						
0930 hrs AIAA-2015-0093 **Orbit Estimation Of A Continuously Thrusting Satellite Using Variable Dimension Filters** G. Goff, J. Black, Air Force Institute of Technology, Wright-Patterson AFB, OH; J. Beck, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2015-0094 **Line of Sight Alignment Algorithms for Future Gravity Missions** F. Ales, P. Gath, U. Johann, Airbus, Friedrichshafen, Germany; C. Braxmaier, University of Bremen, Bremen, Germany	1030 hrs AIAA-2015-0095 **Bio-Inspired Absolute Heading Sensing Based on Atmospheric Scattering** J. Ashkanazy, J. Humbert, University of Maryland, College Park, College Park, MD	1100 hrs AIAA-2015-0096 **In-motion Alignment of Inertial Navigation System with Doppler Speed Measurements** K. Bimal Raj, A. Joshi, Indian Institute of Technology Bombay, Mumbai, India	1130 hrs AIAA-2015-0097 **A Monocular Vision-aided Inertial Navigation System with Improved Numerical Stability** D. Magree, E. Johnson, Georgia Institute of Technology, Atlanta, GA		

Monday, 5 January 2015						
23-GT-1	**New Capabilities in Ground Test Facilities I**					**Miami 3**
Chaired by: G. SYDNOR, NASA Langley Research Center and R. RHEW, NASA-Langley Research Center						
0930 hrs Oral Presentation **Historical Overview and Recent Improvements at the NASA Glenn Research Center 8x6/9x15 Wind Tunnel Complex** J. Dussling, NASA Glenn Research Center, Cleveland, OH	1000 hrs Oral Presentation **New Model Roll Mechanism (MRM) for the Boeing Transonic Wind Tunnel (BTWT)** D. Belter, The Boeing Company, Seattle, WA	1030 hrs Oral Presentation **Acoustic Testing Upgrades at the LLF** G. Eitelberg, DNW, Marknesse, The Netherlands	1100 hrs Oral Presentation **COBRA Data System Upgrades at GRC** J. Panek, NASA Glenn Research Center, Cleveland, OH	1130 hrs Oral Presentation **Moving Belt for Ground Proximity Simulation Upgrade at the LLF** G. Eitelberg, DNW, Marknesse, The Netherlands	1200 hrs Oral Presentation **Transforming Testing Capabilities at the Ames UPWT** J. Bell, NASA Ames Research Center, Moffett Field, CA	

Monday, 5 January 2015						
24-GTE-1	**Gas Turbine Combustion I**					**Emerald 1**
Chaired by: S. SUBRAMANIAN, QuEST Global, Inc.						
0930 hrs AIAA-2015-0098 **NOx Emissions Performance and Correlation Equations for a Multipoint LDI Injector** Z. He, C. Chang, C. Follen, NASA Glenn Research Center, Cleveland, OH	1000 hrs AIAA-2015-0099 **Updates to Simulation of a Single-Element Lean-Direct Injection Combustor Using Arbitrary Polyhedral Meshes** C. Wey, N. Liu, NASA Glenn Research Center, Cleveland, OH	1030 hrs AIAA-2015-0100 **Optimization of Ultra Compact Combustor Flow Path Splits** A. Cottle, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH	1100 hrs AIAA-2015-0101 **Numerical Investigation of the Entropy Wave Generator Test Case Using Multirate Impedance Boundary Conditions** J. Lourier, B. Noll, M. Aigner, German Aerospace Center (DLR), Stuttgart, Germany	1130 hrs AIAA-2015-0102 **Early-Stage Design Optimization of a Turbofan for Low NOx Emissions at Off-Design Operating Conditions** L. Zilhão, J. Melo De Sousa, Technical University of Lisbon, Lisbon, Portugal		

Monday, 5 January 2015						
25-HIS-1	**Topics in Aerospace History**					**Tallahassee 2**
Chaired by: W. BARRY, NASA HQ						
0930 hrs AIAA-2015-0103 **The First Aerial Raid From Portugal to Macau** F. Neves, J. Barata, A. Silva, University of Beira Interior, Covilha, Portugal	1000 hrs AIAA-2015-0104 **First Aerial South Atlantic Night Crossing** F. Neves, J. Barata, A. Silva, University of Beira Interior, Covilha, Portugal	1030 hrs AIAA-2015-0105 **Flight Is Not Improbable. Octave Chanute Combines Civil Engineering With Aeronautics** S. Short, National Soaring Museum, Elmira, NY	1100 hrs AIAA-2015-0106 **The Earliest Russian Wind Tunnels** A. Gorbushin, TsAGI, Moscow, Russia			

Monday, 5 January 2015						
26-HSABP-1	**High Speed Inlets**					**Emerald 8**
Chaired by: G. PANIAGUA, von Karman Institute and D. KIRK, Florida Institute of Technology						
0930 hrs AIAA-2015-0107 **Numerical and Experimental Research of Mass Addition in Inlet at High Velocities** V. Vinogradov, A. Makarov, I. Potekhina, V. Stepanov, Central Institute of Aviation Motors, Moscow, Russia	1000 hrs AIAA-2015-0108 **Viscous Effects and Truncation Effects in Axisymmetric Busemann SCRamjet Intakes** A. Flock, A. Guelhan, German Aerospace Center (DLR), Cologne, Germany	1030 hrs AIAA-2015-0109 **HIFiRE-6 Unstart Conditions at Off-Design Mach Numbers** E. Stephen, S. Hoenisch, C. Riggs, M. Waddel, U.S. Air Force Academy, Colorado Springs, CO; M. Bolender, Air Force Research Laboratory, Wright-Patterson AFB, OH; T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1100 hrs AIAA-2015-0110 **Flight test of a rugged scramjet-inlet temperature and velocity sensor** J. Kurtz, M. Aizengendler, Y. Krishna, P. Walsh, S. O'Byrne, University of New South Wales at the Australian Defence Force Academy, Canberra, Australia	1130 hrs AIAA-2015-0111 **Flow Visualization and Fluctuating Pressure Measurements in an Internal Compression Inlet** H. Tabanli, K. Yuceil, Istanbul Technical University, Istanbul, Turkey	1200 hrs AIAA-2015-0112 **Experimental investigation of a Mach 4 shock-wave turbulent boundary layer interaction near an expansion corner** A. SathiaNarayanan, S. Verma, National Aerospace Laboratories, Bangalore, India	

Monday, 5 January 2015						
27-IS-1	**Intelligent Systems Special Session-Student Paper Competition**					**Osceola Ballroom 3**
Chaired by: S. CHUNG, University of Illinois at Urbana-Champaign						
0930 hrs AIAA-2015-0113 **Human Agent Interfaces as a Key Element for the Dialog between Human Crews and Cognitive Automation** Y. Brand, A. Schulte, University of the German Federal Armed Forces, Munich, Germany	1000 hrs AIAA-2015-0114 **Mixed-Initiative Interaction in Manned-Unmanned-Teaming Mission Planning: Design and Evaluation of a Prototype** F. Schmitt, A. Schulte, University of the German Federal Armed Forces, Munich, Germany	1030 hrs AIAA-2015-0115 **A Constrained Markov Decision Process for Flight Safety Assessment and Management** S. Balachandran, E. Atkins, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2015-0116 **Signal Source Localization Using Partially Observable Markov Decision Processes** L. Dressel, M. Kochenderfer, Stanford University, Stanford, CA	1130 hrs AIAA-2015-0117 **Adaptive Algorithms for Autonomous Data-Ferrying in Nonstationary Environments** A. Axelrod, G. Chowdhary, Oklahoma State University, Stillwater, OK		

Monday, 5 January 2015						
28-IS-2	**Augmenting Adaptive Algorithms for Aircraft Control I**					**Osceola Ballroom 2**
Chaired by: N. NGUYEN, NASA-Ames Research Center						
0930 hrs AIAA-2015-0118 **Adaptive Linear Quadratic Gaussian Optimal Control Modification for Flutter Suppression of Adaptive Wing** N. Nguyen, S. Swei, NASA Ames Research Center, Moffett Field, CA	1000 hrs AIAA-2015-0119 **Optimal Filter Design for a Discrete-Time Formulation of L1-Adaptive Control** H. Jafarnejadsani, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL	1030 hrs AIAA-2015-0120 **Performance Oriented Adaptive Architectures with Guaranteed Bounds** B. Gruenwald, T. Yucelen, Missouri University of Science and Technology, Rolla, MO; M. Fravolini, University of Perugia, Perugia, Italy	1100 hrs AIAA-2015-0121 **Demand-side energy management using an adaptive control strategy for aggregate thermostatic loads** M. Ghanavati, A. Chakravarthy, Wichita State University, Wichita, KS	1130 hrs AIAA-2015-0122 **Bayesian Modeling for Decentralized UAV Control and Task Allocation** S. Hening, P. Regueiro, A. Rodriguez, M. Teodorescu, University of California, Santa Cruz, Santa Cruz, CA; N. Nguyen, C. Ippolito, NASA Ames Research Center, Moffett Field, CA		

Monday, 5 January 2015						
29-ISC-4	**International Student Conference (Community Outreach Category)**					**St. George 114**
Chaired by: R. ANDINO, AIAA-American Institute of Aeronautics and Astronautics						
0930 hrs Oral Presentation **New Mexico State University Community Outreach with University Nanosat Program** C. Barberan, New Mexico State University, Las Cruces, NM	1000 hrs Oral Presentation **Integrated Middle School Educational Outreach Program** J. Gong, C. Reynolds, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs Oral Presentation **UB UAV Community Outreach** B. Bergh, T. Lutz, A. Lyons, M. West, M. Majji, University of Buffalo, Buffalo, NY	1100 hrs Oral Presentation **Engineers on Deck** C. Shields, R. Swasey, Brigham Young University, Provo, UT	1130 hrs Oral Presentation **MSU Space Cowboys Outreach** A. Sanford, Mississippi State University, Starkville, MS	1200 hrs Oral Presentation **USAFA STEM Outreach for Advancing Aeronautical and Astronautical Engineering** T. Hudson, U.S. Air Force Academy, Colorado Springs, CO	

Monday, 5 January 2015		
30-LEC-1 **0930 - 1030 hrs**	**Spacecraft Structures Lecture: Advanced Solar Arrays for NASA Electric Propulsion Missions**	**Osceola Ballroom A**
Thomas Kerslake Power System Engineer NASA Glenn Research Center		

Monday, 5 January 2015						
31-MAT-1	**Nanostructured Materials I**					**Sarasota 1**
Chaired by: G. ODEGARD, Michigan Technological University; S. ROY, The University of Alabama and B. WARDLE, Massachusettes Institute of Technology						
0930 hrs AIAA-2015-0123 **Microstructure and High Through-thickness Thermal Conductivity of Graphite Fiber Composite for Structural Applications** A. Hao, S. Wang, J. Horne, M. Yang, R. Liang, Florida State University, Tallahassee, FL; J. Koo, KAI, LLC, Austin, TX	1000 hrs AIAA-2015-0124 **Molecular dynamics of SWNT/Epoxy nanocomposites** N. Fasanella, V. Sundararaghavan, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2015-0125 **Fracture Toughness of Aligned Carbon Nanotube Polymer Nanocomposites** S. Wicks, A. Vazquez, B. Wardle, Massachusetts Institute of Technology, Cambridge, MA	1100 hrs AIAA-2015-0126 **Experimental Characterization of Damage Evolution in Carbon Nanotube-Polymer Nanocomposites** E. Sengezer, G. Seidel, Virginia Polytechnic Institute and State University, Blacksburg, VA	1130 hrs AIAA-2015-0127 **Interlaminar Shear Strength Investigation of Aligned Carbon Nanotube-Reinforced Prepreg Composite Interfaces** D. Lewis, B. Wardle, Massachusetts Institute of Technology, Cambridge, MA	1200 hrs AIAA-2015-0128 **An interphase design strategy for multifunctional polymer nanocomposites using multiscale method** J. Choi, H. Shin, M. Cho, Seoul National University, Seoul, South Korea	

Monday, 5 January 2015						
32-MAT-2	**Advanced Materials and Processes**					**Sarasota 2**
Chaired by: D. POWELL and A. AVILA, Universidade Federal de Minas Gerais						
0930 hrs AIAA-2015-0129 **Micromechanical modeling of metal-ceramic composites for high temperature applications** P. Deierling, O. Zhupanska, University of Iowa, Iowa City, Iowa City, IA; C. Pasiliao, Air Force Research Laboratory, Eglin AFB, FL	1000 hrs Oral Presentation **Developing Strong and Tough Junctions in Carbon Fiber Composites via Hybridization with Electrospun Polymer Nanofibers** M. Naraghi, S. Hong, Texas A&M University, College Station, TX	1030 hrs AIAA-2015-0130 **Controlling Microstructure and Polymer Deformation with Polarized Light in Liquid Crystal Polymer Networks** J. Bin, W. Oates, Florida State University, Tallahassee, FL	1100 hrs AIAA-2015-0131 **Sapphire Laser Machining Modeling and Experimental Validation for High Temperature Pressure Transducer Development** W. Oates, P. Woerner, Florida State University, Tallahassee, FL			

Monday, 5 January 2015						
33-MDO-1	**MDO: Aircraft Systems Design Applications**					**Sarasota 3**
Chaired by: T. TAKAHASHI, Arizona State University and E. ALYANAK, AFRL/RQVC						
0930 hrs AIAA-2015-0132 **Multi-Disciplinary Optimization of a Near Sonic Airliner** V. Mirochnitchenko, M. Swann, D. Stallngs, M. Merrell, D. Miller, T. Takahashi, Arizona State University, Tempe, AZ	1000 hrs AIAA-2015-0133 **Aircraft Trajectory Optimisation using Wind Forecasting Data** Z. Assaad, M. Moore, C. Bil, A. Eberhard, RMIT University, Melbourne, Australia	1030 hrs AIAA-2015-0134 **Value-Driven Design of Non-Commercial Systems using Bargain Modeling** E. Goetzke, C. Bloebaum, B. Mesmer, Iowa State University, Ames, IA	1100 hrs AIAA-2015-0135 **Rapid Development of Bespoke Sensorcraft: A Proposed Design Loop** C. Paulson, A. Sobester, J. Scanlan, University of Southampton, Southampton, United Kingdom	1130 hrs AIAA-2015-0136 **A modular adjoint approach to aircraft mission analysis and optimization** J. Kao, J. Hwang, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1200 hrs AIAA-2015-0137 **Integrated Global Wing and Local Panel Optimization of Aircraft Wing** Q. Liu, M. Jrad, S. Mulani, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	

Monday, 5 January 2015						
34-MDO-2	**MDO: Fundamental Algorithms & Processes I**					**Osceola Ballroom 5**
Chaired by: A. KO, Phoenix Integration, Inc. and J. PARRISH, Boeing Research and Technology						
0930 hrs AIAA-2015-0138 **Discrete Adjoint Formulation for Continuum Sensitivity Analysis** M. Kulkarni, R. Canfield, M. Patil, Virginia Polytechnic Institute and State University, Blacksburg, VA	1000 hrs AIAA-2015-0139 **Simple and inexpensive algorithm for surrogate filtering** S. Choze, F. Viana, General Electric Company, Niskayuna, NY	1030 hrs AIAA-2015-0140 **Stress Constrained Optimization using SLP Level Set Topology Optimization** C. Brampton, P. Dunning, H. Kim, University of Bath, Bath, United Kingdom	1100 hrs AIAA-2015-0141 **Approximation of the Pareto Surface via a Hybrid of Scalarization Method and Evolutionary Algorithm** T. Erfani, University College London, London, United Kingdom; H. Samami, University of Leicester, Leicester, United Kingdom; R. Erfani, Manchester Metropolitan University, Manchester, United Kingdom; S. Utyuzhnikov, University of Manchester, Manchester, United Kingdom	1130 hrs AIAA-2015-0142 **Graph Coarsening Method for KKT Matrices Arising from Orthogonal Collocation Methods for Optimal Control Problems** B. Senses, T. Davis, A. Rao, University of Florida, Gainesville, Gainesville, FL	1200 hrs AIAA-2015-0143 **Multifidelity Optimization using Statistical Surrogate Modeling for Non-Hierarchical Information Sources** R. Lam, Massachusetts Institute of Technology, Cambridge, MA; D. Allaire, Texas A&M University, College Station, TX; K. Willcox, Massachusetts Institute of Technology, Cambridge, MA	

Monday, 5 January 2015						
35-MST-1	**Air Traffic Management I**					**Sun Ballroom 1**
Chaired by: J. SCHROEDER, Federal Aviation Administration						
0930 hrs AIAA-2015-0144 **Modeling of Complex and Diverse Aircraft Trajectories with the Trajectory Synthesizer Generalized Profile Interface** A. Lee, NASA Ames Research Center, Moffett Field, CA; M. Wu, M. Abramson, University of California, Santa Cruz, Moffett Field, CA	1000 hrs AIAA-2015-0145 **Analysis of the Impact of Performance Model Accuracy on 4D Trajectory Optimization** M. Battipede, G. Sirigu, M. Cassaro, P. Gili, Technical University of Turin, Turin, Italy	1030 hrs AIAA-2015-0146 **Improving Aircraft Collision Risk Estimation using the Cross-Entropy Method** Y. Kim, M. Kochenderfer, Stanford University, Stanford, CA	1100 hrs AIAA-2015-0147 **Trajectory Analysis for Accident Investigation** D. Crider, National Transportation Safety Board, Washington, DC	1130 hrs AIAA-2015-0148 **A Speech-Enabled Simulation Interface Agent for Airspace System Assessments** H. Lu, V. Cheng, Optimal Synthesis, Inc., Los Altos, CA; D. Ballinger, NASA Ames Research Center, Moffett Field, CA; A. Fong, J. Nguyen, Optimal Synthesis, Inc., Los Altos, CA; S. Jones, SimPhonics, Inc., Tampa, FL; et al.		

Monday, 5 January 2015						
36-MST-2	**Hardware In the Loop Simulation**					**Sun Ballroom 2**
Chaired by: S. KOWALCHUK, Sandia National Laboratories						
0930 hrs AIAA-2015-0149 **Rapid Prototyping of Hardware Using Real-Time HWIL Simulation Environments** J. Torres, M. Schrempp, S. Kowalchuk, Sandia National Laboratories, Albuquerque, NM	1000 hrs AIAA-2015-0150 **FLINT - a highly-flexible HWIL solution for GPU accelerated scene generation and sensor modeling** J. Grimes, W. Herald, MacAulay Brown, Inc., Shalimar, FL; R. Thompson, Air Force Research Laboratory, Eglin AFB, FL	1030 hrs AIAA-2015-0151 **Distributed Hardware-In-Loop Simulations for multiple Autonomous Aerial Vehicles** S. Hangal, B. Tak, H. Arya, Indian Institute of Technology Bombay, Mumbai, India	1100 hrs AIAA-2015-0152 **Developing and Testing ECUs for Electric Drives** A. Himmler, dSPACE GmbH, Paderborn, Germany; M. Muli, dSPACE, Inc., Wixom, MI	1130 hrs AIAA-2015-0153 **Pitch Axis Control for a Guided Projectile in a Wind Tunnel-based Hardware-In-the-Loop Setup** G. Strub S. Theodoulis, V. Gassmann, S. Dobre, French-German Research Institute of Saint-Louis (ISL), Saint-Louis, France; M. Basset, University of Upper Alsace, Mulhouse, France		

Monday, 5 January 2015		
37-PANEL-1 **0930 - 1130 hrs**	**U.S. Government Aerospace Technology Roadmaps**	**Osceola Ballroom B**

Moderator: Mark Lewis, Director, IDA Science & Technology Policy Institute

Panelists:

Thomas Beutner
Head, Naval Air Warfare and Weapons
Office of Naval Research

Dennis Filler
Director, FAA William J. Hughes Technical Center

David Miller
Chief Technologist
NASA

Robie Samanta-Roy
Vice President,Technology and Innovation
Lockheed Martin Corporation

Morley Stone
Chief Technologist, Air Force Research Laboratory
Wright-Patterson AFB

Monday, 5 January 2015						
38-PC-1	**Plasma Assisted Combustion I: AFOSR MURI Reports**					**Emerald 2**
Chaired by: J. TISHKOFF and W. LEMPERT, Vanderbilt University						
0930 hrs AIAA-2015-0154 **An Overview or the AFOSR Plasma Assisted Combustion MURI Program** W. Lempert, Ohio State University, Columbus, OH	1000 hrs AIAA-2015-0155 **Challenges in Understanding and Predictive Modeling of Plasma Assisted Combustion** I. Adamovich, W. Lempert, J. Sutton, Ohio State University, Columbus, OH	1030 hrs AIAA-2015-0156 **Plasma assisted combustion: kinetic studies and new combustion technology** Y. Ju, J. Lefkowitz, T. Wada, X. Yang, S. Won, Princeton University, Princeton, NJ; W. Sun, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2015-0157 **Atmospheric Pressure Plasma Based Flame Control and Diagnostics** R. Miles, Princeton University, Princeton, NJ	1130 hrs AIAA-2015-0158 **Plasma Assisted Combustion Mechanism for Small Hydrocarbons** A. Starikovskiy, Princeton University, Princeton, NJ	1200 hrs AIAA-2015-0159 **Non-Equilibrium Plasma-Assisted Flow Reactor Studies of Highly Diluted Reactive Mixtures** N. Tsolas, K. Togai, R. Yetter, Pennsylvania State University, University Park, PA	

Monday, 5 January 2015						
39-PC-2	**Advanced Combustion Concepts I**					**Emerald 3**
Chaired by: M. ANAND, Rolls-Royce Corp						
0930 hrs AIAA-2015-0160 **Oxygen-rich Combustion of A Porous Cylindrical Burner** K. Pan, S. Chen, National Taiwan University, Taipei, Taiwan	1000 hrs AIAA-2015-0161 **Electro-chemical propulsion for space exploration** A. Ingenito, A. Agresta, University of Rome "La Sapienza", Rome, Italy; R. Andriani, Technical University of Milan, Milan, Italy; F. Gamma, University of Rome "La Sapienza", Rome, Italy					

Monday, 5 January 2015						
40-PC-3	**Spray and Droplet Combustion I**					**Emerald 5**
Chaired by: B. CHEHROUDI, European Research Council (ERC) and J. BELLAN, Jet Propulsion Laboratory						
0930 hrs AIAA-2015-0162 **A priori and a posteriori analyses of multi-species turbulent mixing layers at supercritical-p conditions** G. Borghesi, California Institute of Technology, Pasadena, CA; J. Bellan, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1000 hrs AIAA-2015-0163 **Simulation of Subcritical Primary Atomization in a Rule-Based CFD Framework Using Stochastic Modeling** S. Thakur, M. Kumar, University of Florida, Gainesville, Gainesville, FL; E. Luke, Mississippi State University, Mississippi State, MS	1030 hrs AIAA-2015-0164 **Ray tracing analysis of realistic atomizing jet geometries for optical connectivity applications** G. Charalampous, N. Soulopoulos, Y. Hardalupas, Imperial College London, London, United Kingdom	1100 hrs AIAA-2015-0165 **Exploration of Gas Phase Properties in Aerated-Liquid Jets Using X-Ray Fluorescence** K. Lin, Taitech, Inc., Beavercreek, OH; C. Carter, S. Smith, Air Force Research Laboratory, Wright-Patterson AFB, OH; A. Kastengren, Argonne National Laboratory, Chicago, IL	1130 hrs AIAA-2015-0166 **Modeling the Diffusion to Kinetically Controlled Burning Transition of Micron-Sized Aluminum Particles** B. Bojko, P. DesJardin, State University of New York, Buffalo, NY		

Monday, 5 January 2015						
41-PC-4	**Turbulent Combustion I**					**Emerald 7**
Chaired by: T. LIEUWEN, Georgia Institute of Technology and J. OEFELEIN, Sandia National Laboratories						
0930 hrs AIAA-2015-0167 **Large-eddy simulation of a turbulent sooting flame in a swirling combustor** H. Koo, V. Raman, University of Texas, Austin, Austin, TX; M. Mueller, Princeton University, Princeton, NJ; K. Geigle, German Aerospace Center (DLR), Stuttgart, Germany	1000 hrs AIAA-2015-0168 **Measurements of Premixed Turbulent Combustion Regimes of High Reynolds Number Flames** J. Temme, T. Wabel, A. Skiba, J. Driscoll, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2015-0169 **Propagation of Premixed Flame Kernels in High Speed Channel Flows with Moderate Turbulence** N. Grady, R. Pitz, Vanderbilt University, Nashville, TN; S. Menon, B. Ochs, D. Scarborough, T. Slais, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2015-0170 **Characterization of the Temperature and Velocity Field Structure in Turbulent Premixed Jet Flames** P. Allison, H. Shen, T. McManus, J. Sutton, Ohio State University, Columbus, OH			

Monday, 5 January 2015						
42-SD-1	**Computational Aeroelasticity**					**Tampa 2**
Chaired by: K. GRIFFIN, Southwest Research Institute and B. GLAZ, U. S. Army Research Laboratory (APG)						
0930 hrs AIAA-2015-0171 **Numerical Study of the Transonic Limit Cycle Oscillation Phenomenon on the F-16 Fighter Aircraft** D. Raveh, Technion-Israel Institute of Technology, Haifa, Israel; M. Iovnovich, D. Michaels, M. Adar, Israeli Air Force, Tel Aviv, Israel	1000 hrs AIAA-2015-0172 **Adjoint-Based h-adaptive Calculation of Generalized Aerodynamic Forces** M. Bhatia, P. Beran, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2015-0173 **Aeroelastic Stability Predictions of a Business Jet Landing Gear Door using High Fidelity Fluid-Structure Interaction Tools** E. Blades, A. Cornish, ATA Engineering, Inc., Huntsville, AL	1100 hrs AIAA-2015-0174 **Forced and Aeroelastic Response of Bird-Damaged Fan Blades - A Comparison and Its Implications** E. Muir, P. Friedmann, University of Michigan, Ann Arbor, Ann Arbor, MI	1130 hrs AIAA-2015-0175 **Accelerated convergence of static aeroelasticity using low-fidelity aerodynamics** K. Jovanov, R. De Breuker, Delft University of Technology, Delft, The Netherlands		

Monday, 5 January 2015						
43-SD-2	**Large-deformation Nonlinear Dynamics**					**Tampa 3**
Chaired by: D. JOHNSON, NASA Glenn Research Center and W. SCHNEIDER, Lockheed Martin Aeronautics						
0930 hrs AIAA-2015-0176 **An Enhanced Modal Approach for Large Deformation Modeling of Wing-Like Structures** M. Ritter, German Aerospace Center (DLR), Göttingen, Germany; C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI; W. Krüger, German Aerospace Center (DLR), Göttingen, Germany	1000 hrs AIAA-2015-0177 **Reduced order modeling of loads and deformation of a flexible flapping wing** J. Tran, J. Sirohi, University of Texas, Austin, Austin, TX; H. Gao, M. Wei, New Mexico State University, Las Cruces, NM	1030 hrs AIAA-2015-0178 **Nonlinear Aeroelastic Modeling and Analysis of Flexible Wind Turbine Blades** W. Su, W. Song, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1100 hrs AIAA-2015-0179 **Nonlinear Aeroservoelastic Analysis of Flexible Aircraft Described by Large Finite-Element Models** Y. Wang, A. Wynn, R. Palacios, Imperial College London, London, United Kingdom	1130 hrs AIAA-2015-0180 **Nonlinear Model Updating of a Cantilevered Plate and a Stiffened Skin Panel from a Lynx Helicopter** M. Allen, University of Wisconsin, Madison, Madison, WI; B. Weekes, University of Bristol, Bristol, United Kingdom	1200 hrs AIAA-2015-0181 **Limit-cycle Oscillations of a pretensed Membrane Strip** A. Drachinsky, D. Raveh, Technion-Israel Institute of Technology, Haifa, Israel	

Monday, 5 January 2015						
44-SD-3	**Vehicle/Component Dynamic Environment and Loads**					**Osceola Ballroom 6**
Chaired by: A. SCOTTI, Pilatus Aircraft Ltd and J. MCNAMARA, The Ohio State University						
0930 hrs AIAA-2015-0182 **Analytical Prediction and Test Correlation of Spacecraft Cavity Acoustic Environment** D. Inoyama, R. Agarwal, T. Stoumbos, Orbital Sciences Corporation, Dulles, VA	1000 hrs AIAA-2015-0183 **Integrated Flight Dynamics and Aeroelasticity of Flexible Aircraft with Application to Swept Flying Wings** R. Simpson, R. Palacios, Imperial College London, London, United Kingdom; P. Goulart, Swiss Federal Institute of Technology, Zürich, Switzerland	1030 hrs AIAA-2015-0184 **Static and Dynamic Buckling of a DAEDALOS Composite Panel Including Material Damping** M. Dalenbring, U. Falk, A. Zdunek, Swedish Defense Research Agency (FOI), Stockholm, Sweden; C. Bisagni, R. Vescovini, Technical University of Milan, Milan, Italy	1100 hrs AIAA-2015-0185 **Integrated Flexible Dynamic Maneuver Loads Models based on Aerodynamic Influence Coefficients of a 3D Panel Method** T. Kier, German Aerospace Center (DLR), Wessling, Germany	1130 hrs AIAA-2015-0186 **PyPAD: A Multidisciplinary Framework for Preliminary Airframe Design** L. Travaglini, S. Ricci, G. Bindolino, Technical University of Milan, Milan, Italy		

Monday, 5 January 2015						
45-SEN-1	**Information Fusion**					**Osceola Ballroom 1**
Chaired by: T. FREY, Lockheed Martin Aeronautics						
0930 hrs AIAA-2015-0187 **Increasing the Convergence Rate of the Extended Kalman Filter** M. Rhudy, Lafayette College, Easton, PA	1000 hrs AIAA-2015-0188 **Consensus based Heuristic Algorithm for Distributed Sensor Management** K. Neema, D. DeLaurentis, Purdue University, West Lafayette, IN	1030 hrs AIAA-2015-0189 **Multipath Routing and Sensor-Wireless Scheduling to Reduce Latency and Packet Loss over Tactical Wireless Networks** R. Tuggle, PeopleTec, Huntsville, AL	1100 hrs AIAA-2015-0190 **Autonomous Flight Path Planning for Traffic Monitoring in Wireless Sensor Networks** N. Jodeh, R. Cobb, Air Force Institute of Technology, Wright-Patterson AFB, OH	1130 hrs AIAA-2015-0191 **A Constrained Altruistic Method for Balancing Tracking Responsibility in a Distributed Fusion Network** T. Frey, Lockheed Martin Corporation, Fort Worth, TX		

Monday, 5 January 2015						
46-STR-1	**Special Sessions in Honor of Prof. Harry H. Hilton I**					**Sun Ballroom D**
Chaired by: C. BELDICA, University of Illinois-NCSA and R. SULLIVAN, Mississippi State University						
0930 hrs AIAA-2015-0192 **Creep Buckling of Viscoelastic Columns Modeled using Anelastic Displacement Fields** G. Lesieutre, Pennsylvania State University, University Park, PA	1000 hrs AIAA-2015-0193 **Time to Flutter of a Viscoelastic Goland Wing** C. Merrett, Carleton University, Ottawa, Canada	1030 hrs AIAA-2015-0194 **Large-Strain Viscoelastic Constitutive Models for Thin Polyethylene Films** J. Li, K. Kwok, S. Pellegrino, California Institute of Technology, Pasadena, CA	1100 hrs AIAA-2015-0195 **Generalized Unified Formulation Shell Element for Functionally Graded Variable-Stiffness Composite Laminates and Aeroelastic Applications** L. Demasi, Y. Ashenafi, R. Cavallaro, San Diego State University, San Diego, CA	1130 hrs AIAA-2015-0196 **Vibration Mitigation in Composite Plates using an Electromagnetic Field** D. Chernikov, P. Krokhmal, O. Zhupanska, University of Iowa, Iowa City, Iowa City, IA	1200 hrs AIAA-2015-0197 **Nonlinear Structural Analysis of a Icosahedron and Its Application to Lighter Than Air Vehicles Under an Internal Vacuum** A. Palazotto, Air Force Institute of Technology, Wright-Patterson AFB, OH	

Monday, 5 January 2015						
47-STR-2	**ICME for Structures**					**Tampa 1**
Chaired by: S. ENGELSTAD, Lockheed Martin Aeronautics; S. ARNOLD, University of Heidelberg, Germany and J. DUSTIN, GE-Aviation						
0930 hrs AIAA-2015-0198 **Integrated Computational Materials Engineering for Airframe Composite Structure Applications** S. Engelstad, R. Koon, J. Action, Lockheed Martin Corporation, Marietta, GA; J. Riga, Lockheed Martin Corporation, Cherry Hill, NJ; A. Waas, University of Michigan, Ann Arbor, Ann Arbor, MI; D. Robbins, AutoDesk, Inc., Laramie, WY; et al.	1000 hrs AIAA-2015-0199 **Recent Progress in Implementation of ICME for Metallic Materials in the Airframe Industry** R. Glamm, D. Rosenbladt, E. Pripstein, J. Cotton, The Boeing Company, Seattle, WA	1030 hrs AIAA-2015-0200 **Experiences With Materials Information Management Systems For ICME: The Importance Of Metadata** W. Marsden, S. Warde, E. Cope, D. Debon, Granta Design, Cambridge, United Kingdom	1100 hrs AIAA-2015-0201 **Structure Genome: Fill the Gap between Materials Genome and Structural Analysis** W. Yu, Purdue University, West Lafayette, IN	1130 hrs AIAA-2015-0202 **Microstructural Influence on Deformation and Fatigue Life of Composites Using the Generalized Method of Cells** S. Arnold, P. Murthy, B. Bednarcyk, E. Pineda, NASA Glenn Research Center, Cleveland, OH		

Monday, 5 January 2015						
48-STR-3	**Space Structures**					**Tallahassee 3**
Chaired by: J. DOMBER, Ball Aerospace & Technologies Corporation and A. CHATTOPADHYAY, Arizona State University						
0930 hrs AIAA-2015-0203 **A technique to evaluate on-orbit thermal deformation for large precise structures in ASTRO-H** T. Kawano, K. Ishimura, K. Minesugi, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; K. Omagari, NEC Corporation, Fuchu, Japan; K. Tanaka, Nippi Corporation, Yokohama, Japan	1000 hrs AIAA-2015-0204 **Finite Element Analysis of the Inflatable Re-Entry Vehicle Experiment (IRVE)** L. Li, K. Gonyea, R. Braun, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2015-0205 **MOIRE Strongback Thermal Stability Analysis and Test Results** D. Waller, J. Domber, Ball Aerospace & Technologies Corporation, Boulder, CO; B. Belnap, R. Rynders, ATK, Magna, UT; R. Schweickart, Ball Aerospace & Technologies Corporation, Boulder, CO	1100 hrs AIAA-2015-0206 **Design and Testing of Deployable Carbon Fiber Booms for CubeSat Non-Gossamer Applications** S. West, C. White, C. Celestino, S. Philpott, M. Pankow, North Carolina State University, Raleigh, NC	1130 hrs AIAA-2015-0207 **Blossoming of Coiled Deployable Booms** A. Hoskin, University of Surrey, Guildford, United Kingdom		

Monday, 5 January 2015						
49-TP-1	**Aerothermodynamics I**					**Sun Ballroom B**
Chaired by: M. BORG, Air Force Research Laboratory and T. SCHWARTZENTRUBER, University of Minnesota						
0930 hrs AIAA-2015-0208 **Aerothermal Environment and Thermal Response of Supersonic Inflatable Decelerators** S. Muppidi, ERC, Inc., Moffett Field, CA; R. Tanimoto, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; D. Bose, C. Tang, NASA Ames Research Center, Moffett Field, CA; I. Clark, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1000 hrs AIAA-2015-0209 **Boundary Layer Transition and Trip Effectiveness on an Apollo Capsule in the JAXA High Enthalpy Shock Tunnel (HIEST) Facility** L. Kirk, R. Lillard, NASA Johnson Space Center, Houston, TX; J. Olejniczak, NASA Ames Research Center, Moffett Field, CA; H. Tanno, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan	1030 hrs AIAA-2015-0210 **LES Computation of Turbulent Heat Flux on Reentry Capsule Afterbody with Forced Transition** T. Ishihara, Y. Ogino, N. Ohnishi, Tohoku University, Sendai, Japan; H. Tanno, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan	1100 hrs AIAA-2015-0211 **Numerical Investigation of Geometric Effects of Stardust Return Capsule Heat Shield** H. Weng, A. Martin, University of Kentucky, Lexington, Lexington, KY	1130 hrs AIAA-2015-0212 **Tangential Blowing to a Supersonic Flow on a Blunted Nose** I. Egorov, E. Vasilevskii, A. Novikov, I. Ezhov, TsAGI, Zhukovsky, Russia	1200 hrs AIAA-2015-0213 **NASA Langley Experimental Aerothermodynamic Contributions to Slender and Winged Hypersonic Vehicles** S. Berry, K. Berger, NASA Langley Research Center, Hampton, VA	

Monday, 5 January 2015						
50-WE-1	**Wind Energy Aerodynamics and Aeroacoustics I**					**Emerald 4**
Chaired by: M. CHURCHFIELD, National Renewable Energy Laboratory and A. MITTAL, The University of Tennessee at Chattanooga						
0930 hrs AIAA-2015-0214 **Modeling Wind Turbine Tower and Nacelle Effects within an Actuator Line Model** M. Churchfield, S. Lee, National Renewable Energy Laboratory, Golden, CO; S. Schmitz, Z. Wang, Pennsylvania State University, University Park, PA	1000 hrs AIAA-2015-0215 **Development and Validation of a New Blade Element Momentum Skewed-Wake Model within AeroDyn** A. Ning, Brigham Young University, Provo, UT; G. Hayman, R. Damiani, J. Jonkman, National Renewable Energy Laboratory, Golden, CO	1030 hrs AIAA-2015-0216 **Improvements to the Actuator Line Modeling for Wind Turbines** A. Mittal, K. Sreenivas, L. Taylor, L. Hereth, University of Tennessee, Chattanooga, Chattanooga, TN	1100 hrs AIAA-2015-0217 **Modeling and Simulation of a 3MW Wind Turbine Blade for Determination and Analysis of Flow Characteristics** A. Raina, K. Wetzel, Wetzel Engineering, Inc., Austin, TX; S. Farokhi, University of Kansas, Lawrence, Lawrence, KS	1130 hrs AIAA-2015-0218 **Validation of a High-Order Implicit LES Solver for the Simulation of a Low-Reynolds-Number Vertical-Axis Wind Turbine** S. Kanner, P. Persson, University of California, Berkeley, Berkeley, CA		

Monday, 5 January 2015						
51-WE-2	**Wind Farm and Turbine Wake Interactions I**					**Emerald 6**
Chaired by: J. BAKER, Frontier Wind and F. GRASSO, Energy Research Center of the Netherlands (ECN)						
0930 hrs AIAA-2015-0219 **Preliminary Field Test of the Wind Turbine Wake Imaging System** T. Herges, D. Maniaci, D. Bossert, R. Schmitt, B. Naughton, Sandia National Laboratories, Albuquerque, NM	1000 hrs AIAA-2015-0220 **A Study of Intensified Wake Deflection by Multiple Yawed Turbines based on Large Eddy Simulations** L. Luo, North Carolina State University, Raleigh, NC; N. Srivastava, P. Ramaprabhu, University of North Carolina, Charlotte, Charlotte, NC	1030 hrs AIAA-2015-0221 **System Identification of a Wind Turbine Array** J. Annoni, K. Howard, P. Seiler, M. Guala, University of Minnesota, Minneapolis, Minneapolis, MN	1100 hrs AIAA-2015-0222 **On the feasibility of using porous discs for wind tunnel simulations of wind farm power variation with turbine layout** R. Theunissen, C. Allen, University of Bristol, Bristol, United Kingdom; P. Housley, SSE Renewables, Bristol, United Kingdom	1130 hrs AIAA-2015-0223 **Turbulent mixing in wind turbine and actuator disc wakes: experiments and POD analysis** L. Lignarolo, D. Ragni, C. Simao Ferreira, G. van Bussel, Delft University of Technology, Delft, The Netherlands	1200 hrs AIAA-2015-0224 **Computational Simulation of the Interaction Between Tandem Wind Turbines with Offset** K. Sreenivas, A. Mittal, L. Hereth, L. Taylor, University of Tennessee, Chattanooga, Chattanooga, TN	

Monday, 5 January 2015						
52-SCS-1	**Spacecraft Booms and Trusses**					**Osceola Ballroom 4**
Chaired by: J. BLANDINO, Virginia Military Institute and J. HINKLE, ILC Dover						
1100 hrs AIAA-2015-0225 **Application of a Novel Long-Reach Manipulator Concept to Asteroid Redirect Missions** J. Dorsey, W. Doggett, T. Jones, NASA Langley Research Center, Hampton, VA; B. King, Northrop Grumman Corporation, Hampton, VA	1130 hrs AIAA-2015-0226 **Embedding High Performance Electrical Conductors in Space-Based Deployable Composite Structures** B. Davis, W. Francis, M. Hulse, P. Keller, D. Campbell, G. Freebury, Roccor, LLC, Louisville, CO	1200 hrs AIAA-2015-0227 **Simulation of Locking Space Truss Deployments** D. Van Dyne, A. Jennings, J. Black, Air Force Institute of Technology, Wright-Patterson AFB, OH				

Monday, 5 January 2015		
53-LUNCH-1 **1230 - 1400 hrs**	**Durand Lectureship and Public Policy Luncheon** **Making an Impact in Public Service**	**Osceola Ballroom CD**
Michael W. Wynne Former Secretary of the Air Force Senior Advisor to the President of The Stevens Institute		

Monday, 5 January 2015						
54-AA-2	**Jet Noise Measurements I**					**Miami 2**
Chaired by: K. AHUJA, Georgia Institute of Technology						
1400 hrs AIAA-2015-0228 **Turbulence Measurements of Rectangular Nozzles with Bevel** J. Bridges, M. Wernet, NASA Glenn Research Center, Cleveland, OH	1430 hrs AIAA-2015-0229 **An Empirical Jet-Surface Interaction Noise Model with Temperature and Nozzle Aspect Ratio Effects** C. Brown, NASA Glenn Research Center, Cleveland, OH	1500 hrs AIAA-2015-0230 **Characterization of a Supersonic Rectangular Jet over a Range of Test Conditions** G. Valentich, T. Davis, R. Kumar, F. Alvi, Florida State University, Tallahassee, FL; M. Alphonso, C. Harris, Northrop Grumman Corporation, Redondo Beach, CA	1530 hrs AIAA-2015-0231 **Noise Reduction in Supersonic Jets from Rectangular Convergent-Divergent Nozzles** R. Powers, D. McLaughlin, P. Morris, Pennsylvania State University, University Park, PA	1600 hrs AIAA-2015-0232 **Exploring Physics and Control of Twin Supersonic Circular Jets** J. Cluts, C. Kuo, M. Samimy, Ohio State University, Columbus, OH	1630 hrs AIAA-2015-0233 **Investigation of a Heated Supersonic Jet Chevrons Nozzle** P. Mora, J. Kastner, E. Gutmark, University of Cincinnati, Cincinnati, OH; K. Kailasanath, Naval Research Laboratory, Washington, DC	

Monday, 5 January 2015						
55-AFM-3	**AFM Best Student Paper Competition II**					**Captiva 1**
Chaired by: M. GRANT, Purdue University						
1400 hrs AIAA-2015-0234 **Black-box LTI modelling of flapping-wing micro aerial vehicle dynamics** S. Armanini, C. de Visser, G. de Croon, Delft University of Technology, Delft, The Netherlands	1430 hrs AIAA-2015-0235 **Aerodynamic Modeling and Optimization of Sideslip Perching Maneuver** M. Alikhan, T. Go, Florida Institute of Technology, Melbourne, FL					

Monday, 5 January 2015						
56-AFM-4	**Aircraft Flight Dynamics, Handling Qualities and Performance II**					**Captiva 2**
Chaired by: D. OWENS, NASA-Langley Research Center and M. COTTING, US Air Force Test Pilot School						
1400 hrs AIAA-2015-0236 **Subset Simulation for Estimating Small Failure Probabilities of an Aerial System Subject to Atmospheric Turbulences** D. Löbl, F. Holzapfel, Technical University of Munich, Garching, Germany	1430 hrs AIAA-2015-0237 **Symmetric Steady Flapping Flight of Bird-Scale Aircraft, Using Bifurcation and Continuation Method** A. Paranjape, McGill University, Montréal, Canada	1500 hrs AIAA-2015-0238 **Brain Control of Horizontal Airplane Motion - A Comparison of Two Approaches** T. Fricke, Technical University of Munich, Munich, Germany; V. Paixão, N. Loureiro, R. Costa, Champalimaud Center for the Unknown, Lisbon, Portugal; F. Holzapfel, Technical University of Munich, Munich, Germany	1530 hrs AIAA-2015-0239 **Exposing Unique Pilot Behaviors from Flight Test Data** D. Klyde, P. Schulze, P. Thompson, Systems Technology, Inc., Hawthorne, CA	1600 hrs AIAA-2015-0240 **Model Order Reduction for Control Design of Flexible Free-Flying Aircraft** N. Tantaroudas, University of Liverpool, Liverpool, United Kingdom; A. Da Ronch, University of Southampton, Southampton, United Kingdom; K. Badcock, University of Liverpool, Liverpool, United Kingdom; Y. Wang, R. Palacios, Imperial College London, London, United Kingdom	1630 hrs AIAA-2015-0241 **Improved Models for the Ground Handling Assessment of Navy Aircraft** D. Klyde, T. Myers, A. Lampton, Systems Technology, Inc., Hawthorne, CA; M. Draper-Donley, M. Bishop, Naval Air Systems Command, Patuxent River, MD	

Monday, 5 January 2015						
57-APA-5	**Aerodynamic Testing: Wind Tunnel & Flight Testing I**					**Destin 1**
Chaired by: G. GATLIN and J. LIN, NASA-Langley Research Center						
1400 hrs AIAA-2015-0242 **Unsteady Pressures on a Generic Capsule Shape** J. Ross, N. Burnside, NASA Ames Research Center, Moffett Field, CA	1430 hrs AIAA-2015-0243 **Investigation of the Unique Stability Characteristics of the NASA Maraia Reentry Vehicle** J. Hunt, C. Shannon, T. Yechout, U.S. Air Force Academy, Colorado Springs, CO	1500 hrs AIAA-2015-0244 **Aerodynamic Evaluation of a Capsule Shaped Projectile during Free Flight Testing with Ballistic Range** A. Ishida, H. Nagai, Tohoku University, Sendai, Japan; H. Tanno, T. Komuro, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan	1530 hrs AIAA-2015-0245 **Investigation of Model Scale on Wind Tunnel Measurements of Ship Air Loads and Air Wake** N. Rosenfeld, K. Kimmel, A. Sydney, Naval Surface Warfare Center, Bethesda, MD	1600 hrs AIAA-2015-0246 **Wind Tunnel Testing of Unconventional Airships Docking In-Flight and Conceptual Design of Docking Mechanism** A. Kaluvan, Imperial College London, London, United Kingdom; P. Marzocca, Clarkson University, Potsdam, NY; A. Ceruti, University of Bologna, Bologna, Italy; W. Lacarbonara, University of Rome "La Sapienza", Rome, Italy	1630 hrs AIAA-2015-0247 **Scaled Cascade Test in 6x6 Inch Flow Duct** J. Locke, Spirit AeroSystems, Inc., Wichita, KS	1700 hrs AIAA-2015-0248 **Evaluating an Experimental Streamlined Fairing for a Diverter Less Supersonic Inlet (DSI) Equipped Aircraft** J. Masud, O. Khan, Air University, Islamabad, Pakistan

Monday, 5 January 2015						
58-APA-6	**Aerodynamic-Structural Dynamics Interaction I**					**Destin 2**
Chaired by: J. AZEVEDO and L. UKEILEY, University of Florida						
1400 hrs AIAA-2015-0249 **Aeroelastic Response of a Finite Span NACA 0018 Wing Part 1: Experimental Measurements** J. Farnsworth, S. Corbett, J. Seidel, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1430 hrs AIAA-2015-0250 **Aeroelastic Response of a Finite Span NACA 0018 Wing Part 2: Computational Simulations** C. Fagley, J. Seidel, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1500 hrs AIAA-2015-0251 **Comprehensive Simulation Evaluation of the AGARD 445.6 Weakened Model #3 from a Test and Evaluation Perspective** J. Lechniak, K. Bhamidipati, D. Reasor, U.S. Air Force, Edwards AFB, CA; K. Margosian, California State University, Monterey Bay, CA; C. Pasiliao, U.S. Air Force, Eglin AFB, FL	1530 hrs AIAA-2015-0252 **On an innovative approach to account for gust aerodynamic non-linearities in an industrial context** D. Quero-Martin, German Aerospace Center (DLR), Göttingen, Germany; G. Jenaro-Rabadan, Airbus, Hamburg, Germany	1600 hrs AIAA-2015-0253 **Static Aeroelastic Predictions for Complex Aircraft Configurations with CFD/CSD Coupling Methodology** G. Wang, H. Mian, Northwestern Polytechnical University, Xi'an, China; X. Shan, J. Lee, Beijing Aeronautical Science and Technology Research Institute, Beijing, China	1630 hrs AIAA-2015-0254 **Aerodynamic Performance of Flexible Flapping Wings at Bumblebee Scale in Hover Flight** M. Sridhar, C. Kang, University of Alabama, Huntsville, Huntsville, AL	1700 hrs AIAA-2015-0255 **Fluid Structure Interaction on a Flexible Micro Air Vehicle** J. Chen, N. Qin, University of Sheffield, Sheffield, United Kingdom

Monday, 5 January 2015						
59-APA-7	**Unsteady Aerodynamics**					**Naples 1**
Chaired by: K. VANDEN, USAF and V. BHAGWANDIN, US Army Research Laboratory						
1400 hrs AIAA-2015-0256 **Numerical Investigation of the Aerodynamics of an Airfoil in Mutational Ground Effect** Q. Qu, P. Zuo, W. Wang, P. Liu, Beihang University, Beijing, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO	1430 hrs AIAA-2015-0257 **Propulsion Theory of Flapping Airfoils, Comparison with Computational Fluid Dynamics** D. Hunsaker, W. Phillips, Utah State University, Logan, UT	1500 hrs AIAA-2015-0258 **Implications of boundary layer establishment on convective heat transfer experiments** J. Saavedra, S. Lavagnoli, G. Paniagua, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1530 hrs AIAA-2015-0259 **An Attempt to Improve Prediction Capability of Transonic Buffet Using URANS** T. Izumi, Y. Ogino, K. Sawada, Tohoku University, Sendai, Japan	1600 hrs AIAA-2015-0260 **Reduced-Order Modeling of Continuous-Time State-Space Unsteady Aerodynamics** E. Gillebaart, R. De Breuker, Delft University of Technology, Delft, The Netherlands	1630 hrs AIAA-2015-0261 **Unsteady Force and Flow Features of Single and Tandem Wheels** S. Spagnolo, X. Zhang, Z. Hu, O. Stalnov, D. Angland, University of Southampton, Southampton, United Kingdom	

Monday, 5 January 2015						
60-APA-8	**Special Session: Aerodynamic Design Optimization of Benchmark Cases I**					**Naples 2**
Chaired by: S. NADARAJAH and S. LEDOUX, Boeing Engineering Operations & Technology						
1400 hrs Oral Presentation **A Study Based on the AIAA Aerodynamic Design Optimization Discussion Group Test Cases Using Adjoint Methods** A. Jameson, Stanford University, Stanford, CA; J. Vassberg, The Boeing Company, Long Beach, CA		1500 hrs AIAA-2015-0262 **Aerodynamic Shape Optimization of Benchmark Problems Using Jetstream** C. Lee, D. Koo, K. Telidetzki, H. Buckley, H. Gagnon, T. Reist, University of Toronto, Toronto, Canada; et al.	1530 hrs AIAA-2015-0263 **Gradient-Based Single and Multi-points Aerodynamic Optimizations with the elsA Software** M. Meheut, D. Destarac, S. Ben Khelil, G. Carrier, A. Dumont, J. Peter, ONERA, Meudon, France	1600 hrs AIAA-2015-0264 **Multipoint Aerodynamic Shape Optimization Investigations of the Common Research Model Wing** G. Kenway, D. Burdette, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1630 hrs AIAA-2015-0265 **Application of Physics-Based Surrogate Models to Benchmark Aerodynamic Shape Optimization Problems** L. Leifsson, S. Koziel, Y. Tesfahunegn, Reykjavik University, Reykjavik, Iceland; S. Hosder, J. Gramanzini, Missouri University of Science and Technology, Rolla, MO	

Monday, 5 January 2015						
61-AS-1	**Aerodynamics of Adaptive Structures**					**Osceola Ballroom 6**
Chaired by: I. CHOPRA, University of Maryland and M. BALAS, Embry-Riddle Aeronautical University						
1400 hrs AIAA-2015-0266 **Adaptive Vortex Generator Structures for the Reduction of Turbulent Separation** M. Garland, M. Santer, J. Morrison, Imperial College London, London, United Kingdom	1430 hrs AIAA-2015-0267 **Electro-aeromechanical modelling and feedback control of actuated membrane wings** S. Buoso, R. Palacios, Imperial College London, London, United Kingdom	1500 hrs AIAA-2015-0268 **A framework for the aeroelastic analysis and design of generic morphing wings** N. Werter, R. De Breuker, Delft University of Technology, Delft, The Netherlands	1530 hrs AIAA-2015-0269 **Numerical and experimental investigation of aero-structural characteristics and performance of distributed compliance morphing wings** G. Molinari, A. Arrieta, P. Ermanni, Swiss Federal Institute of Technology, Zürich, Switzerland	1600 hrs AIAA-2015-0270 **Adaptive Kagome Lattices for Near Wall Turbulence Suppression** J. Bird, M. Santer, J. Morrison, Imperial College London, London, United Kingdom	1630 hrs AIAA-2015-0271 **Aerodynamic Characterization of a Continuous Trailing Edge Flap Design** T. Mapes, M. Agate, NASA Langley Research Center, Hampton, VA	1700 hrs AIAA-2015-0272 **Unsteady aerodynamic optimization of the camber of a morphing airfoil for rotorcraft blades** A. Cortesi, F. Fusi, G. Quaranta, Technical University of Milan, Milan, Italy

Monday, 5 January 2015						
62-FD-7	**Boundary Layer Transition: Roughness and 3D Flow Effects**					**Tallahassee 1**
Chaired by: B. WHEATON, The Johns Hopkins University Applied Physics Laboratory and K. CASPER, Sandia National Laboratories						
1400 hrs AIAA-2015-0273 **The Interaction of a Backward-Facing Step and Crossflow Instabilities in Boundary-Layer Transition** J. Eppink, NASA Langley Research Center, Hampton, VA; R. Wlezien, Iowa State University, Ames, IA; R. King, M. Choudhari, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2015-0274 **Direct Numerical Simulation of Roughness-Induced Transition in the VKI Mach 6 Tunnel** R. Chaudhry, P. Subbareddy, I. Nompelis, G. Candler, University of Minnesota, Minneapolis, Minneapolis, MN	1500 hrs AIAA-2015-0275 **A Study of the Impact of Wide-Range Roughness Elements on Gortler Instabilities** A. Sescu, R. Pendyala, J. Haywood, Mississippi State University, Mississippi State, MS; M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2015-0276 **Pressure Gradient Effect on Boundary Layers over Surface Excrescences: Parametric Study** J. Haywood, A. Sescu, Mississippi State University, Mississippi State, MS; M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2015-0277 **Experimental Investigation of the Effect of Wall Suction on Cross-Flow Absolute Instability in a Rotating Disk Boundary Layer** J. Ho, T. Corke, E. Matlis, University of Notre Dame, Notre Dame, IN	1630 hrs AIAA-2015-0278 **Freestream Effects on Boundary Layer Disturbances for HIFiRE-5** M. Borg, R. Kimmel, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Hofferth, R. Bowersox, Texas A&M University, College Station, TX; C. Mai, United States Air Force, Eglin AFB, FL	1700 hrs AIAA-2015-0279 **Analysis of Crossflow Instability on HIFiRE-5 using Direct Numerical Simulation** D. Dinzl, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN

Monday, 5 January 2015						
63-FD-8	**CFD Methods II**					**Sanibel 1**
Chaired by: H. LUO, Vanderbilt University and R. DAVIS, University of California Davis						
1400 hrs AIAA-2015-0280 **Computation of the Tangent-Linear Solution for LCO-Converged Nonlinear Flows** S. Xu, J. Hückelheim, M. Gugala, J. Müller, Queen Mary University of London, London, United Kingdom	1430 hrs AIAA-2015-0281 **Structural Dynamics Solution Procedure for Multi-Discipline Fluid/Structure/Thermal Simulation** J. Zorn, R. Davis, University of California, Davis, Davis, CA	1500 hrs AIAA-2015-0282 **hp-adaptive time integration for ALE simulation of Fluid-Structure Interaction problems** A. Hay, S. Etienne, D. Pelletier, A. Garon, École Polytechnique de Montréal, Montréal, Canada	1530 hrs AIAA-2015-0283 **A Tensor Decomposition Method for High Dimensional Fokker-Planck Equation Modeling Polymeric Liquids** Y. Sun, M. Kumar, University of Florida, Gainesville, Gainesville, FL	1600 hrs AIAA-2015-0284 **Comparison of Artificial Dissipation and Filtering Schemes for Time-Accurate Simulations** A. Edoh, A. Karagozian, University of California, Los Angeles, Los Angeles, CA; C. Merkle, Purdue University, West Lafayette, IN	1630 hrs AIAA-2015-0285 **On The Extension of SLAU Scheme to Compressible Two-Fluid Models** Z. Hosseinzadeh-Nik, J. Regele, A. Passalaqua, Iowa State University, Ames, IA	1700 hrs AIAA-2015-0286 **CFD for prediction of flow separation on aircraft tail surfaces** A. Masi, University of Cambridge, Cambridge, United Kingdom; J. Benton, Airbus, Bristol, United Kingdom; P. Tucker, University of Cambridge, Cambridge, United Kingdom

Monday, 5 January 2015						
64-FD-9	**Experimental and Numerical Investigations of Blunt Leading Edge Separation for a 53 Degree Swept Diamond Wing (STO AVT-183) II (Invited)**					**Sanibel 2**
Chaired by: A. RIZZI, KTH Royal Institute Technology and J. LUCKRING, NASA-Langley Research Center						
1400 hrs AIAA-2015-0287 **Applicability of Hybrid RANS/LES Models in Predicting Separation Onset of the AVT-183 Diamond Wing** D. Reasor, 412th Test Wing, Edwards AFB, CA; D. Malloy, Arnold Engineering Development Complex, Arnold AFB, TN; D. Daniel, Aerospace Testing Alliance, Arnold AFB, TN	1430 hrs AIAA-2015-0288 **Numerical Analysis of Incipient Separation on 53-Deg Swept Diamond Wing** N. Frink, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2015-0289 **Vortex Development on the AVT-183 Diamond Wing Configuration - Numerical and Experimental Findings** S. Hitzel, Airbus, Manching, Germany; O. Boelens, National Aerospace Laboratory (NLR), Amsterdam, The Netherlands; A. Hövelmann, Technical University of Munich, Garching, Germany	1530 hrs AIAA-2015-0290 **Numerical study of blunt leading edge separation on a 53 degree swept diamond wing (STO AVT-183) using the Edge and Cobalt flow solvers** H. Edefur, M. Tormalm, Swedish Defense Research Agency (FOI), Stockholm, Sweden; R. Nangia, Self, Bristol, United Kingdom	1600 hrs AIAA-2015-0291 **CFD Study of Vortex Separation Phenomena on Blunt Diamond Wing** M. Tomac, A. Rizzi, Royal Institute of Technology (KTH), Stockholm, Sweden	1630 hrs AIAA-2015-0292 **Vortical Flow Prediction of the AVT-183 Diamond Wing** M. Ghoreyshi, K. Ryszka, R. Cummings, A. Lofthouse, U.S. Air Force Academy, Colorado Springs, CO	

Monday, 5 January 2015						
65-FD-10	**High-Order Methods I**					**Daytona 1**
Chaired by: C. LIANG, George Washington University and X. GAO, Colorado State Univ						
1400 hrs AIAA-2015-0293 **Results and Conclusions of the European Project IDIHOM on High-Order Methods for Industrial Aerodynamic Applications** N. Kroll, T. Leicht, C. Hirsch, F. Bassi, C. Johnston, K. Sorensen, German Aerospace Center (DLR), Braunschweig, Germany; et al.	1430 hrs AIAA-2015-0294 **Higher-Order Methods for Compressible Turbulent Flows Using Entropy Variables** L. Diosady, S. Murman, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2015-0295 **Implementation of Turbulence Models to High-Order Spectral Difference Method** H. Fan, J. Gao, Beihang University, Beijing, China	1530 hrs AIAA-2015-0296 **Hybrid Spectral Difference/ Embedded MPWENO Method for Conservation Laws** J. Choi, University of Maryland, College Park, College Park, MD	1600 hrs AIAA-2015-0297 **A High-Order Finite-Volume Method for Compressible Flows on Moving Tetrahedral Grids** M. Charest, T. Canfield, N. Morgan, J. Waltz, J. Wohlbier, Los Alamos National Laboratory, Los Alamos, NM	1630 hrs AIAA-2015-0298 **A Fourth-Order Scheme for the Compressible Navier-Stokes Equations** X. Gao, S. Guzik, Colorado State University, Fort Collins, CO	

Monday, 5 January 2015						
66-FD-11	**Jet Flows and Control**					**Daytona 2**
Chaired by: D. GAITONDE, The Ohio State University and C. PASCHEREIT, Technical University of Berlin						
1400 hrs AIAA-2015-0299 **Active Control of Mach 0.9 Jet Using High Frequency Excitation** P. Upadhyay, T. Davis, F. Alvi, Florida State University, Tallahassee, FL	1430 hrs AIAA-2015-0300 **LES Simulation of Forced High-Speed Jet** J. Kim, BOOLTS Simulation Systems, Seoul, South Korea	1500 hrs AIAA-2015-0301 **Contrasting Modal Decompositions of Flow Fields with & without Control** D. Gonzalez, Naval Surface Warfare Center, Indian Head, MD; A. Mohan, D. Gaitonde, Ohio State University, Columbus, OH; M. Lewis, Science and Technology Policy Institute, Washington, DC	1530 hrs AIAA-2015-0302 **The influence of the inner shear layer on the suppression of the global mode in heated swirling jets** L. Rukes, M. Sieber, K. Oberleithner, C. Nayeri, C. Paschereit, Technical University of Berlin, Berlin, Germany	1600 hrs AIAA-2015-0303 **Effects of Shear Layer Manipulation on Noise Emissions of a Turbulent Jet Flame** H. Nawroth, C. Paschereit, Technical University of Berlin, Berlin, Germany	1630 hrs AIAA-2015-0304 **Measurement and Prediction of Hot Streak Profiles Generated by Axially Opposed Dilution Jets** R. Prenter, A. Ameri, J. Bons, Ohio State University, Columbus, OH	

Monday, 5 January 2015						
67-FD-12/PDL-1	**Plasma Flow Control**					**Sun Ballroom A**
Chaired by: D. RIZZETTA, USAF and T. MCLAUGHLIN, US Air Force Academy						
1400 hrs AIAA-2015-0305 **Plasma-Based Control of Transition on a Wing with Leading-Edge Excrescence** D. Rizzetta, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2015-0306 **Numerical Investigation on the Efficiency of a Plasma Actuator for Turbine Applications** G. Bell, H. Ogawa, S. Watkins, RMIT University, Melbourne, Australia	1500 hrs AIAA-2015-0307 **Design Exploration of a DBD Plasma Actuator for Massive Separation Control** T. Watanabe, H. Aono, T. Tatsukawa, T. Nonomura, A. Oyama, K. Fujii, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1530 hrs AIAA-2015-0308 **LES of Separated-flow Controlled by DBD Plasma Actuator around NACA 0015 over Reynolds Number Range of 10^4-10^6** M. Sato, Japan Aerospace Exploration Agency (JAXA), Kanagawa, Japan; K. Okada, Ryoyu Systems Company, Ltd., Nagoya, Japan; H. Aono, Japan Aerospace Exploration Agency (JAXA), Kanagawa, Japan; K. Asada, University of Tokyo, Kanagawa, Japan; A. Yakeno, T. Nonomura, Japan Aerospace Exploration Agency (JAXA), Kanagawa, Japan; et al.	1600 hrs AIAA-2015-0309 **Parametric investigation on plasma streamwise vortex generators with flow around the bluff body** J. Yoon, J. Han, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1630 hrs AIAA-2015-0310 **Active flow control by means of MHD plasma actuator on a NACA 23012 Airfoil Model** I. Moralev, V. Bityurin, A. Klimov, P. Kazanskiy, Russian Academy of Sciences, Moscow, Russia	

Monday, 5 January 2015						
68-FD-13	**RANS/LES Applications**					**Sanibel 3**
Chaired by: N. GEORGIADIS, NASA Glenn Research Center and J. AHMAD, NASA						
1400 hrs AIAA-2015-0311 **RANS and LES/RANS Simulations of Flow Over an Dynamically Pitching Naca0012 Airfoil** J. Ke, J. Edwards, North Carolina State University, Raleigh, NC	1430 hrs AIAA-2015-0312 **Use of Symbolic Regression for construction of Reynolds-stress damping functions for Hybrid RANS/LES** J. Weatheritt, R. Sandberg, University of Southampton, Southampton, United Kingdom	1500 hrs AIAA-2015-0313 **OpenFOAM Simulations of Atmospheric-Entry Capsules in the Subsonic Regime** B. Nikaido, Science and Technology Corporation, Moffett Field, CA; S. Murman, J. Garcia, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2015-0314 **Evaluation of Industry Standard Turbulence Models on an Axisymmetric Supersonic Compression Corner** J. DeBonis, NASA Glenn Research Center, Cleveland, OH	1600 hrs AIAA-2015-0315 **Flow Past Tandem Circular Cylinders at High Reynolds Numbers using Overset Grids in OpenFOAM** H. Gopalan, Union College, Schenectady, NY; R. Jaiman, National University of Singapore, Singapore, Singapore; D. Chandar, Agency for Science, Technology and Research, Singapore, Singapore	1630 hrs AIAA-2015-0316 **Revisiting Turbulence Model Validation for High-Mach Number Axisymmetric Compression Corner Flows** N. Georgiadis, NASA Glenn Research Center, Cleveland, OH; C. Rumsey, NASA Langley Research Center, Hampton, VA; G. Huang, Wright State University, Dayton, OH	1700 hrs AIAA-2015-0317 **Numerical Accuracy in RANS Computations of High-Lift Multi-element Airfoil and Aicraft Configurations** D. Drikakis, P. Tsoutsanis, A. Antoniadis, Cranfield University, Cranfield, United Kingdom

Monday, 5 January 2015						
69-GEPC-2	**Status/Progress of Environmentally Responsible Aviation Project**					**Sun Ballroom C**
Chaired by: F. COLLIER, NASA-Langley Research Center and G. BEZOS O'CONNOR, NASA Langley Research Center						
1400 hrs Oral Presentation **Status of ERA Airframe Technology Demonstrators** P. Davis, D. Jegley, NASA Langley Research Center, Hampton, VA; T. Rigney, NASA Armstrong Flight Research Center, Edwards, CA	1430 hrs Oral Presentation **Environmentally Responsible Aviation: Status of Propulsion Technology Demonstrators** K. Suder, D. Van Zante, M. Celestina, C. Hughes, C. Lee, NASA Glenn Research Center, Cleveland, OH	1500 hrs Oral Presentation **Status of ERA Vehicle System Integration Technology Demonstrators** J. Flamm, H. Fernandez, M. Khorrami, NASA Langley Research Center, Hampton, VA; K. James, NASA Ames Research Center, Moffett Field, CA; R. Thomas, NASA Langley Research Center, Hampton, VA	1530 hrs Oral Presentation **Assessment of System Level Technical Performance and Impact of NASA's Environmentally Responsible Aviation (ERA) Project's Integrated Technology Demonstrations (ITDs)** C. Nickol, NASA Langley Research Center, Hampton, VA	1600 hrs Panel Discussion		

Monday, 5 January 2015						
70-GNC-6	**Aerospace Robotics and Autonomous/Unmanned Systems II**					**Sun Ballroom 3**
Chaired by: J. SASIADEK, Carleton University and D. PEREZ						
1400 hrs AIAA-2015-0318 **CubeSat Autonomous Rendezvous Simulation** E. Lightsey, A. Fear, University of Texas, Austin, Austin, TX	1430 hrs AIAA-2015-0319 **Optimal Power Descent Guidance with 6-DoF Line of Sight Constraints via Unit Dual Quaternions** U. Lee, M. Mesbahi, University of Washington, Seattle, Seattle, WA	1500 hrs AIAA-2015-0320 **Dynamics and Control of Flexible Manipulators Using Variable-Speed Control Moment Gyros** Q. Hu, Beijing Institute of Technology, Beijing, China; Z. Wang, Beihang University, Beijing, China; J. Zhang, Beijing Institute of Technology, Beijing, China	1530 hrs AIAA-2015-0321 **Long-range Navigation using Solar Panels Characteristics and Angle-of-Arrival for Planetary Rover Cooperating with Landers** T. Ishida, M. Takahashi, Keio University, Yokohama, Japan	1600 hrs AIAA-2015-0322 **Methods for Modeling Tensegrity Dynamics in LEO** M. Rye, C. Sultan, Virginia Polytechnic Institute and State University, Blacksburg, VA	1630 hrs AIAA-2015-0323 **M-MRAC for SPHERES** V. Stepanyan, University of California, Santa Cruz, Santa Cruz, CA; J. Barlow, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; K. Krishnakumar, NASA Ames Research Center, Moffett Field, CA	

Monday, 5 January 2015							
71-GNC-7	**Lander Technology Development at NASA I**						**Miami 1**
Chaired by: J. CARSON, NASA Jet Propulsion Laboratory and E. ROBERTSON, NASA Johnson Space Center							
1400 hrs AIAA-2015-0324 **Developing Autonomous Precision Landing and Hazard Avoidance Technology from Concepts through Terrestrially Flight-Tested Prototypes** C. Epp, E. Robertson, J. Carson, NASA Johnson Space Center, Houston, TX	1430 hrs AIAA-2015-0325 **Interfacing and Verifying ALHAT Safe Precision Landing Systems with the Morpheus Vehicle** J. Carson, R. Hirsh, J. Busa, NASA Johnson Space Center, Houston, TX; C. Villalpando, K. Martin, N. Trawny, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; et al.	1500 hrs AIAA-2015-0326 **Flight testing a Real-Time Hazard Detection System for Safe Lunar Landing on the Rocket-Powered Morpheus Vehicle** N. Trawny, A. Huertas, M. Luna, C. Villalpando, K. Martin, J. Carson, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; et al.	1530 hrs AIAA-2015-0327 **Simulations of the Hazard Detection System for Approach Trajectories of the Morpheus Lunar Lander** M. Luna, A. Huertas, N. Trawny, C. Villalpando, K. Martin, W. Wilson, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; et al.	1600 hrs AIAA-2015-0328 **Lidar Sensor Performance in Closed-Loop Flight Testing of the Morpheus Rocket-Propelled Lander to a Lunar-Like Hazard Field** V. Roback, NASA Langley Research Center, Hampton, VA; D. Pierrottet, Coherent Applications, Inc., Hampton, VA; F. Amzajerdian, B. Barnes, NASA Langley Research Center, Hampton, VA; A. Bulyshev, Analytical Mechanics Associates, Inc., Hampton, VA; G. Hines, NASA Langley Research Center, Hampton, VA; et al.	1630 hrs AIAA-2015-0329 **Advancing Lidar Sensors Technologies for Next Generation Landing Missions** F. Amzajerdian, NASA Langley Research Center, Hampton, VA; D. Pierrottet, Coherent Applications, Inc., Hampton, VA; G. Hines, V. Roback, L. Petway, B. Barnes, NASA Langley Research Center, Hampton, VA; et al.	1700 hrs AIAA-2015-0330 **Morpheus Lander Roll Control System and Wind Modeling** E. Gambone, NASA Johnson Space Center, Houston, TX

Monday, 5 January 2015						
72-GNC-8	**GNC Sensor Systems II**					**Sun Ballroom 4**
Chaired by: S. STARIN, NASA-Goddard Space Flight Center and T. LIM, US Naval Academy						
1400 hrs AIAA-2015-0331 **A New Method for Calibrating an Angular Accelerometer Using a High-Precision Calibration Table** D. Jatiningrum, P. Lu, C. de Visser, Q. Chu, M. Mulder, Delft University of Technology, Delft, The Netherlands	1430 hrs AIAA-2015-0332 **Design and Development of a Laser Fine Pointing Sensor** F. Ales, P. Gath, U. Johann, Airbus, Friedrichshafen, Germany; O. Mandel, Karlsruhe Institute of Technology, Karlsruhe, Germany; C. Braxmaier, University of Bremen, Bremen, Germany	1500 hrs AIAA-2015-0333 **Feature Detection for Pose Estimation** T. Lim, M. ODowd, P. Ramos, U.S. Naval Academy, Annapolis, MD	1530 hrs AIAA-2015-0334 **Tool for Optimizing Star Tracker and IMU Configuration** E. Hariton, A. Swank, NASA Glenn Research Center, Cleveland, OH	1600 hrs AIAA-2015-0335 **Improvement of Infrared Horizon Detector Using Two-dimensional Infrared Temperature Distribution Model** L. Xu, H. Chen, Tsinghua University, Beijing, China	1630 hrs AIAA-2015-0336 **LIRIS demonstrator on ATV5: a step beyond for European non cooperative navigation system** B. Cavrois, A. Vergnol, A. Donnard, P. Casiez, Airbus Defence and Space, Les Mureaux, France; O. Mongrard, ESA, Noordwijk, The Netherlands	

Monday, 5 January 2015						
73-GNC-9	**Missile Guidance II**					**Sun Ballroom 6**
Chaired by: M. IDAN, Technion - Israel Institute of Technology and A. VANDERWYST, Raytheon Missile Systems						
1400 hrs AIAA-2015-0337 **Cooperative Aircraft Defense from an Attacking Missile using Proportional Navigation** E. Garcia, D. Casbeer, Air Force Research Laboratory, Wright-Patterson AFB, OH; K. Pham, Air Force Research Laboratory, Kirtland AFB, NM; M. Pachter, Air Force Institute of Technology, Wright-Patterson AFB, OH	1430 hrs AIAA-2015-0338 **Bounded Differential Game Guidance Law with Dual Control Systems for Agile Missiles** D. Taur, Chungshan Institute of Science and Technology, Taipei, Taiwan	1500 hrs AIAA-2015-0339 **Lateral Interception of Maneuvering Targets Using Dubins Paths** G. Akhil. Ratnoo, D. Ghose, Indian Institute of Science, Bangalore, India	1530 hrs AIAA-2015-0340 **Optimal Paths for Lateral Interception of Moving Targets using a Dubins Approach** G. Akhil, A. Ratnoo, D. Ghose, Indian Institute of Science, Bangalore, India	1600 hrs AIAA-2015-0341 **An SDRE Based Differential Game Approach for Maneuvering Target Interception** R. Bardhan, D. Ghose, Indian Institute of Science, Bangalore, India		

Monday, 5 January 2015						
74-GNC-10	**Novel Navigation, Estimation, and Tracking Methods II**					**Sun Ballroom 5**
Chaired by: N. AHMED, CNRS & Université Paris-Sud and M. KUMAR, University of Florida						
1400 hrs AIAA-2015-0342 **Automated 3D Digital Reconstruction of Fiber Reinforced Polymer Composites** W. Whitacre, Draper Laboratory, Cambridge, MA; M. Czabaj, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2015-0343 **A Novel IEG Strategy for Realistically Modeled Seeker-less Interceptors** S. Gour, D. Ghose, Indian Institute of Science, Bangalore, India; V. Aki, Defence Research & Development Organisation, Bangalore, India	1500 hrs AIAA-2015-0344 **Line of Sight Rate Estimation for Guided Projectiles with Strapdown Seekers** J. Maley, Army Research Laboratory, Aberdeen Proving Ground, MD	1530 hrs AIAA-2015-0345 **Calibration of Atmospheric Density Model Using Orbital Data of Multiple Satellites** Y. Ren, J. Shan, York University, Toronto, Canada	1600 hrs AIAA-2015-0346 **Position Based Visual Servoing in an Indoor Simulation Platform** H. Zhu, H. Liu, University of Toronto, Toronto, Canada	1630 hrs AIAA-2015-0347 **Multiple UAV Target Tracking Using Consensus-Based Distributed High Degree Cubature Information Filter** T. Sun, M. Xin, University of Missouri, Columbia, Columbia, MO	

Monday, 5 January 2015						
75-GTE-2	**Film Cooling**					**Emerald 1**
Chaired by: S. SUBRAMANIAN, QuEST Global, Inc.						
1400 hrs AIAA-2015-0348 **Development of Novel Internal Cooling Geometry for Gas Turbine Blades** I. Ranade, E. Guillen, D. Bystry-Wells, J. Gutierrez, Y. Mehta, A. Dias dos Santos, Embry-Riddle Aeronautical University, Daytona Beach, FL; et al.	1430 hrs AIAA-2015-0349 **Experimental and Numerical Study of Deposition in Pin Fin Arrays with Impingement Cooling Jets** D. Zagnoli, R. Prenter, A. Ameri, J. Bons, Ohio State University, Columbus, OH	1500 hrs AIAA-2015-0350 **Effects of Hole Configuration, Surface Curvature, and Mach Number on Film Cooling in Fuel Rich Environments** A. Lynch, A. Shewhart, M. Polanka, J. Rutledge, Air Force Institute of Technology, Wright-Patterson AFB, OH	1530 hrs AIAA-2015-0351 **Rib Shape Effects on Heat Transfer Performance in Internal Cooling Passages** Y. Dai, J. Tyacke, P. Tucker, University of Cambridge, Cambridge, United Kingdom	1600 hrs AIAA-2015-0352 **An Experimental Study of Compressibility Effects on the Film Cooling Effectiveness Using PSP and PIV Techniques** H. Hu, W. Zhou, B. Johnson, Iowa State University, Ames, IA		

Monday, 5 January 2015						
76-HSABP-2	**Premixed High Speed Combustion (Invited)**					**Emerald 8**
Chaired by: J. MCDANIEL, University of Virginia and C. GOYNE, University of Virginia						
1400 hrs AIAA-2015-0353 **Development of a Premixed Combustion Capability for Dual-Mode Scramjet Experiments (Invited)** R. Rockwell, C. Goyne, H. Chelliah, J. McDaniel, University of Virginia, Charlottesville, Charlottesville, VA; J. Edwards, North Carolina State University, Raleigh, NC; A. Cutler, George Washington University, Hampton, VA; et al.	1430 hrs Oral Presentation **Thermal and Chemical Kinetic Analysis of a High-speed Reacting Flow in a Variable Area Duct (Invited)** M. Rahimi, H. Chelliah, University of Virginia, Charlottesville, Charlottesville, VA	1500 hrs AIAA-2015-0354 **Nitric Oxide PLIF Visualization of Simulated Fuel-Air Mixing in a Dual-Mode Scramjet (Invited)** L. Cantu, E. Gallo, A. Cutler, George Washington University, Hampton, VA; B. Bathel, P. Danehy, NASA Langley Research Center, Hampton, VA; R. Rockwell, University of Virginia, Charlottesville, Charlottesville, VA; et al.	1530 hrs Oral Presentation **Coherent Anti-Stokes Raman Spectroscopy (CARS) in a Dual-Mode Scramjet with Premixed Fueling (Invited)** E. Gallo, L. Cantu, A. Cutler, George Washington University, Hampton, VA; P. Danehy, NASA Langley Research Center, Hampton, VA; R. Rockwell, C. Goyne, University of Virginia, Charlottesville, Charlottesville, VA; et al.	1600 hrs AIAA-2015-0355 **Velocimetry Using Graphite Tracer Particles in a Scramjet Flowpath (Invited)** J. Kirik, C. Goyne, J. McDaniel, R. Rockwell, R. Johnson, H. Chelliah, University of Virginia, Charlottesville, Charlottesville, VA	1630 hrs AIAA-2015-0356 **Large Eddy Simulation of High-Speed, Premixed Ethylene Combustion (Invited)** K. Ramesh, J. Edwards, North Carolina State University, Raleigh, NC; C. Goyne, J. McDaniel, University of Virginia, Charlottesville, Charlottesville, VA	1700 hrs AIAA-2015-0357 **Direct Measurement of Combustion Efficiency of a Dual-Mode Scramjet via TDLAT and SPIV (Invited)** K. Busa, B. Rice, J. McDaniel, C. Goyne, R. Rockwell, University of Virginia, Charlottesville, Charlottesville, VA; J. Edwards, North Carolina State University, Raleigh, NC

Monday, 5 January 2015						
77-IS-3	**Intelligent Collaborative Control of Multi-Agent Systems**					**Osceola Ballroom 2**
Chaired by: K. KOCHERSBERGER, Virginia Polytechnic Institute and State University and A. YUCEL, Lockheed Martin Aeronautics						
1400 hrs AIAA-2015-0358 **Decentralized Message Passing for Minimum Sensor Cover Based on Belief Propagation** D. Jang, H. Choi, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1430 hrs AIAA-2015-0359 **Coordinating Groups of Sensing Platforms in Dynamic, Uncertain Environments** I. Sledge, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1500 hrs AIAA-2015-0360 **Sensor Resource Management to Support UAS Integration into the National Airspace System** N. Hanlon, K. Cohen, E. Kivelevitch, University of Cincinnati, Cincinnati, OH	1530 hrs AIAA-2015-0361 **An Intelligent, Heuristic Path Planner for Multiple Agent Unmanned Air Systems** C. Crispin, A. Sobester, University of Southampton, Southampton, United Kingdom	1600 hrs AIAA-2015-0362 **Intelligent Water Drops Algorithm for Coordinating Activities Between Cluster Spacecraft in a Communications-Denied Environment** J. Straub, University of North Dakota, Grand Forks, Grand Forks, ND		

Monday, 5 January 2015						
78-IS-4	**Making Aerospace Operations Intelligent**					**Osceola Ballroom 1**
Chaired by: C. BOWMAN, Novira Therapeutics						
1400 hrs AIAA-2015-0363 **Surveillance for Intelligent Emergency Response Robotic Aircraft (SIERRA)-VTOL Aircraft for Emergency Response** B. Brown, W. Wei, University of Cincinnati, Cincinnati, OH; R. Ozburn, West Virginia Division of Forestry, Farmington, WV; M. Kumar, University of Toledo, Toledo, OH; K. Cohen, University of Cincinnati, Cincinnati, OH	1430 hrs AIAA-2015-0364 **Multiobjective Design Exploration of a Many-objective Space Trajectory Problem for Low-Thrust Spacecraft Using MOEA with Large Populations** T. Tatsukawa, T. Watanabe, A. Oyama, K. Fujii, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1500 hrs AIAA-2015-0365 **Abnormal Orbital Event Detection, Characterization, and Prediction** C. Bowman, Data Fusion & Neural Networks, Broomfield, CO	1530 hrs AIAA-2015-0366 **GPS Scintillation Outage Prediction** C. Bowman, Data Fusion & Neural Networks, Broomfield, CO	1600 hrs AIAA-2015-0367 **Helicopter Mission Assignment in Disaster Relief Based on Particle Swarm Optimization** A. Andreeva-Mori, K. Kobayashi, M. Shindo, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1630 hrs AIAA-2015-0368 **A Scented Receding Horizon Approach to the Mars Surveyor Competition** S. Higgins, A. Stubblebine, T. Deshpande, E. Kivelevitch, University of Cincinnati, Cincinnati, OH	1700 hrs AIAA-2015-0369 **A Cascading Fuzzy Logic Controller to the Mars Surveyor Competition** A. Stubblebine, S. Higgins, T. Deshpande, E. Kivelevitch, University of Cincinnati, Cincinnati, OH

Monday, 5 January 2015						
79-ISC-2	**International Student Conference (Masters Category)**					**St. George 112**
Chaired by: J. CORBETS						
1400 hrs AIAA-2015-0370 **Characterization of Rotor Wake in Ground Effect** G. Perrotta, University of Maryland, College Park, College Park, MD	1430 hrs AIAA-2015-0371 **Comparison of Numerical Methods to Determine the Effect of Non-Equilibrium in Flows from the Laminar to Turbulent Regime** R. Bosworth, University of Colorado, Colorado Springs, Colorado Springs, CO	1500 hrs AIAA-2015-0372 **Complex Lamellar Helical Solution for Cyclonically Driven Hybrid Rocket Engines** J. Fleischmann, J. Majdalani, Auburn University, Auburn, AL	1530 hrs AIAA-2015-0373 **Particle In Cell (PIC) Algorithm Advancement for Plasma Modelling of an Ion Thruster Discharge Chamber** T. Godar, J. Menart, Wright State University, Dayton, OH	1600 hrs AIAA-2015-0374 **Aerial Deployed Unfolding Autonomous Glider System** A. Smith, University of Nevada, Reno, Reno, NV	1630 hrs AIAA-2015-0375 **Ground Testing of Active Thermal Tiles** R. Delaney, H. Dumm, University of New Mexico, Albuquerque, Albuquerque, NM	1700 hrs AIAA-2015-0376 **Theoretical and Numerical Approaches for Impact Load Identification on an Aerospace Structure Correlation with Experimental Data** G. Fabbi, University of Rome "La Sapienza", Rome, Italy

Monday, 5 January 2015						
80-ISC-3	**International Student Conference (Team Category)**					**St. George 114**
Chaired by: L. HANSEN, HRP Systems, Inc.						
1400 hrs AIAA-2015-0377 **Experimental and Computational Investigation of a Dual-Bell Nozzle** K. Davis, E. Fortner, M. Heard, H. McCallum, H. Putzke, Worcester Polytechnic Institute, Worcester, MA	1430 hrs AIAA-2015-0378 **Analysis of Different Design Strategies to Improve Single Blade Performance in Rotorcrafts** L. Gilkey, C. Echavarria, S. Gomez, University of New Mexico, Albuquerque, Albuquerque, NM	1500 hrs AIAA-2015-0379 **Estimating Landing and Take-off Cycle Parameters Using MATLAB** J. Varney, P. Motevalli, D. Katsaduros, M. Prall, M. Johnson, Purdue University, West Lafayette, IN	1530 hrs AIAA-2015-0380 **Passive Turbulence Generating Grid Arrangements in a Turbine Cascade Wind Tunnel** C. Wiese, M. McClearn, G. Allevato, K. Rouser, U.S. Air Force Academy, Colorado Springs, CO	1600 hrs AIAA-2015-0381 **L-Dominance: A New Mechanism Combining ε-Dominance and Pareto Knee Exploitation in Evolutionary Multi-objective Optimization** B. Hancock, T. Nysetvold, C. Mattson, Brigham Young University, Provo, UT	1630 hrs AIAA-2015-0382 **Design of a Cost Effective Thrust Stand for Introducing Thrust and Impulse** E. Hopping, M. Murdy, N. Stepp, University of Alabama, Huntsville, Huntsville, AL	

Monday, 5 January 2015		
81-LEC-2 **1400 - 1500 hrs**	**Non-Deterministic Approaches Lecture: The Building Block Approach in the 21st Century - The Role of ICME & UQ**	**Osceola Ballroom A**
Chaired by: E. TUEGEL, USAF and M. RUMPFKEIL, University of Dayton		
Rolland Dutton Chief, Manufacturing and Industrial Technologies Division AFRL/RXM, Wright-Patterson AFB		

Monday, 5 January 2015						
82-MAT-3	**ICME Applications - Residual Stress Modeling and Measurement**					**Sarasota 1**
Chaired by: J. MATLIK, Rolls-Royce Corp and V. VENKATESH						
1400 hrs AIAA-2015-0383 **Uncertainty Quantification in ICMSE: Application to Metal Alloys** G. Cai, S. Mahadevan, Vanderbilt University, Nashville, TN	1430 hrs AIAA-2015-0384 **Residual Stress Modeling and Uncertainty Quantification** R. Shankar, W. Wu, J. Yang, J. Oh, Scientific Forming Technologies Corporation, Columbus, OH	1500 hrs AIAA-2015-0385 **Probabilistic Modeling of Bulk Residual Stresses** J. McFarland, V. Bhamidipati, R. McClung, Southwest Research Institute, San Antonio, TX; M. James, J. Watton, Alcoa Technical Center, Alcoa Center, PA; M. Hill, Hill Engineering, LLC, Rancho Cordova, CA; et al.	1530 hrs AIAA-2015-0386 **The Impact of Forging Residual Stress on Fatigue in Aluminum** D. Ball, Lockheed Martin Corporation, Fort Worth, TX; M. James, R. Bucci, J. Watton, Alcoa Technical Center, Alcoa Center, PA; A. DeWald, M. Hill, Hill Engineering, LLC, Rancho Cordova, CA; et al.	1600 hrs AIAA-2015-0387 **Residual Stress Measurements for Model Validation As Applied in the United States Air Force Foundational Engineering Problem Program on ICME of Bulk Residual Stress in Ni Rotors** C. Iuliana, V. Venkatesh, Pratt & Whitney, East Hartford, CT	1630 hrs AIAA-2015-0388 **Repeatability of Residual Stress Measurements** A. DeWald, Hill Engineering, LLC, Rancho Cordova, CA	1700 hrs AIAA-2015-0389 **The Effect of Stochastically Varying Creep Parameters on Residual Stresses in Ceramic Matrix Composites** E. Pineda, B. Bednarcyk, NASA Glenn Research Center, Cleveland, OH; S. Mital, University of Toledo, Toledo, OH; S. Arnold, NASA Glenn Research Center, Cleveland, OH

Monday, 5 January 2015						
83-MAT-4	**Multi-Scale Modeling of Materials**					**Sarasota 2**
Chaired by: S. ROY, The University of Alabama and G. SEIDEL, Virginia Polytechnic Institute and State Universit						
1400 hrs AIAA-2015-0390 **A Multiscale Model Coupling Molecular Dynamics Simulations and Micromechanics to Study the Behavior of CNT-Enhanced Nanocomposites** N. Subramanian, A. Rai, S. Datta, B. Koo, A. Chattopadhyay, Arizona State University, Tempe, AZ	1430 hrs AIAA-2015-0391 **Prediction of Progressive Damage at the Fiber/Matrix Scale Using Cohesive Zone Elements** M. Ballard, J. Whitcomb, Texas A&M University, College Station, TX	1500 hrs AIAA-2015-0392 **A Micromechanics Approach to Homogenizing Damageable Elastoplastic Heterogeneous Materials** L. Zhang, W. Yu, Purdue University, West Lafayette, IN	1530 hrs AIAA-2015-0393 **Concurrent Multiscale Modeling of Coupling between Continuum Damage and Piezoresistivity in CNT-Polymer Nanocomposites** X. Ren, G. Seidel, Virginia Polytechnic Institute and State University, Blacksburg, VA	1600 hrs AIAA-2015-0394 **A Micromechanical Approach to Imperfect Interface Analysis of Heterogeneous Materials** H. Sertse, W. Yu, Purdue University, West Lafayette, IN	1630 hrs AIAA-2015-0395 **Effect of Material Variability on Progressive Damage and Micromechanics of Composite Materials** J. Johnston, C. Heitland, A. Chattopadhyay, Arizona State University, Tempe, AZ	

Monday, 5 January 2015						
84-MDO-3	**MDO: Wing Design Applications**					**Sarasota 3**
Chaired by: T. TAKAHASHI, Arizona State University and F. ENGELSEN, The Boeing Company						
1400 hrs AIAA-2015-0396 **Self-Designing Parametric Geometries** A. Sobester, University of Southampton, Southampton, United Kingdom	1430 hrs AIAA-2015-0397 **Design Implications of Elliptical Planform Wings** D. Dulin, T. Takahashi, Arizona State University, Tempe, AZ	1500 hrs AIAA-2015-0398 **Adaptive Shape Control for Aerodynamic Design** G. Anderson, Stanford University, Stanford, CA; M. Aftosmis, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2015-0399 **Beyond Quasi-Analytical Methods for Preliminary Structural Sizing and Weight Estimation of Lifting Surfaces** A. Elham, Delft University of Technology, Delft, The Netherlands; M. van Tooren, University of South Carolina, Columbia, Columbia, SC	1600 hrs AIAA-2015-0400 **Airfoil Optimization Based on Rapid Transition Prediction** X. Wang, J. Cai, C. Liu, Z. Hu, Northwestern Polytechnical University, Xi'an, China		

Monday, 5 January 2015						
85-MST-4	**Modeling of Space Systems and Dynamics**					**Sun Ballroom 2**
Chaired by: D. CARTMELL, Boeing Engineering Operations & Technology and B. BIRKMIRE, Air Force Research Laboratory						
1400 hrs AIAA-2015-0401 **A New Approach to Simulating the Trajectory of Solar Sail Spacecraft Using the Finite Element Method** A. Karwas, R. Taghavi, University of Kansas, Lawrence, Lawrence, KS	1430 hrs AIAA-2015-0402 **Design of a Programmable Star Tracker-Based Reference System for a Simulated Spacecraft** W. Grunwald, E. Swenson, Air Force Institute of Technology, Wright-Patterson AFB, OH	1500 hrs AIAA-2015-0403 **Formation Flying Constant Low-thrust Control Model Based on Relative Orbit Elements** X. Wang, Y. Rao, C. Han, Y. Shi, Beihang University, Beijing, China	1530 hrs AIAA-2015-0404 **Using the DIMMACSS-PSG Intelligent Robotic Middleware to Control Real-World and Simulated Multi-Agent Systems** S. Walker, J. Shan, York University, Toronto, Canada	1600 hrs AIAA-2015-0405 **Modeling and Design of a Communication and Navigation Satellite Constellation for the Lunar South Pole** M. Surratt, M. Kezirian, University of Southern California, Los Angeles, CA	1630 hrs AIAA-2015-0406 **A Framework for Calibrating Angular Accelerometers using a Motion Simulator** D. Jatiningrum, C. de Visser, M. van Paassen, M. Mulder, Delft University of Technology, Delft, The Netherlands	

Monday, 5 January 2015			
86-MVC-2	**Grid Quality Metrics Related to Solution Accuracy Including Real-World Configurations**		**Gainesville 2**
Chaired by: K. BRYDEN, Ames Laboratory			
1400 hrs AIAA-2015-0407 **Grid Quality and Resolution Effects on the Aerodynamic Modeling of Parachute Canopies** M. Ghoreyshi, J. Seidel, U.S. Air Force Academy, Colorado Springs, CO; K. Bergeron, Army Research, Development and Engineering Command, Natick, MA; A. Jirasek, A. Lofthouse, R. Cummings, U.S. Air Force Academy, Colorado Springs, CO	1430 hrs AIAA-2015-0408 **On the quantification of errors of a pre-processing effort reducing contact meshing approach** A. Keskin, Rolls-Royce Group plc, Derby, United Kingdom; M. Kober, E. Stelldinger, A. Kuehhorn, Cottbus University, Cottbus, Germany; H. Boehm, A. Hornig, Dresden University of Technology, Dresden, Germany; et al.	1500 hrs The Path to and State of Geometry and Meshing in 2030 Current and emerging trends in HPC are providing transformational capabilities for Simulation Based Research and Development and Simulation Based Design. Numerous efforts are underway to provide Exascale systems in the next decades. HPC architectures are rapidly evolving and the tools and methods need to keep pace with both the scale and the evolving HW architecture. Emerging HPC capabilities provide potential for simulation of increasingly complex, multi-scale and multi-disciplinary applications for discovery, design and evaluation of aerospace systems. The computational mesh, along with the geometry that it represents, has a considerable impact on the quality, stability, and amount of resources required to complete numerical simulations. Extreme-scale environments require increased levels of process automation and reliability not currently available in state-of-the-art mesh generation tools. These shortcomings make geometry modeling and mesh generation a pacing bottleneck for the future. The goal of the proposed panel is to provide technical interchange to help illuminate the path for geometry and mesh generation as a supporting element of the NASA CFD 2030 Vision. Moderator: Hugh Thornburg Panelists: **John Dannenhoffer**, Syracuse University **John Chawner**, Pointwise, Inc. **Nigel Taylor**, MBDA **Jeffrey Slotnick**, The Boeing Company **Saikat Dey**, Naval Research Laboratory **William Jones**, NASA Langley Research Cener	

Monday, 5 January 2015		
87-PANEL-2 **1400 - 1600 hrs**	**Climate Change and National Security**	**Osceola Ballroom B**

Moderator: John Lanicci, Professor, Embry-Riddle Aeronautical University

Panelists:

Chad Briggs
Strategy Director
Global Interconnections, LLC

Roger Handberg
Professor, Political Science, College of Sciences Prelaw Adviser
University of Central Florida

Peter Jacques
Associate Professor, Department of Political Science
University of Central Florida

David Titley
Director, Center for Solutions to Weather and Climate Risk
Pennsylvania State University

Cathy Snyder
Vice President, Energy & Environment
Lockheed Martin Washington Operations

Monday, 5 January 2015		
88-PC-5	**Plasma Assisted Combustion II: AFOSR MURI Reports**	**Emerald 2**

Chaired by: C. LI, Air Force Office of Scientific Research and W. LEMPERT, Vanderbilt University

1400 hrs AIAA-2015-0409 **Multi-Scale Modeling of Plasma-Assisted Ignition and Combustion** S. Nagaraja, V. Yang, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2015-0410 **Plasma assisted ignition of combustible mixtures. Effect of electronically excited O(1D) atoms and vibrationally excited molecules** N. Popov, Moscow State University, Moscow, Russia	1500 hrs AIAA-2015-0411 **Parametric study of plasma-assisted ignition in combustible mixtures** N. Alexandrov, I. Kosarev, S. Kindysheva, Moscow Institute of Physics and Technology, Moscow, Russia; A. Starikovskiy, Princeton University, Princeton, NJ	1530 hrs AIAA-2015-0412 **High-pressure nanosecond discharges for plasma-assisted combustion** S. Starikovskaia, École Polytechnique, Paris, France	1600 hrs Oral Presentation **Nanosecond Repetitively Pulsed Discharges in Plasma-Assisted Combustion** C. Laux, École Centrale de Paris, Paris, France	1630 hrs Panel Discussion Panelists: **Igor Adamovich** Ohio State University **Andrey Starikovskiy** Princeton University **Richard Miles** Princeton University **Rich Yetter** Penn State University **Yiguang Ju** Princeton University **Vigor Yang** Georgia Tech

Monday, 5 January 2015		
89-PC-6	**Combustion Chemistry**	**Emerald 3**

Chaired by: P. KOURDIS, California Institute of Technology

1400 hrs AIAA-2015-0413 **Simulations of a Micro-Reactor for the Study of the Unimolecular Decomposition of Large Fuel Molecules** Q. Guan, G. Ellison, J. Daily, University of Colorado, Boulder, Boulder, CO	1430 hrs AIAA-2015-0414 **Modeling Gas Dynamic Effects in Shock-Tubes for Reaction Kinetics Measurements** K. Grogan, Q. Wang, M. Ihme, Stanford University, Stanford, CA	1500 hrs AIAA-2015-0415 **Hydrocarbon Emissions from a WSR Near Lean Blow-Off** D. Blunck, Oregon State University, Corvallis, OR; S. Zeppieri, United Technologies Corporation, East Hartford, CT; J. Gross, S. Stouffer, University of Dayton, Dayton, OH; M. Colket, United Technologies Corporation, East Hartford, CT	1530 hrs AIAA-2015-0416 **HP-Mech: A High Pressure Kinetic Mechanism for C2 Flames with Exhaust Gas Dilution** J. Santner, X. Yang, D. Chen, Q. Wang, Y. Ju, Princeton University, Princeton, NJ; X. Shen, University of Science and Technology of China, Hefei, China	1600 hrs AIAA-2015-0417 **The Effects of Non-Uniform Boundary Temperatures in Ignition Delay Time Measurements from Heated Rapid Compression Machine Experiments** C. Allen, J. Neuman, Marquette University, Milwaukee, WI	1630 hrs AIAA-2015-0418 **High-Pressure Fuel Pyrolysis Investigation Using a Microflow Tube Reactor** U. Shrestha, G. Simms, H. Chelliah, University of Virginia, Charlottesville, Charlottesville, VA	1700 hrs AIAA-2015-0419 **Unsteady Rans Simulation of an Enclosed, Turbulent Reacting Methane Jet with the Premixed CMC Method** S. Vasu, University of Central Florida, Orlando, FL

Monday, 5 January 2015		
90-PC-7	**Spray and Droplet Combustion II**	**Emerald 5**

Chaired by: Y. HARDALUPAS, Imperial College London

1400 hrs AIAA-2015-0420 **Multi-Scale Simulation of Primary Breakup in Gas-Assisted Atomization** Y. Ling, S. Zaleksi, Pierre and Marie Curie University, Paris, France	1430 hrs AIAA-2015-0421 **Aspects of droplet grouping in polydisperse spray diffusion flames** J. Greenberg, Technion–Israel Institute of Technology, Haifa, Israel; D. Katoshevski, Ben-Gurion University of the Negev, Beer-Sheva, Israel	1500 hrs AIAA-2015-0422 **Hypergolic Ignition and Flame Structures of Hydrazine Spray/ Gaseous Nitrogen Tetroxide Co-flowing Jets** H. Tani, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan; H. Terashima, University of Tokyo, Tokyo, Japan; M. Koshi, Yokohama National University, Yokohama, Japan; Y. Daimon, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan	1530 hrs AIAA-2015-0423 **A Computational Study of Internal Flows in a Heated Water-Oil Emulsion Droplet** J. Sim, H. Im, S. Chung, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia		

Monday, 5 January 2015						
91-PC-8	**Turbulent Combustion II**					**Emerald 7**
Chaired by: G. BORGHESI and J. O`CONNOR, Pennsylvania State University						
1400 hrs AIAA-2015-0424 **Spatiotemporal Characterization of Flame-Vortex Interactions in Bluff-Body Stabilized Turbulent Premixed Flames Using Simultaneous High-Repetition-Rate OH-PLIF and PIV** A. Caswell, Air Force Research Laboratory, Wright-Patterson AFB, OH; B. Rankin, B. Huelskamp, Innovative Scientific Solutions, Inc., Dayton, OH; N. Jiang, Spectral Energies, LLC, Dayton, OH; A. Lynch, V. Belovich, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	1430 hrs AIAA-2015-0425 **Proper Orthogonal Decomposition Analysis of a Turbulent Swirling Self-Excited Premixed Flame** A. Kypraiou, A. Dowling, E. Mastorakos, University of Cambridge, Cambridge, United Kingdom; N. Karimi, University of Glasgow, Glasgow, United Kingdom	1500 hrs AIAA-2015-0426 **Influence of Fuel Stratification on Turbulent Flame Propagation** M. Hassanaly, V. Raman, University of Texas, Austin, Austin, TX; M. Colket, United Technologies Corporation, East Hartford, CT	1530 hrs AIAA-2015-0427 **Measurement of 3D Rayleigh Index fields in helically-perturbed swirl flames using doubly-phase-conditioned chemiluminescence tomography** B. Geraedts, S. Yang, University of Toronto, Toronto, Canada; C. Arndt, Institute for Combustion Technology, German Aerospace Center, Stuttgart, Germany; A. Steinberg, University of Toronto, Toronto, Canada	1600 hrs AIAA-2015-0428 **Modeling the Response of Turbulent Flames to Harmonic Forcing** L. Humphrey, V. Acharya, Georgia Institute of Technology, Atlanta, GA; D. Shin, University of Southampton, Southampton, United Kingdom; T. Lieuwen, Georgia Institute of Technology, Atlanta, GA	1630 hrs AIAA-2015-0429 **Stability Analysis of Reacting Wakes: Flow and Density Asymmetry Effects** B. Emerson, S. Jagtap, T. Lieuwen, Georgia Institute of Technology, Atlanta, GA	1700 hrs AIAA-2015-0430 **Effect of Ignition Chemistry on Turbulent Premixed Flames of n-Heptane and iso-Octane** S. Won, S. Nakane, C. Reuter, Princeton University, Princeton, NJ; B. Windom, University of Colorado, Colorado Springs, Colorado Springs, CO; Y. Ju, Princeton University, Princeton, NJ

Monday, 5 January 2015						
92-SCS-2	**Solar Sails and Tensioned Membranes**					**Osceola Ballroom 4**
Chaired by: R. PAPPA, NASA Langley Research Center and J. BANIK, USAF						
1400 hrs AIAA-2015-0431 **Recent Advances in Heliogyro Solar Sail Structural Dynamics, Stability, and Control Research** W. Wilkie, J. Warren, L. Horta, K. Lyle, J. Juang, NASA Langley Research Center, Hampton, VA; S. Gibbs, Duke University, Durham, NC; et al.	1430 hrs AIAA-2015-0432 **Empirical Modeling for Sail Membrane Dynamics by Fusing Measurement Data and Numerical Analysis** M. Yamazaki, Nihon University, Chiba, Japan	1500 hrs AIAA-2015-0433 **Structural and Attitude Dynamics and Control of a Solar Sail using Two Degrees of Freedom Tip Vanes** M. Choi, C. Damaren, University of Toronto, Toronto, Canada	1530 hrs AIAA-2015-0434 **Deployment Testing of the De-Orbit Sail Flight Hardware** M. Hillebrandt, S. Meyer, M. Zander, C. Huehne, German Aerospace Center (DLR), Braunschweig, Germany	1600 hrs AIAA-2015-0435 **Nonlinear Torsional Dynamics and Control of Heliogyro Solar Sail Blades** D. Guerrant, D. Lawrence, University of Colorado, Boulder, Boulder, CO	1630 hrs AIAA-2015-0436 **Deformation Properties of Solar Sail IKAROS Membrane with Nonlinear Finite Element Analyses** Y. Satou, O. Mori, N. Okuizumi, Y. Shirasawa, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; H. Furuya, H. Sakamoto, Tokyo Institute of Technology, Yokohama, Japan	

Monday, 5 January 2015						
93-SD-4	**Flutter, LCO and Aeroelastic Tailoring**					**Tampa 2**
Chaired by: W. SCHNEIDER, Lockheed Martin Aeronautics and R. SCOTT, NASA-Langley Research Center						
1400 hrs AIAA-2015-0437 **Plans and example results for the 2nd AIAA Aeroelastic Prediction Workshop** J. Heeg, P. Chwalowski, NASA Langley Research Center, Hampton, VA; D. Raveh, Technion–Israel Institute of Technology, Haifa, Israel; M. Dalenbring, A. Jirasek, Swedish Defense Research Agency (FOI), Stockholm, Sweden	1430 hrs AIAA-2015-0438 **Transonic Flutter Characteristics of Advanced Fighter Wings** O. Bendiksen, University of California, Los Angeles, Los Angeles, CA	1500 hrs AIAA-2015-0439 **Aeroelastic Tailoring using Rib/Spar Orientations: Experimental Investigation** G. Francois, J. Cooper, P. Weaver, University of Bristol, Bristol, United Kingdom	1530 hrs AIAA-2015-0440 **On the Interpretation of Bending-Torsion Coupling for Swept, Non-Homogenous Wings** O. Stodieck, J. Cooper, P. Weaver, University of Bristol, Bristol, United Kingdom	1600 hrs AIAA-2015-0441 **Morphing Wing Design for Fixed Wing Aircraft** J. Yang, P. Sartor, J. Cooper, R. Nangia, University of Bristol, Bristol, United Kingdom	1630 hrs AIAA-2015-0442 **Prediction of Wing Flutter Boundary Using High Fidelity Delayed Detached Eddy Simulation** J. Gan, H. Im, X. Chen, G. Zha, University of Miami, Coral Gables, FL; C. Pasiliao, Air Force Research Laboratory, Eglin AFB, FL	1700 hrs AIAA-2015-0443 **Analysis of the Transonic Flutter of Supersonic Transport Wings** E. Mellquist, The Aerospace Corporation, El Segundo, CA; O. Bendiksen, University of California, Los Angeles, Los Angeles, CA

Monday, 5 January 2015						
94-SD-5	**Energy Harvesting, Health Monitoring and Multifunctional Structures**					**Tampa 3**
Chaired by: W. WELSH, Sikorsky Aircraft Corporation and H. KIM, Boeing Defense, Space & Security						
1400 hrs AIAA-2015-0444 **Modeling of Highly Flexible Multifunctional Wings for Energy Harvesting** W. Su, N. Tsushima, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1430 hrs AIAA-2015-0445 **Performance Analysis and Parametric Design of an Airfoil-Based Piezoaeroelastic Energy Harvester** Y. Wu, D. Li, J. Xiang, Beihang University, Beijing, China	1500 hrs AIAA-2015-0446 **Harvesting at the Margins: A Study of Harvesting Away from Optimal Conditions** T. Hynds, J. Kauffman, University of Central Florida, Orlando, FL	1530 hrs AIAA-2015-0447 **Detecting Damage in a UAV Composite Wing Spar Using Distributed Fiber Optic Strain Sensors** B. Martins, J. Kosmatka, University of California, San Diego, La Jolla, CA	1600 hrs AIAA-2015-0448 **Damage Characterization Using Matching Pursuit with a Guided Wave Simulation Library** M. Obenchain, C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI		

Monday, 5 January 2015						
95-STR-4	**Special Session: Composite Laminate Optimization**					**Sun Ballroom D**
Chaired by: M. RASSAIAN, Boeing Engineering Operations & Technology and A. BLOM, The Boeing Company						
1400 hrs AIAA-2015-0449 **Maximizing Buckling Load Factors of Fiber-Placed Composite Cylindrical Shells by Particle Swarm Optimization** S. Guldu, A. Kayran, Middle East Technical University, Ankara, Turkey	1430 hrs AIAA-2015-0450 **Optimisation of Variable Stiffness Composites with Ply Drops** D. Peeters, M. Abdalla, Delft University of Technology, Delft, The Netherlands	1500 hrs AIAA-2015-0451 **Optimal Postbuckling Design of Variable Angle Tow Composites using Lamination Parameters** G. Raju, S. White, Z. Wu, P. Weaver, University of Bristol, Bristol, United Kingdom	1530 hrs AIAA-2015-0452 **Mass Optimisation of Variable Angle Tow, Variable Thickness Panels with Static Failure and Buckling Constraints** R. Groh, P. Weaver, University of Bristol, Bristol, United Kingdom	1600 hrs AIAA-2015-0453 **Level Set Optimization for Steered Fiber Composites** C. Brampton, H. Kim, University of Bath, Bath, United Kingdom	1630 hrs AIAA-2015-0454 **Optimization of Composite Plates with Spatially Varying Fiber Paths for Thermal Buckling** A. Duran, N. Fasanella, V. Sundararaghavan, A. Waas, University of Michigan, Ann Arbor, Ann Arbor, MI	

Monday, 5 January 2015						
96-STR-5	**Aircraft Structural Design**					**Tampa 1**
Chaired by: M. WOLFF, Gulfstream Aerospace Corporation and P. MARDANPOUR						
1400 hrs AIAA-2015-0455 **Topology Optimization of Composite Structures for Multifunctional Behavior** D. Seifert, M. Patil, G. Seidel, Virginia Polytechnic Institute and State University, Blacksburg, VA	1430 hrs AIAA-2015-0456 **Methodology for Conceptual Design with Composite Stiffened Skin** A. Noevere, A. Wilhite, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2015-0457 **Structural Loads Analysis of a Carrier Onboard Delivery Aircraft** B. Flansburg, Lockheed Martin Corporation, Marietta, GA	1530 hrs AIAA-2015-0458 **Reliability Based Structural Design using Continuum Sensitivity Analysis** M. Kulkarni, R. Canfield, Virginia Polytechnic Institute and State University, Blacksburg, VA	1600 hrs AIAA-2015-0459 **Full Scale Aircraft Drop Test Program for the F-35C Carrier Variant** D. Norwood, R. Chichester, Lockheed Martin Corporation, Fort Worth, TX	1630 hrs AIAA-2015-0460 **Analytical Evaluation of Composite Laminates with Scored Balsa** A. Tran, K. Wetzel, Wetzel Engineering, Inc., Austin, TX; R. Hale, University of Kansas, Lawrence, Lawrence, KS	

Monday, 5 January 2015							
97-STR-6	**Failure Analysis and Prediction I**						**Tallahassee 3**
Chaired by: S. RUSSELL, Triumph Aerostructures; J. MIN, NASA Glenn Research Center and M. CHO, Seoul National University							
1400 hrs AIAA-2015-0461 **A novel two-parameter linear elastic constitutive model for bond based peridynamics** N. Prakash, G. Seidel, Virginia Polytechnic Institute and State University, Blacksburg, VA	1430 hrs AIAA-2015-0462 **Computational Techniques for the Thermostructural Analysis of Composites** V. Goyal, The Aerospace Corporation, El Segundo, CA	1500 hrs AIAA-2015-0463 **A Micromechanical Approach to Static Failure Prediction of Heterogeneous Materials** H. Sertse, W. Yu, Purdue University, West Lafayette, IN	1530 hrs AIAA-2015-0464 **Tensile Response of Oxide/Oxide Woven Ceramic Composites** D. Zhang, P. Meyer, A. Waas, University of Michigan, Ann Arbor, Ann Arbor, MI	1600 hrs AIAA-2015-0465 **Ordinary-State Based Peridynamic Truss Element** M. Dorduncu, A. Borut, E. Madenci, University of Arizona, Tucson, Tucson, AZ	1630 hrs AIAA-2015-0466 **Progressive Damage and Failure Prediction of Open Hole Tension and Open Hole Compression Specimens** A. Joseph, A. Waas, University of Michigan, Ann Arbor, Ann Arbor, MI; W. Ji, Ulsan National Institute of Science and Technology, Ulsan, Korea (the Republic of); E. Pineda, NASA Glenn Research Center, Cleveland, OH; S. Liguore, S. Wanthal, The Boeing Company, St. Louis, MO	1700 hrs AIAA-2015-0467 **Comparative Studies of Residual Stress Effects on Fatigue Crack Growth of Welded Aluminum Structures under Block Spectrum Loading** S. Alireza, E. Fang, X. Liu, J. Lua, Global Engineering and Materials, Inc., Princeton, NJ

Monday, 5 January 2015						
98-TP-2	**Cryogenics**					**Miami 3**
Chaired by: H. MA, University of Missouri and E. SILK, NASA-Goddard Space Flight Center						
1400 hrs AIAA-2015-0468 **Numerical Simulation of the Liquid Nitrogen Chilldown of a Vertical Tube** S. Darr, H. Hu, R. Shaeffer, J. Chung, University of Florida, Gainesville, Gainesville, FL; J. Hartwig, NASA Glenn Research Center, Cleveland, OH; A. Majumdar, NASA Marshall Space Flight Center, Huntsville, AL	1430 hrs AIAA-2015-0469 **RANS Modeling of Transcritical and Supercritical Nitrogen Jets** E. Antunes, A. Silva, J. Barata, University of Beira Interior, Covilha, Portugal	1500 hrs AIAA-2015-0470 **Models for Cyrogenic Cavitation in Rotating Turbomachinery** J. Schwille, D. Jackson, The Aerospace Corporation, El Segundo, CA	1530 hrs AIAA-2015-0471 **Thermodynamic Effect on Backflow Vortex Cavitation** A. Tsunoda, Y. Ito, Tokyo Institute of Technology, Yokohama, Japan; N. Tani, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan; T. Nagasaki, Tokyo Institute of Technology, Yokohama, Japan	1600 hrs AIAA-2015-0472 **Cryogenic Loop Heat Pipe for Zero-Boil-Off Cryogen Storage** D. Zakar, R. Baldauff, Naval Research Laboratory, Washington, DC; T. Hoang, TTH Research, Inc., Laurel, MD	1630 hrs AIAA-2015-0473 **Numerical Modeling of the Transient Chilldown Process of a Cryogenic Propellant Transfer Line** J. Hartwig, J. Vera, NASA Glenn Research Center, Cleveland, OH	

Monday, 5 January 2015						
99-TP-3	**Nonequilibrium Flows and Radiation I**					**Sun Ballroom B**
Chaired by: M. PANESI, University of Illinois at Urbana Champaign and J. BURT, Universal Technology Corporation						
1400 hrs AIAA-2015-0474 **Direct simulation of rovibrational excitation and dissociation in molecular nitrogen using an ab initio potential energy surface** P. Valentini, I. Nompelis, T. Schwartzentruber, University of Minnesota, Minneapolis, Minneapolis, MN	1430 hrs AIAA-2015-0475 **State-to-State Kinetic Model for a Viscous Radiating Hypersonic Flow** E. Josyula, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Burt, Ohio Aerospace Institute, Wright-Patterson AFB, OH; E. Kustova, Saint Petersburg State University, Saint Petersburg, Russia; P. Vedula, University of Oklahoma, Norman, Norman, OK	1500 hrs AIAA-2015-0476 **State-to-State Modeling of CO for Mars Entry Applications** R. Macdonald, A. Munafò, University of Illinois, Urbana-Champaign, Urbana, IL; C. Johnston, NASA Langley Research Center, Hampton, VA; M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL	1530 hrs AIAA-2015-0477 **State Specific Modeling of Energy Transfer and Chemical Reactions in Shocks using High Fidelity Models** T. Zhu, Z. Li, N. Parsons, D. Levin, Pennsylvania State University, University Park, PA	1600 hrs AIAA-2015-0478 **Nonequilibrium Radiation Modeling for a Low Enthalpy Hypersonic Shock Layer** J. Burt, E. Josyula, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2015-0479 **Sensitivity of State-Specific Dissociation Cross Sections to O3 Potential Energy Surfaces** M. Kulakhmetov, A. Alexeenko, Purdue University, West Lafayette, IN	1700 hrs AIAA-2015-0480 **Dissociation and Energy transfer study of N2-N and N2-N2 interactions by using rovibrational and coarse-grained state-to-state models** A. Munafò, University of Illinois, Urbana-Champaign, Urbana, IL; R. Jaffe, D. Schwenke, NASA Ames Research Center, Moffett Field, CA; M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL

Monday, 5 January 2015						
100-UMS-1	**UAS Integration: Detect and Avoid Technologies**					**Osceola Ballroom 3**
Chaired by: M. LOGAN, NASA Langley Research Center and R. STANSBURY, Embry-Riddle Aeronautical University						
1400 hrs AIAA-2015-0481 **Defining Well Clear for Unmanned Aircraft Systems** S. Cook, MITRE Corporation, McLean, VA; D. Brooks, New Mexico State University, Las Cruces, NM; R. Cole, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA; D. Hackenberg, NASA Headquarters, Washington, DC; V. Raska, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2015-0482 **Challenges and Solutions for Vision-based Sense and Avoid** G. Fasano, D. Accardo, A. Tirri, A. Moccia, University of Naples "Federico II", Naples, Italy; E. De Lellis, Italian Aerospace Research Center (CIRA), Capua, Italy	1500 hrs AIAA-2015-0483 **Conflict Detection and Resolution System Architecture for Unmanned Aerial Vehicles in Civil Airspace** Y. Jenie, E. Van Kampen, J. Ellerbroek, J. Hoekstra, Delft University of Technology, Delft, The Netherlands	1530 hrs AIAA-2015-0484 **Unmanned Aircraft System Sense and Avoid Integrity and Continuity Risk for Non-Cooperatve Intruders** M. Jamoom, M. Joerger, S. Khanafseh, B. Pervan, Illinois Institute of Technology, Chicago, IL	1600 hrs AIAA-2015-0485 **Development of a Surrogate Autonomous Aircraft for Entry in the NASA Airspace Operation Challenge** R. Anderson, H. Moncayo, R. Prazenica, M. Mirmirani, A. Noriega, B. Burnett, Embry-Riddle Aeronautical University, Daytona Beach, FL; et al.	1630 hrs AIAA-2015-0486 **Real-Time Validation of an ADS-B Based Aircraft Conflict Detection System** M. Orefice, V. Di Vito, F. Corraro, Italian Aerospace Research Center (CIRA), Capua, Italy; G. Fasano, D. Accardo, University of Naples "Federico II", Naples, Italy	1700 hrs AIAA-2015-0487 **Optimal UAS Path Planning for Convoy Overwatch** R. Livermore, Air Force Research Laboratory, Wright-Patterson AFB, OH; R. Cobb, Air Force Institute of Technology, Wright-Patterson AFB, OH

Monday, 5 January 2015						
101-WE-3	**Wind Energy Blade and Turbine Design**					**Emerald 6**
Chaired by: D. GRIFFITH and C. KELLEY						
1400 hrs AIAA-2015-0488 **Free-form Design of Low Induction Rotors** C. Bottasso, Technical University of Munich, Munich, Germany; A. Croce, L. Sartori, Technical University of Milan, Milan, Italy	1430 hrs AIAA-2015-0489 **Analysis of the Impact of Leading Edge Surface Degradation on Wind Turbine Performance** C. Langel, R. Chow, O. Hurley, C. Van Dam, University of California, Davis, Davis, CA; D. Maniaci, Sandia National Laboratories, Albuquerque, NM; R. Ehrmann, Texas A&M University, College Station, TX; et al.	1500 hrs AIAA-2015-0490 **Horizontal-Axis Wind Turbine Wake Sensitivity to Different Blade Load Distributions** C. Kelley, D. Maniaci, B. Resor, Sandia National Laboratories, Albuquerque, NM	1530 hrs AIAA-2015-0491 **Aero-Elastic Optimization of a 10 MW Wind Turbine** F. Zahle, C. Tibaldi, D. Verelst, R. Bitche, C. Bak, Technical University of Denmark, Roskilde, Denmark	1600 hrs AIAA-2015-0492 **Effects of spanwise blade load distribution on wind turbine wake evolution** X. Yang, A. Boomsma, F. Sotiropoulos, University of Minnesota, Minneapolis, Minneapolis, MN; B. Resor, D. Maniaci, C. Kelley, Sandia National Laboratories, Albuquerque, NM	1630 hrs AIAA-2015-0493 **Numerical Simulations of Subscale Wind Turbine Rotor Inboard Airfoils at Low Reynolds Number** M. Blaylock, Sandia National Laboratories, Livermore, CA; D. Maniaci, B. Resor, Sandia National Laboratories, Albuquerque, NM	

Monday, 5 January 2015						
102-WE-4	**Wind Energy Aerodynamics and Aeroacoustics II**					**Emerald 4**
Chaired by: T. KIM, Technical University of Denmark						
1400 hrs AIAA-2015-0494 **Non-conventional flat back thick airfoils for very large offshore wind turbines** F. Grasso, O. Ceyhan, Energy Research Center of the Netherlands, Petten, The Netherlands	1430 hrs AIAA-2015-0495 **Numerical Studies Of the Upstream Flow Field Around A Horizontal Axis Wind Turbine** H. Abedi, L. Davidson, Chalmers University of Technology, Göteborg, Sweden; S. Voutsinas, National Technical University of Athens, Athens, Greece	1500 hrs AIAA-2015-0496 **Investigation of Wind Turbine Power Generation During Atmospheric Icing by Multi-Disciplinary Experimentation** P. Blasco, J. Palacios, S. Schmitz, Pennsylvania State University, University Park, PA	1530 hrs AIAA-2015-0497 **AVATAR: AdVanced Aerodynamic Tools of lArge Rotors** G. Schepers, Energy Research Center of the Netherlands, Petten, The Netherlands	1600 hrs AIAA-2015-0498 **Experimental Investigation of the Wake Flow Field of a Model Wind Turbine Rotor with Tip Injection** A. Abdulrahim, E. Anik, O. Uzol, Middle East Technical University, Ankara, Turkey	1630 hrs AIAA-2015-0499 **Cross-Validation of Numerical and Experimental Studies of Transitional Airfoil Performance** A. Frere, K. Hillewaert, Cenaero, Gosselies, Belgium; H. Chivaee, R. Mikkelsen, Technical University of Denmark, Copenhagen, Denmark; P. Chatelain, Université catholique de Louvain, Louvain, Belgium	

Monday, 5 January 2015		
103-APA-9/NDA-1 **1500 - 1730 hrs**	**Frontiers of Uncertainty Management for Complex Aerospace Systems**	**Osceola Ballroom 5**
Chaired by: R. GRAVES, Air Force Reseach Laboratory and P. MORGAN, Ohio Aerospace Institute		

This joint session between the NDA and APA technical committees is a unique forum with the goal of presenting a number of best practices associated with validation, verification, and uncertainty quantification from a work flow management perspective. Invited speakers in this session will communicate their approaches to validation, verification, and uncertainty quantification, and how the adoption of non-deterministic work flows has influenced their organizations, and their ability to deliver reliable aerospace system products.

Panelists:

Overview of Selected DOE/NNSA Predictive Science Initiatives: the Predictive Science Academic Alliance Program and the DAKOTA Project
AIAA-2015-0500
Michael Eldred
SANDIA

Integrated Uncertainty Quantification for Risk and Resource Management: A NASA Langley Perspective
AIAA-2015-0501
Eric Walker
NASA Langley

Verification, Validation, and Uncertainty Propagation and Quantification for Simulation Credibility
AIAA-2015-0502
Dean Eklund
AFRL/RQH

Tuesday

Tuesday, 6 January 2015		
104-PLNRY-2 **0800 - 0900 hrs**	**International Trends in Aerospace: Up, Up and Away? To Where?**	**Osceola Ballroom CD**

James N. Miller
President
Adaptive Strategies, LLC

Tuesday, 6 January 2015						
105-AA-3	**Computational Aeroacoustics II**					**Miami 2**
Chaired by: J. GALLMAN, Gulfstream						
0930 hrs AIAA-2015-0503 **LES of jet flow and noise with internal and external geometry features** J. Tyacke, P. Tucker, University of Cambridge, Cambridge, United Kingdom	1000 hrs AIAA-2015-0504 **Implementation of a Sharp Immersed Boundary Method in a 3-D Multi-block Large Eddy Simulation Tool for Jet Aeroacoustics** N. Dhamankar, G. Blaisdell, Purdue University, West Lafayette, IN; A. Lyrintzis, Embry-Riddle Aeronautical University, Daytona Beach, FL	1030 hrs AIAA-2015-0505 **Synchronized Large-Eddy Simulations to track Native Perturbations in a Turbulent Jet** U. Sasidharan Nair, D. Gaitonde, Ohio State University, Columbus, OH				

Tuesday, 6 January 2015						
106-AA-4	**Jet Noise Prediction I**					**Sun Ballroom C**
Chaired by: A. PILON, Lockheed Martin Aeronautics						
0930 hrs AIAA-2015-0507 **Application of Synthetic Array Techniques for Improved Simulations of Hot Supersonic Jet Noise** C. Nelson, A. Cain, Innovative Technology Applications Company, LLC, Chesterfield, MO; R. Dougherty, OptiNav, Inc., Bellevue, WA; K. Brentner, P. Morris, Pennsylvania State University, University Park, PA	1000 hrs AIAA-2015-0508 **Numerical Study of Noise Characteristics in Overexpanded Jet Flows** J. Liu, A. Corrigan, K. Kailasanath, Naval Research Laboratory, Washington, DC; N. Heeb, E. Gutmark, University of Cincinnati, Cincinnati, OH	1030 hrs AIAA-2015-0509 **Analysis of Converging-Diverging Beveled Nozzle Jets Using Large Eddy Simulation with a Wall Model** K. Aikens, G. Blaisdell, Purdue University, West Lafayette, IN; A. Lyrintzis, Embry-Riddle Aeronautical University, Daytona Beach, FL	1100 hrs AIAA-2015-0510 **Numerical modelling of jets exiting from the ASME and conical nozzles** C. Bogey, O. Marsden, École Centrale, Ecully, France	1130 hrs AIAA-2015-0511 **Numerical Simulation of Supersonic Twin-Jet Noise with High Order Finite Difference Scheme** J. Gao, X. Xu, X. Li, Beihang University, Beijing, China	1200 hrs AIAA-2015-0512 **3-D Jet Noise Prediction for Separate Flow Nozzles with Pylon Interaction** X. Xu, J. He, X. Li, Beihang University, Beijing, China; F. Hu, Old Dominion University, Norfolk, VA	

Tuesday, 6 January 2015						
107-ACD-1	**Aircraft Design Optimization**					**Naples 3**
Chaired by: H. JIMENEZ, Georgia Institute of Technology						
0930 hrs AIAA-2015-0513 **Optimized Military Transport Aircraft Design Through Multi-Objective Analysis of Fleet-Level Metrics Under Demand Uncertainty** P. Govindaraju, W. Crossley, Purdue University, West Lafayette, IN	1000 hrs AIAA-2015-0514 **Evaluation of N+2 Technologies and Advanced Vehicle Concepts** J. Schutte, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2015-0515 **Comparison of Advanced Vehicle Concepts through Pareto-Optimal Technology Sets** C. Ingram, H. Jimenez, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2015-0516 **An Aircraft Conceptual Design and Optimization Platform and Its Application for Nature Laminar Flow Aircraft Study** Y. Zhao, H. Chen, Y. Zhang, Tsinghua University, Beijing, China	1130 hrs AIAA-2015-0517 **Multirotor Configuration Feasibility Analysis and Optimal Design Based on Moore-Penrose Pseudoinverse** Z. Hu, S. Yang, F. Xiong, Beijing Institute of Technology, Beijing, China		

Tuesday, 6 January 2015						
108-AFM-5	**Aerodynamic Prediction Methods**					**Captiva 2**
Chaired by: F. PRIOLO, Millennium Engineering and Integration Company						
0930 hrs AIAA-2015-0518 **Linear Computational Fluid Dynamic Analysis of Dynamic Ground Effect of a Wing in Sink and Flare Maneuvers** G. Quijada, Simón Bolívar University, Caracas, Venezuela; P. Boschetti, Simón Bolívar University, Naiguata, Venezuela	1000 hrs AIAA-2015-0519 **Computational Analysis of a Flow Around Two-Dimensional Streamlined Bodies with OpenFOAM** R. Habbit, A. Porteous, C. Echavarria, S. Poroseva, University of New Mexico, Albuquerque, Albuquerque, NM; S. Murman, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2015-0520 **Analytical Aerodynamic Force and Moment Coefficients of Axisymmetric Objects in Rarefied Flow** K. Hart, K. Simonis, B. Steinfeldt, R. Braun, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2015-0521 **Kinetic Models and Gas Kinetic Schemes for Hybrid Simulation of Partially Rarefied Flows** S. Colonia, R. Steijl, G. Barakos, University of Liverpool, Liverpool, United Kingdom	1130 hrs AIAA-2015-0522 **Trajectory Simulation of a Spinning Projectile Based on Variable Step Size CFD/RBD Method** G. Wang, Z. Zeng, Northwestern Polytechnical University, Xi'an, China; Q. Suo, Nanjing University of Aeronautics and Astronautics, Jingdezhen, China	1200 hrs AIAA-2015-0523 **Analytical Shock Standoff and Shape Prediction with Validation for Blunt Face Cylinder** J. Martel, SURVICE Engineering, Fort Walton Beach, FL; B. Jolly, 96th Test Wing, Eglin AFB, FL	

Tuesday, 6 January 2015						
109-AFM-6	**Atmospheric Entry, Hypersonic Flight and Aeroassist Technology**					**Captiva 1**
Chaired by: M. BOLENDER, Air Force Research Lab						
0930 hrs AIAA-2015-0524 **A Comparison of Three Algorithms for Orion Drogue Parachute Release** D. Matz, NASA Johnson Space Center, Houston, TX; R. Braun, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2015-0525 **Spatial Parameterization of Blunt Body Dynamics under Parachutes** M. Hughes, Lockheed Martin Corporation, Littleton, CO	1030 hrs AIAA-2015-0526 **Coupled Inertial Navigation and Flush Air Data Sensing Algorithm for Atmosphere Estimation** C. Karlgaard, P. Kutty, Analytical Mechanics Associates, Inc., Hampton, VA; M. Schoenenberger, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2015-0527 **Free Flight Investigation of Atmospheric Entry Capsules in Low Subsonic Flow** A. Preci, A. Guelhan, German Aerospace Center (DLR), Cologne, Germany	1130 hrs AIAA-2015-0528 **The Flight Dynamics of the HIFiRE Flight 6 Research Vehicle** D. Adamczak, M. Bolender, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Tuesday, 6 January 2015						
110-AMT-2	**Laser Diagnostics for Reacting Flows**					**Tallahassee 1**
Chaired by: J. SUTTON, Ohio State University and D. PLEMMONS, Aerospace Testing Alliance (ATA)						
0930 hrs AIAA-2015-0529 **Characterization of Inverse Diffusion Flames by Planar Laser Induced Fluorescence of CO and OH** D. Richardson, National Research Council, Dayton, OH; N. Jiang, S. Roy, Spectral Energies, LLC, Dayton, OH; A. Lynch, J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2015-0530 **Pulsed Laser Diode for Use as a Light Source for Short-Exposure, High-Frame-Rate Flow Visualization** N. Parziale, Stevens Institute of Technology, Hoboken, NJ; B. Schmidt, P. Wang, H. Hornung, J. Shepherd, California Institute of Technology, Pasadena, CA	1030 hrs AIAA-2015-0531 **High-Speed 1D Raman/Rayleigh Scattering Imaging in Turbulent H2/N2 Flames** K. Gabet Hoffmeister, F. Fuest, J. Sutton, Ohio State University, Columbus, OH	1100 hrs AIAA-2015-0532 **Techniques for Three-Dimensional Flame Reconstructions with a Plenoptic Camera** J. Bolan, K. Johnson, B. Thurow, Auburn University, Auburn, AL	1130 hrs AIAA-2015-0533 **Time Resolved Planar Measurements in the wake of a Reacting Jet Injected into a Swirling, Vitiated Crossflow at High Pressure** P. Panda, M. Roa, R. Lucht, Purdue University, West Lafayette, IN	1200 hrs AIAA-2015-0534 **In situ Measurements of Ethylene and Methyl Radical by using the Radar REMPI technique** Y. Wu, Z. Zhang, University of Tennessee, Knoxville, Knoxville, TN	

Tuesday, 6 January 2015						
111-APA-10	**Icing or Roughness Effects on Vehicle Aerodynamics II**					**Destin 2**
Chaired by: S. MORRIS, Engineering Systems, Inc. and D. O'BRIEN, US Army RDECOM						
0930 hrs AIAA-2015-0535 **Two-Dimensional/Infinite Swept Wing Ice Accretion Model** S. Bourgault-Cote, E. Laurendeau, École Polytechnique de Montréal, Montréal, Canada	1000 hrs AIAA-2015-0536 **The Influence of Ice Accretion on the Aerodynamic Performance of a UAS Airfoil** K. Szilder, W. Yuan, National Research Council, Ottawa, Canada	1030 hrs AIAA-2015-0537 **Numerical Simulation of Hot Air Anti-icing Charateristics of an Aero-engine Strut** W. Dong, J. Zhu, G. Lei, M. Zheng, Shanghai Jiao Tong University, Shanghai, China	1100 hrs AIAA-2015-0538 **Calculation and Analysis of Water Film Flow Characteristics on Anti-icing Airfoil Surface** W. Dong, M. Zheng, G. Lei, J. Zhu, Shanghai Jiao Tong University, Shanghai, China			

Tuesday, 6 January 2015						
112-APA-11	**Other Topics in Applied Aerodynamics**					**Destin 1**
Chaired by: G. GATLIN and P. VIJGEN, Boeing Commercial Airplanes						
0930 hrs AIAA-2015-0539 **Flight Test Experiments on Discrete Roughness Element Technology for Laminar Flow Control** W. Saric, D. West, M. Tufts, H. Reed, Texas A&M University, College Station, TX	1000 hrs AIAA-2015-0540 **Assessment of the Potential for Micro Energy Harvesting in a Fixed-Wing MAV Configuration** D. Martos, J. Melo De Sousa, Technical University of Lisbon, Lisbon, Portugal	1030 hrs AIAA-2015-0541 **Forecast of Uncertainty-Based Analytics for a Data Acquisition Probe in the Presence of Cross Winds** R. Graves, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2015-0542 **Experimental study of supersonic corner flow evolution in a rectangular channel** R. Morajkar, J. Driscoll, M. Gamba, University of Michigan, Ann Arbor, Ann Arbor, MI	1130 hrs AIAA-2015-0543 **Efficient Flight Simulation Using Kriging Surrogate Model Based Aerodynamic Database** N. Othman, M. Kanazaki, Tokyo Metropolitan University, Hino, Japan	1200 hrs AIAA-2015-0544 **Aerodynamic Study of Range Extension Modification for a Fighter Aircraft** J. Masud, O. Khan, Air University, Islamabad, Pakistan	

Tuesday, 6 January 2015						
113-APA-12	High-Angle-of-Attack, High-lift and Vortical Flow Aerodynamics					Sun Ballroom A
Chaired by: A. JONES, University of Maryland and M. CONWAY, The Aerospace Corporation						
0930 hrs AIAA-2015-0545 **Mixing Flow Characteristics for a Transverse Sonic Jet Injecting into a Supersonic Crossflow** E. Khali, Saad Dahleb University, Blida, Algeria; Y. Yao, University of the West of England, Bristol, United Kingdom	1000 hrs AIAA-2015-0546 **Initiation of Leading-Edge-Vortex Formation on Finite Wings in Unsteady Flow** Y. Hirato, M. Shen, North Carolina State University, Raleigh, NC; S. Aggarwal, Swifter Technology, LLC, Denville, NJ; A. Gopalarathnam, J. Edwards, North Carolina State University, Raleigh, NC	1030 hrs AIAA-2015-0547 **Effect of Roll Orientation on the Vortex Asymmetry on a Conical Forebody** J. Taligoski, A. Uzun, R. Kumar, Florida State University, Tallahassee, FL	1100 hrs AIAA-2015-0548 **Improved Methodology for Predicting the Force on Stalled Spinning Wings** A. Ragheb, M. Selig, University of Illinois, Urbana-Champaign, Urbana, IL	1130 hrs AIAA-2015-0550 **Aerodynamics and Flow Mechanics of a Two-Element Airfoil in Ground Effect** Q. Qu, W. Wang, P. Liu, Beihang University, Beijing, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO	1200 hrs AIAA-2015-0549 **Aerodynamics of the F-15 At High Angle of Attack** S. Yang, P. Chen, ZONA Technology, Inc., Scottsdale, AZ; X. Wang, M. Mignolet, Arizona State University, Tempe, AZ; D. Pitt, The Boeing Company, St. Louis, MO	

Tuesday, 6 January 2015						
114-APA-13	Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-up Air Vehicles II					Naples 2
Chaired by: N. HARIHARAN, CREATE-AV and D. MCDANIEL, University of Alabama at Birmingham						
0930 hrs AIAA-2015-0551 **An Assessment of CREATE-AV Kestrel for F-35 Aero/Performance Applications** B. Smith, Lockheed Martin Corporation, Fort Worth, TX	1000 hrs AIAA-2015-0553 **An Industry Assessment of HPCMP CREATE-AV Helios** R. Narducci, The Boeing Company, Philadelphia, PA	1030 hrs AIAA-2015-0554 **Coaxial Rotor Wake and Prop Induction Impact on a Horizontal Tail Using HPCMP CREATE™-AV Helios** E. Reed, T. Egolf, Sikorsky Aircraft Corporation, Stratford, CT	1100 hrs AIAA-2015-0555 **Computational Fluid Dynamics for the Aerodynamic Design and Modeling of a Ram-Air Parachute with Bleed-Air Actuators** M. Ghoreyshi, U.S. Air Force Academy, Colorado Springs, CO; K. Bergeron, Army Research, Development and Engineering Command, Natick, MA; J. Seidel, A. Jirasek, A. Lofthouse, R. Cummings, U.S. Air Force Academy, Colorado Springs, CO	1130 hrs AIAA-2015-0556 **Coupled Flight Simulator and CFD Calculations of Ship Airwake using Kestrel** J. Forsythe, E. Lynch, S. Polsky, Naval Air Systems Command, Patuxent River, MD	1200 hrs AIAA-2015-0552 **An Industry Assessment of HPCMP CREATE-AV Kestrel** D. Stookesberry, The Boeing Company, St. Louis, MO	

Tuesday, 6 January 2015						
115-APA-14	Special Session: Space Launch System (SLS) I					Naples 1
Chaired by: J. BLEVINS, NASA Marshall Space Flight Center and J. PINIER, NASA Langley Research Center						
0930 hrs AIAA-2015-0557 **Overview of the Space Launch System Transonic Buffet Environment Test Program** D. Piatak, M. Sekula, R. Rausch, J. Florance, T. Ivanco, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2015-0558 **Initial Assessment of Space Launch System Transonic Unsteady Pressure Environment** M. Sekula, D. Piatak, R. Rausch, J. Florance, NASA Langley Research Center, Hampton, VA; J. Ramey, Jacobs, Hampton, VA	1030 hrs AIAA-2015-0559 **Computational and Experimental Unsteady Pressures for Alternate SLS Booster Nose Shapes** G. Brauckmann, C. Streett, W. Kleb, S. Alter, K. Murphy, C. Glass, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2015-0560 **An Empirical Non-TNT Approach to Launch Vehicle Explosion Modeling** J. Blackwood, Bangham Engineering, Huntsville, AL	1130 hrs AIAA-2015-0561 **Space Launch System Ascent Aerothermal Environments Methodology** C. Morris, NASA Marshall Space Flight Center, Huntsville, AL		

Tuesday, 6 January 2015						
116-DE-1	Design Engineering					Sarasota 2
Chaired by: F. KAHLEN, University of Cape Town and S. ROWE, NASA Marshall Space Flight Center						
0930 hrs AIAA-2015-0562 **Multi-Objective Hydrodynamic Design Optimization of a Centrifugal Pump** M. Sagban, S. Gangadharan, Embry-Riddle Aeronautical University, Daytona Beach, FL	1000 hrs AIAA-2015-0563 **The process of validating Model and Software for applying Model-Based Development (MBD) to embedded systems more fruitfully** S. Mina, H. Oyori, IHI Corporation, Tomioka, Japan	1030 hrs AIAA-2015-0564 **An Intermeshing Rotor Helicopter Design and Test** F. Wei, E. Moore, A. Gates, Central Connecticut State University, New Britain, CT	1100 hrs AIAA-2015-0565 **Perching Feasibility of a Fixed Delta M-Wing MAV** D. Patel, University of Michigan, Ann Arbor, Ann Arbor, MI			

Tuesday, 6 January 2015						
117-FD-14	**CFD Methods III**					**Sanibel 1**
Chaired by: S. TU, Jackson State University and M. YU, University of Maryland, Baltimore County						
0930 hrs AIAA-2015-0566 **Advanced Data Transfer Strategies for Overset Computational Methods** E. Quon, M. Smith, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2015-0567 **Further Development of a Riemann-solver Free Space-time Discontinuous Galerkin Method for Compressible Magnetohydrodynamics (MHD) Equations** H. Song, L. Ji, Beijing Institute of Technology, Beijing, China; Q. Pang, S. Tu, Jackson State University, Jackson, MS	1030 hrs AIAA-2015-0568 **Wave-number Independent Preconditioning for GMRES Time-spectral Solvers** N. Mundis, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY	1100 hrs AIAA-2015-0569 **Finite-element Time Discretizations for the Unsteady Euler Equations** N. Mundis, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY	1130 hrs AIAA-2015-0570 **Homotopy Continuation for Correction Procedure via Reconstruction - Discontinuous Galerkin (CPR-DG) Methods** M. Yu, University of Maryland, Baltimore, Baltimore, MD; Z. Wang, University of Kansas, Lawrence, Lawrence, KS	1200 hrs AIAA-2015-0571 **Source Term Discretization Effects on the Accuracy of Finite Volume Schemes** J. Thorne, A. Katz, Utah State University, Logan, UT	

Tuesday, 6 January 2015						
118-FD-15	**Discontinuous Galerkin Methods I**					**Sanibel 2**
Chaired by: E. JOHNSEN, University of Michigan and H. HUYNH, NASA Glenn Research Center						
0930 hrs AIAA-2015-0572 **A general and robust high-order numerical framework for shock-capturing: entropy-bounding, shock detection and artificial viscosity** Y. Lv, Y. See, M. Ihme, Stanford University, Stanford, CA	1000 hrs AIAA-2015-0573 **Analysis of Discontinuous Galerkin Approaches for Advection--Diffusion Problems** L. Khieu, K. Fidkowski, E. Johnsen, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2015-0574 **A dissipative Filter for the Discontinuous Galerkin method** K. Panourgias, University of Patras, Patras, Greece; J. Ekaterinaris, Embry-Riddle Aeronautical University, Daytona Beach, FL	1100 hrs AIAA-2015-0575 **A Reconstructed Discontinuous Galerkin Method for the Compressible Navier-Stokes Equations on Hybrid Grids** H. Luo, L. Xuan, North Carolina State University, Raleigh, NC; Y. Xia, Idaho National Laboratory, Idaho Falls, ID	1130 hrs AIAA-2015-0576 **Three-Dimensional Discontinuous Galerkin h/p Adaptive Numerical Solutions for Compressible Flows** K. Panourgias, University of Patras, Patras, Greece; J. Ekaterinaris, Embry-Riddle Aeronautical University, Daytona Beach, FL		

Tuesday, 6 January 2015						
119-FD-16	**Experiments in Energy Exchange in High Speed Flows (Invited)**					**Daytona 1**
Chaired by: J. AUSTIN, University of Illinois at Urbana-Champaign and E. JOSYULA, Air Force Reseach Laboratory						
0930 hrs Oral Presentation **Progress on the Basic Research Initiative for AFOSR on how energy transfer mechanisms affect flow properties around bodies going at hypersonic speeds (Invited)** J. Schmisseur, I. Leyva, Air Force Research Laboratory, Edwards AFB, CA	1000 hrs Oral Presentation **Boundary-Layer Transition on a Slender Cone in Hypervelocity Flow with Real Gas Effects (Invited)** J. Jewell, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2015-0577 **Measurements of Vibrational Energy Transfer and Its Effect on the Flow in a Plasma Wind Tunnel (Invited)** M. Nishihara, S. Leonov, W. Lempert, J. Rich, I. Adamovich, Ohio State University, Columbus, OH	1100 hrs Oral Presentation **Measurements of Vibrational Non-equilibrium in Supersonic Jet Mixing and Combustion (Invited)** H. Reising, T. Haller, N. Clemens, P. Varghese, University of Texas, Austin, Austin, TX	1130 hrs AIAA-2015-0578 **Flow characterization and boundary layer transition studies in VKI hypersonic facilities (Invited)** G. Grossir, D. Masutti, O. Chazot, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1200 hrs Oral Presentation **Shock Wave- Boundary Layer Interaction In Hypervelocity Flow** J. Austin, California Institute of Technology, Pasadena, CA; A. Knisely, University of Illinois, Urbana-Champaign, Urbana, IL; D. Levin, Pennsylvania State University, University Park, PA	

Tuesday, 6 January 2015						
120-FD-17	**Shock-Dominated Flows II**					**Sanibel 3**
Chaired by: D. KNIGHT, Rutgers University						
0930 hrs AIAA-2015-0579 **Physical Diffusion Cures the Carbuncle Phenomenon** J. Powers, J. Bruns, A. Jemcov, University of Notre Dame, Notre Dame, IN	1000 hrs AIAA-2015-0580 **Assessment of CFD Capability for High Enthalpy Non-Equilibrium Flows with Strong Viscous-Inviscid Interaction** M. Rouhi Youssefi, D. Knight, Rutgers University, Piscataway, NJ	1030 hrs AIAA-2015-0581 **Numerical Prediction of Dynamics of Microwave Filament Interaction with Supersonic Combined Cylinder Bodies** O. Azarova, Russian Academy of Sciences, Moscow, Russia; D. Knight, Rutgers University, New Brunswick, NJ	1100 hrs AIAA-2015-0582 **Numerical Prediction of Dynamics of Interaction of Laser Discharge Plasma with a Hemisphere-Cylinder in a Supersonic Flow** O. Azarova, Russian Academy of Sciences, Moscow, Russia; D. Knight, Rutgers University, New Brunswick, NJ	1130 hrs AIAA-2015-0583 **Numerical Simulation of Energy Deposition in a Viscous Supersonic Flow Past a Hemisphere** M. Mortazavi, D. Knight, Rutgers University, Piscataway, NJ	1200 hrs AIAA-2015-0584 **LES for Prediction of Pressure Fluctuation for Supersonic Flow around a Truncated Cone** S. Chern, G. Lobser, M. Schoonmaker, E. Heyde, United Launch Alliance, Denver, CO; C. Liu, University of Texas, Arlington, Arlington, TX	

Tuesday, 6 January 2015						
121-FD-18	**Stability and Transition Modeling**					**Daytona 2**
Chaired by: E. WHITE, Texas A&M University and L. DECHANT, Sandia National Laboratories/Aerosciences						
0930 hrs AIAA-2015-0585 **DNS Study on Role of Linearly Unstable Modes in Flow Transition** J. Tang, Y. Yan, Y. Dong, C. Liu, University of Texas, Arlington, Arlington, TX	1000 hrs AIAA-2015-0586 **Laminar Turbulent Intermittency Models: Determination of Functional Behavior Using an Asymptotic Differential Equation Argument** L. DeChant, Sandia National Laboratories, Albuquerque, NM	1030 hrs AIAA-2015-0587 **A Comparison of a Local Correlation-Based Transition Model Coupled with SA and SST Turbulence Models** J. Wang, C. Sheng, University of Toledo, Toledo, OH	1100 hrs AIAA-2015-0588 **Application of the Amplification Factor Transport Transition Model to the Shear Stress Transport Model** J. Coder, M. Maughmer, Pennsylvania State University, University Park, PA	1130 hrs AIAA-2015-0589 **A General 3D Relation for Oblique Shocks on Swept Ramps** N. Domel, Lockheed Martin Corporation, Fort Worth, TX	1200 hrs AIAA-2015-0590 **A physics-Based Stress Model** J. Rodio, North Carolina State University, Raleigh, NC; X. Xiao, Corvid Technologies, Inc., Mooresville, NC; H. Hassan, North Carolina State University, Raleigh, NC	

Tuesday, 6 January 2015						
122-GNC-11	**Aerospace Robotics and Autonomous/Unmanned Systems III**					**Sun Ballroom 3**
Chaired by: J. SASIADEK, Carleton University and D. PEREZ						
0930 hrs AIAA-2015-0591 **Two Dimensional Optimum Path Navigation for Autonomous Parafoil Vehicles in High Altitude Ballooning** S. Lee, Alfred University, Alfred, NY; J. Conner, A. Arena, Oklahoma State University, Stillwater, OK	1000 hrs AIAA-2015-0592 **Three-Dimensional Velocity Obstacle Method for UAV Deconflicting Maneuvers** Y. Jenie, E. Van Kampen, C. de Visser, J. Ellerbroek, J. Hoekstra, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2015-0593 **Comprehensive Modeling and Analysis of an Unmanned Coaxial Helicopter** X. Yuan, J. Zhu, Tsinghua University, Beijing, China	1100 hrs AIAA-2015-0594 **Tracking a Maneuvering Target with an Underactuated UAV in the SE(3) Space** D. Pylorof, E. Bakolas, University of Texas, Austin, Austin, TX			

Tuesday, 6 January 2015						
123-GNC-12	**Advances in GN&C of Multi-Agent Autonomous Systems**					**Miami 1**
Chaired by: S. CHUNG, University of Illinois at Urbana-Champaign and N. HOVAKIMYAN, University of Illinois at Urbana-Champaign						
0930 hrs AIAA-2015-0595 **Time-Critical Coordination of Multiple UAVs with Absolute Temporal Constraints** J. Puig, E. Xargay, R. Choe, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL	1000 hrs AIAA-2015-0596 **Attitude Control and Stabilization of Spacecraft with a Captured Asteroid** S. Bandyopadhyay, S. Chung, University of Illinois, Urbana-Champaign, Urbana, IL; F. Hadaegh, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1030 hrs AIAA-2015-0597 **Trajectory Generation using Spatial Pythagorean Hodograph Bezier Curves** R. Choe, J. Puig, V. Cichella, E. Xargay, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL	1100 hrs AIAA-2015-0598 **Collision Avoidance through Path Replanning using Bézier Curves** S. Mehdi, R. Choe, V. Cichella, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL	1130 hrs AIAA-2015-0599 **Swarm Assignment and Trajectory Optimization Using Variable-Swarm, Distributed Auction Assignment and Model Predictive Control** D. Morgan, S. Chung, University of Illinois, Urbana-Champaign, Urbana, IL; F. Hadaegh, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1200 hrs AIAA-2015-0600 **Collision Avoidance: A Game Theoretic Approach** S. Snyder, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL	

Tuesday, 6 January 2015						
124-GNC-13	**Guidance and Control of Autonomous/Unmanned Systems**					**Sun Ballroom 5**
Chaired by: K. BOLLINO, AFOSR/EOARD and P. SHANKAR, California State Univ						
0930 hrs AIAA-2015-0601 **SDRE Based Guidance and Flight Control of Aircraft Formations** O. Tekinalp, S. Kumbasar, Middle East Technical University, Ankara, Turkey	1000 hrs AIAA-2015-0602 **Tight Formation Flight with Feasible Model Predictive Control** F. Almeida, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil	1030 hrs AIAA-2015-0603 **A Fully Parameterizable Implementation of Autonomous Take-off and Landing for a Fixed Wing UAV** T. Carnes, T. Bakker, R. Klenke, Virginia Commonwealth University, Richmond, VA	1100 hrs AIAA-2015-0604 **A Kalman Filter Based Attitude Heading Reference System Using a Low Cost Inertial Measurement Unit** M. Leccadito, T. Bakker, R. Niu, R. Klenke, Virginia Commonwealth University, Richmond, VA	1130 hrs AIAA-2015-0605 **Robust Flight Control System for a Tilt Rotor UAV** G. Di Francesco, E. D'Amato, M. Mattei, Second University of Naples, Aversa, Italy	1200 hrs AIAA-2015-0606 **Design of Gain Scheduled Stability and Control Augmentation System for Quad-Tilt-Wing UAV** H. Totoki, Y. Ochi, National Defense Academy, Yokosuka, Japan; M. Sato, K. Muraoka, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	

Tuesday, 6 January 2015						
125-GNC-14	**Adaptive Control of Flight Vehicles**					**Sun Ballroom 4**
Chaired by: S. SCHATZ, Institute of Flight System Dynamics and T. YUCELEN, Missouri University of Science & Technology						
0930 hrs AIAA-2015-0607 **Output Feedback Concurrent Learning Model Reference Adaptive Control** J. Quindlen, Massachusetts Institute of Technology, Cambridge, MA; G. Chowdhary, Oklahoma State University, Stillwater, OK; J. How, Massachusetts Institute of Technology, Cambridge, MA	1000 hrs AIAA-2015-0608 **Application of a Novel Scalability Notion in Adaptive Control to Various Adaptive Control Frameworks** S. Schatz, Technical University of Munich, Garching, Germany; T. Yucelen, B. Gruenwald, Missouri University of Science and Technology, Rolla, MO; F. Holzapfel, Technical University of Munich, Garching, Germany	1030 hrs AIAA-2015-0609 **Adaptive Fault Tolerant Controller Based on Quasi-Continuous High-Order Sliding Modes** J. Davila, National Polytechnic Institute, Mexico City, Mexico; J. Cieslak, D. Henry, A. Zolghadri, University of Bordeaux, Bordeaux, France; F. Bejarano, National Polytechnic Institute, Mexico City, Mexico	1100 hrs AIAA-2015-0610 **A Direct Uncertainty Minimization Framework in Model Reference Adaptive Control** T. Yucelen, B. Gruenwald, Missouri University of Science and Technology, Rolla, MO; J. Muse, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2015-0611 **A Design, Analysis and Verification Framework for Adaptive Flight Control** M. Fravolini, University of Perugia, Perugia, Italy; T. Yucelen, B. Gruenwald, Missouri University of Science and Technology, Rolla, MO; N. Nguyen, NASA Ames Research Center, Moffett Field, CA; W. Daniel, Missouri University of Science and Technology, Rolla, MO	1200 hrs AIAA-2015-0612 **An adaptive compensation strategy of control surfaces free-play** A. Mannarino, Technical University of Milan, Milan, Italy	

Tuesday, 6 January 2015						
126-GNC-15	**Missile Guidance III**					**Sun Ballroom 6**
Chaired by: S. THEODOULIS, French German Research Institute and R. TEKIN, ASELSAN Inc						
0930 hrs AIAA-2015-0613 **A New Impact Time Control Guidance Law for Precise Time-on-Target Missile Strike** M. Snyder, University of Central Florida, Orlando, FL; R. Prazenica, Embry-Riddle Aeronautical University, Daytona Beach, FL; R. Hull, United Technologies Corporation, Orlando, FL	1000 hrs AIAA-2015-0614 **Blind Evasion by Random-Phase Periodic Maneuvers** R. Morgan, J. Riel, Raytheon Missile Systems, Tucson, AZ	1030 hrs AIAA-2015-0615 **Satisfying Impact Angle Constraint with Field-of-View Limitations** A. Ratnoo, Indian Institute of Science, Bangalore, India	1100 hrs AIAA-2015-0616 **Impact Time and Angle Control Guidance** S. kumar, D. Ghose, Indian Institute of Science, Bangalore, India	1130 hrs AIAA-2015-0617 **A Composite Guidance for Vertically Launched Dual Range SAM with Side Jet Controls** D. Taur, Chungshan Institute of Science and Technology, Taipei, Taiwan	1200 hrs AIAA-2015-0618 **Cooperative Attack of Multiple Missiles with Ideal-Line-of-Sight-Guidance** H. Li, Beijing Institute of Technology, Beijing, China	

Tuesday, 6 January 2015						
127-GT-2	**The NASA CRM Model & High Reynolds Number Aerodynamics and Testing (Invited)**					**Miami 3**
Chaired by: J. QUEST, ETW GmbH and W. KILGORE, NASA Langley Research Center						
0930 hrs AIAA-2015-0619 **Validation of Wing Deformation Simulations for the NASA CRM Model using Fluid-Structure Interaction Computations** S. Keye, German Aerospace Center (DLR), Braunschweig, Germany	1000 hrs AIAA-2015-0620 **CFD-Aided Model Deformation Corrections of NASA Research Model Wind Tunnel data** K. Yasue, M. Ueno, S. Koga, M. Kohzai, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1030 hrs AIAA-2015-0621 **Slotted Wall Interference Investigation in ETW using the NASA CRM model** A. Gorbushin, S. Bosnyakov, S. Glazkov, A. Llysenkov, S. Matyash, A. Semenov, TsAGI, Zhukovsky, Russia; et al.	1100 hrs AIAA-2015-0622 **Mach Stability Improvements Using an Existing Second Throat Capability at the National Transonic Facility (Invited)** D. Chan, NASA Langley Research Center, Hampton, VA; S. Balakrishna, Jacobs, Hampton, VA; E. Walker, NASA Langley Research Center, Hampton, VA; S. Goodliff, Jacobs, Hampton, VA	1130 hrs AIAA-2015-0623 **A Description of the Development, Capabilities, and Operational Status of the Test SLATE Data Acquisition System at the National Transonic Facility** C. Cramer, Sierra Lobo, Inc., Hampton, VA; J. DeMoss, Analytical Services & Materials, Inc., Hampton, VA; J. Wright, M. Asay, S. Simmons, L. Bobbitt, Jacobs, Hampton, VA		

Tuesday, 6 January 2015						
128-GTE-3	**Engine Systems I**					**Emerald 1**
Chaired by: G. WELCH, NASA Glenn Research Center and M. RICKLICK, CATER: Center for Advanced Turbines & Energy Research						
0930 hrs AIAA-2015-0624 **Optimization of Gas Turbine - Solid Oxide Fuel Cell Systems for Aircraft Power Generation** D. Waters, C. Cadou, University of Maryland, College Park, College Park, MD	1000 hrs AIAA-2015-0625 **Inverted Gas Turbine Design and Analysis** J. Wilson, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH	1030 hrs AIAA-2015-0626 **Preliminary Design Investigation of Electromagnetic Motors for Turbofan-Drive Assist** K. Okai, T. Shinohara, T. Himeno, T. Watanabe, University of Tokyo, Tokyo, Japan; D. Masaki, T. Tagashira, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; et al.	1100 hrs AIAA-2015-0627 **Feasibility Study of an Inverse Brayton UAV Propulsion System** N. Grannan, E. Gutmark, University of Cincinnati, Cincinnati, OH	1130 hrs AIAA-2015-0628 **An Off-Design Analysis of an Inverse Brayton Cycle Based UAV Propulsion System** N. Grannan, E. Gutmark, University of Cincinnati, Cincinnati, OH	1200 hrs AIAA-2015-0629 **Advances of Turbomachinery Design Optimization** J. Page, R. Watson, Z. Ali, University of Cambridge, Cambridge, United Kingdom; P. Hield, Rolls-Royce Group plc, Bristol, United Kingdom; P. Tucker, University of Cambridge, Cambridge, United Kingdom	

Tuesday, 6 January 2015		
129-HIS-2 **0930 - 1130 hrs**	**The NACA Centennial: An Assessment**	**Tallahassee 2**
Chaired by: T. CROUCH, National Air & Space Museum		
An invited panel discussion on the impact and influence of the National Advisory Committee for Aeronautics 100 years after the founding (March 3, 1915). **Roger Launius**, NASM; **James Hansen**, Auburn; **Deborah Douglas**, MIT; **William Barry**, NASA		

Tuesday, 6 January 2015						
130-HSABP-3	**Pressure Gain Combustion - Rotating Detonation Engines I**					**Emerald 3**
Chaired by: D. MUSIELAK, University of Texas at Arlington and T. KAEMMING, Innovative Scientific Solutions Incorporated						
0930 hrs AIAA-2015-0630 **Performance Evaluation of a Rotating Detonation Engine with Conical-Shape Tail** K. Ishihara, K. Matsuoka, J. Kasahara, Nagoya University, Nagoya, Japan; A. Matsuo, Keio University, Yokohama, Japan; I. Funaki, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1000 hrs AIAA-2015-0631 **Study of the Experimental Performance of a Rotating Detonation Engine with Nozzled Exhaust Flow** M. Fotia, Air Force Research Laboratory, Wright-Patterson AFB, OH; T. Kaemming, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2015-0632 **Experimental Ignition Characteristics of a Rotating Detonation Engine under Backpressured Conditions** M. Fotia, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2015-0633 **Fuel Blending as a Means to Achieve Initiation in a Rotating Detonation Engine** A. St. George, R. Driscoll, V. Anand, D. Munday, E. Gutmark, University of Cincinnati, Cincinnati, OH	1130 hrs AIAA-2015-0634 **Experimental Measurement of Detonation Cell Size in a Two-Dimensional Facility at High Pressures** C. Babbie, P. King, Air Force Institute of Technology, Wright-Patterson AFB, OH; C. Stevens, J. Hoke, F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1200 hrs AIAA-2015-0635 **Development of a Rotating Detonation Engine Facility at the University of Cincinnati** A. St. George, R. Driscoll, D. Munday, E. Gutmark, University of Cincinnati, Cincinnati, OH	

Tuesday, 6 January 2015						
131-HSABP-4	**Numerical Analysis of High Speed Air-Breathing Propulsion**					**Emerald 8**
Chaired by: H. HASSAN, North Carolina State University and T. SMITH, Boeing Engineering Operations & Technology						
0930 hrs AIAA-2015-0636 **Simulating Turbulence and Mixing in Supersonic Combustors Using Hybrid RANS/LES** D. Peterson, E. Hassan, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2015-0637 **Hybrid Reynolds-Averaged / Large Eddy Simulation of a Cavity Flameholder; Assessment of Modeling Sensitivities** R. Baurle, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2015-0639 **Performance Analysis of the Atlantis Dynamic Intake System** S. Wilson, C. Johansen, University of Calgary, Calgary, Canada; V. Mravcak, Atlantis Research Labs Inc., Regina, Canada				

Tuesday, 6 January 2015						
132-ICC-1	**C2 and Beyond: A Look into the Future of Complex Aerospace Command and Control Systems**					**Osceola Ballroom 2**
Chaired by: M. SOTAK, Kratos Defense and Security Solutions and J. MCEVER, The Johns Hopkins University Applied Physics Laboratory						
0930 hrs AIAA-2015-0640 **A System-of-Systems Approach for Assessing the Resilience of Reconfigurable Command and Control Networks** H. Tran, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2015-0641 **Utilization of Wind Energy in Optimal Guidance Strategies via Real-Time Control Methodologies** K. Turkoglu, A. Mazzulla, San Jose State University, San Jose, CA	1030 hrs AIAA-2015-0642 **Direct Adaptive Control for Infinite-Dimensional Symmetric Hyperbolic Systems with Application to Controlled Wave-like Behavior** M. Balas, Embry-Riddle Aeronautical University, Daytona Beach, FL; S. Frost, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2015-0643 **MAR-CPS: Measurable Augmented Reality for Prototyping Cyber-Physical Systems** S. Omidshafiei, A. Agha-Mohammadi, Y. Chen, N. Üre, J. How, Massachusetts Institute of Technology, Cambridge, MA; J. Vian, The Boeing Company, Seattle, WA; et al.	1130 hrs AIAA-2015-0644 **A System-of-Systems Perspective on Information Fusion Systems: Architecture Representation and Evaluation** A. Raz, D. DeLaurentis, Purdue University, West Lafayette, IN		

Tuesday, 6 January 2015		
133-IS-5 **0930 - 1230 hrs**	**Invited Panel Discussion - Autonomy Research for Civil Aviation: Toward a New Era of Flight**	**Osceola Ballroom 3**

This panel will share their perspectives on autonomy research and development needs in civil aviation. Panelists represent a broad set of industrial and academic stakeholders in civil aviation with interests in manned and unmanned aircraft as well as air traffic management and National Airspace System operations. As members of the National Research Council (NRC) committee to develop a national research agenda for autonomy in civil aviation (released June 2014), panelists will each provide their views on the most critical autonomy barriers, research priorities, and potential benefits identified in this report followed by an open question and answer period with attendees.

Panelists:

Ella Atkins	**John-Paul Clarke**	**Noah Flood**	**Andrew Lacher**
University of Michigan	Georgia Institute of Technology	Delta Airlines	MITRE

Tuesday, 6 January 2015		
134-LEC-3 **0930 - 1030 hrs**	**Adaptive Structures Lecture: Micro Aerial Vehicles (MAV): Challenges and Opportunities**	**Osceola Ballroom A**
Chaired by: D. MCGOWAN, NASA Langley Research Center and E. WHITE, Boeing Engineering Operations & Technology		

Inderjit Chopra
Alfred Gessow and Distinguished University Professor
University of Maryland

Tuesday, 6 January 2015		
135-MAT-5 **0930 - 1230 hrs**	**ICME Panel**	**Sun Ballroom D**
Chaired by: J. MATLIK, Rolls-Royce Corp; S. ARNOLD, University of Heidelberg, Germany and M. SANGID, Purdue University		

Integrating Computational Materials Engineering Practices into Design Systems and Structural Analysis - Requirements Definition & Implementation Opportunities

Panelists:

Charles Ward	**Dale Ball**	**Steve Engelstad**	**Ben Thacker**	**H Alicia Kim**	**Vasisht Venkatesh**	**Joe Salvo**	**Vikas Saraf**	**Rob Gorham**
AFRL	Lockheed Martin Coporation	Lockheed Martin Corporation	SouthwestResearch Institute	Univeristy of Bath	Pratt & Whitney	GE Global Research	ATI	America Makes

Tuesday, 6 January 2015						
136-MAT-6	**Nanostructured Materials II**					**Sarasota 1**
Chaired by: V. ROLLIN, Embry-Riddle Aeronautical University and D. POWELL						
0930 hrs AIAA-2015-0645 **Graphene-Carbon Nanotubes Hybrids for Composite Materials** A. Avila, G. Pereira, Federal University of Minas Gerais, Belo Horizonte, Brazil	1000 hrs AIAA-2015-0646 **Modeling of Fracture in Nano-Particle Reinforced Polymers using the Atomistic J-Integral** A. Akepati, S. Roy, V. Unnikrishnan, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1030 hrs Oral Presentation **Aerospace Applications of Nanomaterials for Sustainable Energy** S. Arepalli, National Institute of Aerospace, Hampton, VA	1100 hrs AIAA-2015-0647 **Multiscale analysis of polymer nanocomposites considering hyperelasto-plastic behavior** H. Shin, W. Kim, J. Ryu, S. Chang, M. Cho, Seoul National University, Seoul, South Korea			

Tuesday, 6 January 2015						
137-MDO-4	**MDO: Supersonic Applications**					**Sarasota 3**
Chaired by: T. TAKAHASHI, Arizona State University and E. ALYANAK, AFRL/RQVC						
0930 hrs AIAA-2015-0648 **Multi-Parameter Performance Evaluation, the Next Step in Conceptual Design Concept Assessment** E. Alyanak, D. Allison, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2015-0649 **High Fidelity, Nonlinear, Integrated Nozzle Installation Effects for Numerical Propulsion System Simulation** D. Allison, Optimal Flight Sciences, LLC, Dayton, OH; E. Alyanak, Air Force Research Laboratory, Wright-Patterson AFB, OH; N. Bhagat, Universal Technology Corporation, Fairborn, OH	1030 hrs AIAA-2015-0650 **Multi-Objective, Multidisciplinary Design Optimization of TSTO Space Planes with RBCC Engines** T. Fujikawa, T. Tsuchiya, University of Tokyo, Bunkyo, Japan; S. Tomioka, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan				

Tuesday, 6 January 2015						
138-MST-5	**Air Traffic Management II**					**Sun Ballroom 1**
Chaired by: J. SCHROEDER, Federal Aviation Administration						
0930 hrs AIAA-2015-0651 **Study on Validation and Application of Fuel-Burn Estimation** Y. Nakamura, K. Kageyama, Electronic Navigation Research Institute, Tokyo, Japan	1000 hrs AIAA-2015-0652 **Continuous Descent Operation Performance Improvement through Flight Time Reduction** N. Takeichi, J. Ishihara, M. Sato, Nagoya University, Nagoya, Japan	1030 hrs AIAA-2015-0653 **Arrival Metering Precision Study** T. Prevot, NASA Ames Research Center, Moffett Field, CA; J. Mercer, J. Homola, S. Hunt, A. Gomez, N. Bienert, San Jose State University, Moffett Field, CA; et al.				

Tuesday, 6 January 2015						
139-MST-6	**Human Factors, Perception, and Cueing**					**Sun Ballroom 2**
Chaired by: F. CARDULLO, State University of NY						
0930 hrs AIAA-2015-0654 **Adaptive State Predictor Based Human Operator Modeling on Longitudinal and Lateral Control** A. Trujillo, I. Gregory, NASA Langley Research Center, Hampton, VA; L. Hempley, Northrop Grumman Corporation, Hampton, VA	1000 hrs AIAA-2015-0655 **Effects of False Tilt Cues on the Training of Manual Roll Control Skills** P. Zaal, San Jose State University, San Jose, CA; B. Sweet, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2015-0656 **An Algorithm to Improve Ground-Based Spatial Disorientation Training** B. McGrath, University of Canberra, Canberra, Australia; B. Lawson, Army Aeromedical Research Laboratory, Fort Rucker, AL; M. Newman, National Aerospace Training and Research Center (NASTAR), Southampton, PA; A. Rupert, Army Aeromedical Research Laboratory, Fort Rucker, AL	1100 hrs AIAA-2015-0657 **Automatic Air Collision Avoidance System Testing** C. Richardson, Air Force Test Center, Edwards AFB, CA; T. Hamilton, Air Force Life Cycle Management Center, Arlington, VA; T. Millet, M. Pacini, Air Force Test Center, Edwards AFB, CA	1130 hrs AIAA-2015-0658 **Experimental Evaluation of RLS Algorithm for Identification of Time-Varying Neuromuscular Response** M. Olivari, F. Nieuwenhuizen, H. Bülthoff, Max Planck for Biological Cybernetics, Tübingen, Germany; L. Pollini, University of Pisa, Pisa, Italy	

Tuesday, 6 January 2015						
140-NDA-3	**Uncertainty Quantification and Management I**					**Osceola Ballroom 5**
Chaired by: G. MODGIL, Rolls-Royce Corp and B. SMARSLOK, Air Force Reseach Laboratory						
0930 hrs AIAA-2015-0659 **Calibration of Predictor Models Using Multple Validation Experiments** L. Crespo, National Institute of Aerospace, Hampton, VA; S. Kenny, D. Giesy, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2015-0660 **Using Expected Information Gain to Design Aerothermal Model Calibration Experiments** D. Villanueva, Universal Technology Corporation, Dayton, OH; B. Smarslok, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2015-0661 **Global Sensitivity Analysis for System Response Prediction Using Auxiliary Variable Method** C. Li, S. Mahadevan, Vanderbilt University, Nashville, TN	1100 hrs AIAA-2015-0662 **Using Bootstrap to Assess Sampling Uncertainty in Fatigue Crack Growth Life** K. Bhachu, R. Haftka, N. Kim, University of Florida, Gainesville, Gainesville, FL	1130 hrs AIAA-2015-0663 **Uncertainty Quantification of a Rectangular 5:1 Cylinder** J. Witteveen, Center for Mathematics and Computer Science (CWI), Amsterdam, The Netherlands; P. Omrani, TNO, Delft, The Netherlands; A. Mariotti, M. Salvetti, University of Pisa, Pisa, Italy	1200 hrs AIAA-2015-0664 **Uncertainty Quantification and Sensitivity Analysis of Aeroservoelastic Stability for a Slender Flight Vehicle** J. Tang, Z. Wu, C. Yang, Beihang University, Beijing, China	

Tuesday, 6 January 2015		
141-PANEL-3 **0930 - 1130 hrs**	**Improving Business Skills and Business Processes for the Aerospace Technical Community**	**Osceola Ballroom B**

Moderator: Andy White, Director, University of Tennessee Aerospace & Defense Business Institute

Panelists:

Jeff Babione
Vice President and Deputy GM, Joint Strike Fighter Program
Lockheed Martin Corporation

Robert Lightfoot
Associate Administrator
NASA

Alex Miller
William B. Stokely Chair in Management and former Associate Dean
UT Haslam College of Business Administration

Bobby Smart
Deputy Assistant Secretary
Air Force Acquisition Integration

Tuesday, 6 January 2015						
142-PC-9	**Advanced Combustion Concepts II**					**Emerald 5**
Chaired by: W. SUN, Georgia Institute of Technology and R. PITZ, Vanderbilt University						
0930 hrs AIAA-2015-0665 **Low temperature oxidation of methane in a nanosecond pulsed plasma discharge** J. Lefkowitz, P. Guo, A. Rousso, Y. Ju, Princeton University, Princeton, NJ	1000 hrs AIAA-2015-0666 **Plasma Assisted MILD Combustion** T. Wada, J. Lefkowitz, Y. Ju, Princeton University, Princeton, NJ	1030 hrs AIAA-2015-0667 **On the Role of Translational Nonequilibrium for Hydrogen Air Plasma Assisted Ignition** A. Starikovskiy, Princeton University, Princeton, NJ	1100 hrs AIAA-2015-0668 **Energy balance in surface nanosecond dielectric barrier discharge. Plasma-assisted ignition of heavy hydrocarbons at high pressures** S. Shcherbanev, S. Stepanyan, École Polytechnique, Palaiseau, France; M. Boumehdi, P. Desgroux, G. Vanhove, Lille University of Science and Technology, Lille, France; S. Starikovskaia, École Polytechnique, Palaiseau, France	1130 hrs AIAA-2015-0669 **The Effect of Ozone Addition on Flame Propagation** X. Gao, Y. Zhang, S. Adusumilli, J. Seitzman, W. Sun, Georgia Institute of Technology, Atlanta, GA; T. Ombrello, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.		

Tuesday, 6 January 2015						
143-PC-10	**Turbulent Combustion III**					**Emerald 7**
Chaired by: A. STEINBERG, University of Toronto and Y. JU, Princeton University						
0930 hrs AIAA-2015-0670 **High-Speed Measurements in Partially-Premixed Swirl Flames at Elevated Temperature and Pressure** C. Slabaugh, Purdue University, West Lafayette, IN; I. Boxx, S. Werner, W. Meier, German Aerospace Center (DLR), Stuttgart, Germany; R. Lucht, Purdue University, West Lafayette, IN	1000 hrs AIAA-2015-0671 **Large Scale Dynamics and Statistics of the Time-Varying Temperature Field in Turbulent Non-Premixed Jet Flames** T. McManus, J. Sutton, Ohio State University, Columbus, OH	1030 hrs AIAA-2015-0672 **Simulation Using Flamelet Radiation Modeling** J. Doom, General Electric Company, Niskayuna, NY	1100 hrs AIAA-2015-0673 **Addition of Ammonia to a Bluff-Body Stabilized Flame and Its Effect on NOx Emissions and Static Stability** B. Huelskamp, Innovative Scientific Solutions, Inc., Dayton, OH; P. Gokulakrishnan, Combustion Science and Engineering, Inc., Columbia, MD; C. Klingshirn, University of Dayton Research Institute, Dayton, OH; N. Kuprowicz, V. Belovich, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2015-0674 **Strain Effects in Partially Premixed Methane-air Jet Flames** W. Calhoon, K. Kemenov, Combustion Research and Flow Technology, Inc., Huntsville, AL		

Tuesday, 6 January 2015						
144-PDL-2	**Aero-Optics**					**Emerald 2**
Chaired by: M. STANEK, AFRL/RQVI and M. RENNIE, University of Notre Dame						
0930 hrs AIAA-2015-0675 **Airborne Aero-Optics Laboratory - Transonic (AAOL-T)** E. Jumper, S. Gordeyev, D. Cavalieri, P. Rollins, University of Notre Dame, Notre Dame, IN; M. Whiteley, MZA Associates Corporation, Dayton, OH; M. Krizo, Air Force Institute of Technology, Wright-Patterson AFB, OH	1000 hrs AIAA-2015-0676 **Aero-Optical Investigation of Transonic Flow Features And Shock Dynamics on Hemisphere-On-Cylinder Turrets** N. De Lucca, S. Gordeyev, J. Morrida, E. Jumper, University of Notre Dame, Notre Dame, IN	1030 hrs AIAA-2015-0677 **Global Unsteady Pressure Fields Over Turrets In-Flight** N. De Lucca, S. Gordeyev, E. Jumper, University of Notre Dame, Notre Dame, IN	1100 hrs AIAA-2015-0678 **Computation of the Aero-Optical Effect of a Helicopter Rotor Wake Using Unsteady RANS and LES** R. Kelly, A. Jemcov, M. Rennie, E. Jumper, University of Notre Dame, Notre Dame, IA; M. Whiteley, D. Goorskey, MZA Associates Corporation, Dayton, OH	1130 hrs AIAA-2015-0679 **A Latency-Tolerant Architecture for Airborne Adaptive Optic Systems** W. Burns, E. Jumper, S. Gordeyev, University of Notre Dame, Notre Dame, IN		

Tuesday, 6 January 2015						
145-SCS-3	**Packaging and Deployment of Spacecraft Structures**					**Osceola Ballroom 4**
Chaired by: W. REYNOLDS, Air Force Research Laboratory and G. GRESCHIK, TentGuild Engineering Co						
0930 hrs AIAA-2015-0680 **Wrapping Fold and Deployment Characteristics of Boom-Membrane Integrated Space Structures** H. Sakamoto, H. Furuya, Tokyo Institute of Technology, Tokyo, Japan; Y. Satou, N. Okuizumi, M. Takai, M. Natori, Japan Aerospace Exploration Agency (JAXA), Kanagawa, Japan	1000 hrs AIAA-2015-0681 **An Examination of Crease Removal in Rigidizable Inflatable Metal-Polymer Laminate Cylinders** G. Secheli, A. Viquerat, V. Lappas, University of Surrey, Guildford, United Kingdom	1030 hrs AIAA-2015-0682 **Wrapping Thick Membranes with Slipping Folds** M. Arya, N. Lee, S. Pellegrino, California Institute of Technology, Pasadena, CA	1100 hrs AIAA-2015-0683 **A Basic Construction Concept for Space Structure Systems Using Active Connecting Elements** M. Natori, Self, Sagamihara, Japan; M. Nagasawa, J. Yamada, A. Okuno, H. Yamakawa, Waseda University, Shinjyuku, Japan; K. Higuchi, Muroran Institute of Technology, Muroran, Japan			

Tuesday, 6 January 2015						
146-SD-6	**Supersonic/Hypersonic Systems I**					**Tampa 2**
Chaired by: B. GLAZ, U. S. Army Research Laboratory (APG) and N. FALKIEWICZ, MIT Lincoln Laboratory						
0930 hrs AIAA-2015-0684 **An Overview of the NASA High Speed ASE Project: Aeroelastic Analyses of a Low-Boom Supersonic Configuration** W. Silva, NASA Langley Research Center, Hampton, VA; A. De La Garza, P. Zink, E. Bounajem, J. Johnson, Lockheed Martin Corporation, Fort Worth, TX; M. Buonanno, Lockheed Martin Corporation, Palmdale, CA; et al.	1000 hrs AIAA-2015-0685 **Response of a Panel to Shock Impingement: Modeling and Comparison with Experiments - Part 2** A. Gogulapati, R. Deshmukh, J. McNamara, Ohio State University, Columbus, OH; V. Vyas, X. Wang, M. Mignolet, Arizona State University, Tempe, AZ; et al.	1030 hrs AIAA-2015-0686 **Loosely Coupled Time-Marching of Fluid-Thermal-Structural Interactions with Time-Accurate CFD** B. Miller, J. McNamara, Ohio State University, Columbus, OH	1100 hrs AIAA-2015-0687 **Rapid Prediction of Unsteady Aeroelastic Loads in Shock-Dominated Flows** K. Brouwer, A. Crowell, J. McNamara, Ohio State University, Columbus, OH	1130 hrs AIAA-2015-0688 **Characterization of Structural Response to Hypersonic Boundary Layer Transition** Z. Riley, R. Deshmukh, B. Miller, J. McNamara, Ohio State University, Columbus, OH		

Tuesday, 6 January 2015						
147-SD-7	**Cable/Beam Modeling I**					**Tampa 3**
Chaired by: C. HEBERT, Sierra Nevada Corporation and Z. SOTOUDEH, Rensselaer Polytechnic Institute						
0930 hrs AIAA-2015-0689 **Nonlinear Normal Modes in Finite Element Model Validation of Geometrically Nonlinear Flat and Curved Beams** D. Ehrhardt, M. Allen, R. Kuether, University of Wisconsin, Madison, Madison, WI	1000 hrs AIAA-2015-0690 **Experimental and Theoretical Analysis of Cabled Beams** K. Spak, Virginia Polytechnic Institute and State University, Blacksburg, VA; G. Agnes, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; D. Inman, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2015-0691 **Non-linear Sectional Analysis of Composite Beams with Finite Deformation and Hyperelastic Materials** F. Jiang, W. Yu, Purdue University, West Lafayette, IN	1100 hrs AIAA-2015-0692 **Nonlinear Geometric Reduced Order Model for the Response of a Beam with a Piezoelectric Actuator** V. Vyas, X. Wang, A. Jain, M. Mignolet, Arizona State University, Tempe, AZ	1130 hrs AIAA-2015-0693 **Investigation of a Dynamic Finite Element Model for the Nonlinear Response of Fatigue Cracked Structures** P. Cooley, J. Slater, Wright State University, Dayton, OH	1200 hrs AIAA-2015-0694 **Application of Transfer Matrix Approach to Modeling and Decentralized Control of Lattice-based Structures** N. Cramer, University of California, Santa Cruz, Santa Cruz, CA; S. Swei, K. Cheung, NASA Ames Research Center, Moffett Field, CA; M. Teodorescu, University of California, Santa Cruz, Santa Cruz, CA	

Tuesday, 6 January 2015						
148-STR-7	**Special Session: Challenges in the Design of Joined Wings I**					**Tampa 1**
Chaired by: L. DEMASI, San Diego State University College of Engineering and A. PALAZOTTO, AFIT						
0930 hrs AIAA-2015-0695 **Aerodynamic Optimization Trade Study of a Box-Wing Aircraft Configuration** H. Gagnon, D. Zingg, University of Toronto, Toronto, Canada	1000 hrs AIAA-2015-0696 **Performance Based MDO of a Joined-Wing Regional Transport Aircraft (For Challenges in the Design of Joined Wings SPECIAL SESSION)** A. Suleman, University of Victoria, Victoria, Canada; F. Afonso, J. Vale, F. Lau, Technical University of Lisbon, Lisbon, Portugal	1030 hrs AIAA-2015-0697 **Minimum Induced Drag Theorems for Joined Wings, Closed systems, and Generic Biwings: Theory** L. Demasi, San Diego State University, San Diego, CA; G. Monegato, Technical University of Turin, Turin, Italy; A. Dipace, University of Pisa, Pisa, Italy; R. Cavallaro, San Diego State University, San Diego, CA	1100 hrs AIAA-2015-0698 **Minimum Induced Drag Theorems for Joined Wings, Closed Systems, and Generic Biwings: Results** L. Demasi, San Diego State University, San Diego, CA; G. Monegato, Technical University of Turin, Turin, Italy; E. Rizzo, SkyBox Engineering, Pisa, Italy; R. Cavallaro, San Diego State University, San Diego, CA; A. Dipace, University of Pisa, Pisa, Italy	1130 hrs AIAA-2015-0699 **Reduced Order Methods and Algorithms for Structurally Nonlinear Joined Wings** N. Teunisse, P. Tiso, Delft University of Technology, Delft, The Netherlands; L. Demasi, R. Cavallaro, San Diego State University, San Diego, CA	1200 hrs AIAA-2015-0700 **Design of a prototype of light amphibious PrandtlPlane** A. Frediani, University of Pisa, Pisa, Italy; V. Cipolla, SkyBox Engineering, Pisa, Italy; F. Oliviero, University of Pisa, Pisa, Italy	

Tuesday, 6 January 2015						
149-STR-8	**Special Sessions in Honor of Prof. Harry H. Hilton II**					**Tallahassee 3**
Chaired by: O. ZHUPANSKA, The University of Iowa; P. MARZOCCA, Clarkson University and R. SIERAKOWSKI, Air Force Reseach Laboratory						
0930 hrs AIAA-2015-0701 **Molecular Dynamics and Finite Element Investigation of Polymer Interphase Effects on Effective Stiffness of Wavy Aligned Carbon Nanotube Composites** Y. Atescan, Istanbul Technical University, Istanbul, Turkey; C. Hadden, Michigan Technological University, Houghton, MI; B. Wardle, Massachusetts Institute of Technology, Cambridge, MA; G. Odegard, Michigan Technological University, Houghton, MI; H. Cebeci, Istanbul Technical University, Istanbul, Turkey	1000 hrs AIAA-2015-0702 **On the Closed-Form Constitutive Relations for Damageable Elasto-Viscoplastic Materials** L. Zhang, W. Yu, Purdue University, West Lafayette, IN	1030 hrs AIAA-2015-0703 **Multiscale Modeling of the Radar Signature of a Composite Aircraft** K. Zhang, J. Jin, P. Geubelle, University of Illinois, Urbana-Champaign, Urbana, IL	1100 hrs AIAA-2015-0704 **Flight Vehicle Structural Design Processes for a Common Bulkhead and an MPCV Spacecraft Adapter** P. Aggarwal, P. Hull, NASA Marshall Space Flight Center, Huntsville, AL	1130 hrs AIAA-2015-0705 **Multiscale Modeling of a Mechanophore-embedded Nanocomposite for Damage Initiation Detection** B. Koo, Y. Liu, A. Chattopadhyay, L. Dai, Arizona State University, Tempe, AZ	1200 hrs AIAA-2015-0706 **Further Results on the Use of Material Tailoring to Improve Buckling Capacity of Elliptical Composite Cylinders** M. Hyer, Virginia Polytechnic Institute and State University, Blacksburg, VA	

Tuesday, 6 January 2015						
150-TP-4	**Heat Pipes/Heat Transfer I**					**Sun Ballroom B**
Chaired by: E. SHORT, Raytheon Company and M. HOWARD, Sandia National Laboratories						
0930 hrs AIAA-2015-0707 **Analytical Model for Transient Loop Heat Pipe Operation** T. Hoang, TTH Research, Inc., Clifton, VA; R. Baldauff, Naval Research Laboratory, Washington, DC; D. Mahony, Praxis, Inc., Alexandria, VA	1000 hrs AIAA-2015-0708 **Non-Intrusive Fluid Flow Measurement Method for Loop Heat Pipes** T. Hoang, TTH Research, Inc., Clifton, VA; R. Baldauff, K. Cheung, Naval Research Laboratory, Washington, DC; D. Mahony, Praxis, Inc., Alexandria, VA	1030 hrs AIAA-2015-0709 **Multiple-Evaporator Loop Heat Pipe** T. Hoang, TTH Research, Inc., Clifton, VA; J. Ku, NASA Goddard Space Flight Center, Greenbelt, MD	1100 hrs AIAA-2015-0710 **On the Modelling of Evaporating Sprays Impinging onto Solid Surfaces** C. Rodrigues, J. Barata, A. Silva, University of Beira Interior, Covilha, Portugal	1130 hrs AIAA-2015-0711 **Numerical Simulation of a stationery 3D Cooling Channel using periodic condition** H. Alhajeri, College of Technological Studies, Kuwait, Kuwait; A. Addali, Cranfield University, Cranfield, United Kingdom	1200 hrs AIAA-2015-0712 **Experimental Assessment of Vapour Chamber Heater Spreader Implementation in Avionic Cooling** A. Jones, R. Chen, Loughborough University, Loughborough, United Kingdom	

Tuesday, 6 January 2015						
151-UMS-2	**Unmanned Systems: Technologies and Applications I**					**Osceola Ballroom 1**
Chaired by: B. ARGROW, University of Colorado Boulder						
0930 hrs AIAA-2015-0713 **Motion Analysis of Captive Platform System Constructed from Airship and Tether** K. Chiba, S. Satori, R. Mitsuhashi, Hokkaido University of Science, Sapporo, Japan; J. Sasaki, R. Akiba, Hokkaido Aerospace Science and Technology Incubation Center, Sapporo, Japan	1000 hrs AIAA-2015-0714 **Control for Suppressing Roll Motion of Outdoor Blimp Robots for Disaster Surveillance** H. Saiki, National Research Institute of Fire and Disaster, Chofu, Japan; T. Kobayashi, T. Fukao, T. Urakubo, Kobe University, Kobe, Japan; K. Araiba, H. Amano, National Research Institute of Fire and Disaster, Chofu, Japan	1030 hrs AIAA-2015-0715 **Autonomous Navigation of UAV through GPS-Denied Indoor Environment with Obstacles** E. Schnipke, S. Reidling, J. Meiring, W. Jeffers, M. Hashemi, R. Tan, University of Toledo, Toledo, OH; et al.	1100 hrs AIAA-2015-0716 **Development of a Low-Cost Experimental Quadcopter Testbed using an Arduino controller for Video Surveillance** K. Turkoglu, A. Ji, San Jose State University, San Jose, CA	1130 hrs AIAA-2015-0717 **Autonomous Navigation of a Quadrotor in Indoor Environments for Surveillance and Reconnaissance** S. Bhandari, S. Viska, H. Shah, C. Chen, G. Tonini, S. Kline, California Polytechnic State University, Pomona, CA	1200 hrs AIAA-2015-0718 **System Architecture, Development and Results of the Embry-Riddle Aeronautical University Maritime RobotX Platform** C. Hockley, T. Zuercher, C. Kennedy, G. Gamble, H. Patel, P. Currier, Embry-Riddle Aeronautical University, Daytona Beach, FL; et al.	

Tuesday, 6 January 2015						
152-WE-5	**Vertical Axis Wind Turbine (VAWT) Research**					**Emerald 4**
Chaired by: D. GRIFFITH and C. SIMAO FERREIRA						
0930 hrs AIAA-2015-0719 **Combined structural optimization and aeroelastic analysis of a Vertical Axis Wind Turbine** B. Roscher, C. Simao Ferreira, L. Bernhammer, Delft University of Technology, Delft, The Netherlands; H. Madsen, Technical University of Denmark, Roskilde, Denmark; D. Griffith, Sandia National Laboratories, Albuquerque, NM; B. Stoevesandt, Fraunhofer, Oldenburg, Germany	1000 hrs AIAA-2015-0720 **Post-stall airfoil performance and vertical-axis wind turbines** J. Graham, J. Peiro, J. Rainbird, Imperial College London, London, United Kingdom	1030 hrs AIAA-2015-0721 **Efficient Aerodynamic Shape Optimization of VAWT Airfoil and Its Validation** W. Yamazaki, Y. Arakawa, Nagaoka University of Technology, Nagaoka, Japan	1100 hrs AIAA-2015-0722 **Airfoil optimization for stall regulated vertical axis wind turbines** C. Simao Ferreira, Delft University of Technology, Delft, The Netherlands; M. Barone, Sandia National Laboratories, Albuquerque, NM; A. Zanon, Austrian Institute of Technology, Vienna, Austria; R. Kemp, Delft University of Technology, Delft, The Netherlands; P. Giannattasio, University of Udine, Udine, Italy	1130 hrs AIAA-2015-0723 **Dynamic Stall on Vertical Axis Wind Turbines** D. Casteleim, G. Tescione, D. Ragni, C. Simao Ferreira, Delft University of Technology, Delft, The Netherlands		

Tuesday, 6 January 2015						
153-WE-6	**Wind Farm and Turbine Wake Interactions II**					**Emerald 6**
Chaired by: D. MANIACI, Sandia National Laboratories and T. HERGES						
0930 hrs AIAA-2015-0724 **A Comparison of the Dynamic Wake Meandering Model, Large-Eddy Simulation, and Field Data at the Egmond aan Zee Offshore Wind Plant** M. Churchfield, S. Lee, P. Moriarty, National Renewable Energy Laboratory, Golden, CO; Y. Hao, M. Lackner, University of Massachusetts, Amherst, Amherst, MA; R. Barthelmie, Cornell University, Ithaca, NY; et al.	1000 hrs AIAA-2015-0725 **A Modeling Framework for Wind Farm Analysis: Wind Turbine Wake Interactions** A. Ghate, S. Lele, Stanford University, Stanford, CA	1030 hrs AIAA-2015-0726 **A Comparison of the NREL 5-MW Wake Characteristics Using Both SOWFA and OVERFLOW2** E. Anderson, R. Chow, C. Van Dam, University of California, Davis, Davis, CA	1100 hrs AIAA-2015-0727 **Actuator Line Wind Turbine Simulations in Atmospheric Turbulent Flows using Spectral Element Method** T. Chatterjee, Y. Peet, Arizona State University, Tempe, AZ	1130 hrs AIAA-2015-0728 **A Parabolic Method without Pressure Approximations for Wind Turbines** A. Mittal, W. Briley, L. Taylor, K. Sreenivas, University of Tennessee, Chattanooga, Chattanooga, TN	1200 hrs AIAA-2015-0729 **Preliminary Study on Wake Interaction Effects Using a Free Vortex Wake Model** K. Shaler, J. McNamara, K. Kecskemety, Ohio State University, Columbus, OH	

Tuesday, 6 January 2015						
154-AS-2	**Shape Memory Alloy Applications**					**Osceola Ballroom 6**
Chaired by: D. LAGOUDAS, Texas A&M University and J. LENG						
1030 hrs AIAA-2015-0730 **Development of a SMA-Based, Slat-Gap Filler for Airframe Noise Reduction** T. Turner, NASA Langley Research Center, Hampton, VA; D. Long, Analytical Mechanics Associates, Inc., Hampton, VA	1100 hrs AIAA-2015-0731 **Aero–structural Optimization of Shape Memory Alloy-based Wing Morphing via a Class/Shape Transformation Approach** P. Leal, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil; D. Hartl, C. Bertagne, Texas A&M University, College Station, TX	1130 hrs AIAA-2015-0732 **Design and Testing of a Shape Memory Alloy Buoyancy Engine for Unmanned Underwater Vehicles** A. Angilella, F. Gandhi, Rensselaer Polytechnic Institute, Troy, NY; T. Miller, Pennsylvania State University, University Park, PA	1200 hrs AIAA-2015-0733 **Development of a Twisting Wing Powered by a Shape Memory Alloy Actuator** C. Stein, D. Hartl, L. Hodge, J. Mabe, J. Herrington, R. Saunders, Texas A&M University, College Station, TX			

Tuesday, 6 January 2015		
155-LUNCH-2 **1230 - 1400 hrs**	**Recognition Luncheon: Celebrating Achievements in Aerospace Sciences and Information Systems**	**Osceola Ballroom CD**

Tuesday, 6 January 2015						
156-AA-5	**Jet Noise Measurements II**					**Miami 2**
Chaired by: C. BROWN, NASA Glenn Research Center						
1400 hrs AIAA-2015-0734 **An Investigation of Transonic Resonance in a Mach 2.2 Round Convergent-Divergent Nozzle** V. Dippold, K. Zaman, NASA Glenn Research Center, Cleveland, OH	1430 hrs AIAA-2015-0735 **Measuring Jet Noise Source Locations with Acoustic Beamforming** N. Breen, K. Ahuja, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2015-0736 **A Study of the Noise Source Mechanisms in an Excited Mach 0.9 Jet - Complementary Experimental and Computational Analysis** M. Crawley, R. Speth, M. Samimy, D. Gaitonde, Ohio State University, Columbus, OH	1530 hrs AIAA-2015-0737 **The Properties and Localizations of Acoustic Sources of High Speed Jets** P. Kan, J. Lewalle, Z. Berger, M. Glauser, Syracuse University, Syracuse, NY	1600 hrs AIAA-2015-0738 **Comparison of Spatial and Temporal Resolution on High Speed Axisymmetric Jets** M. Berry, A. Magstadt, Z. Berger, P. Shea, M. Glauser, Syracuse University, Syracuse, NY; C. Ruscher, Spectral Energies, LLC, Dayton, OH; et al.	1630 hrs AIAA-2015-0739 **Investigation of "Loud" Modes in a High-Speed Jet to Identify Noise-Producing Events** Z. Berger, M. Berry, P. Shea, M. Glauser, P. Kan, J. Lewalle, Syracuse University, Syracuse, NY; et al.	

Tuesday, 6 January 2015						
157-AA-6	**General Acoustics**					**Sun Ballroom C**
Chaired by: J. PETERS, Rolls-Royce Corp						
1400 hrs AIAA-2015-0740 **Phase-Based Adaptive Estimation of Magnitude-Squared Coherence Between Turbofan Internal Sensors and Far-Field Microphone Signals** J. Miles, NASA Glenn Research Center, Cleveland, OH	1430 hrs AIAA-2015-0741 **Assessment of Geometry and In-Flow Effects on Contra-Rotating Open Rotor Broadband Noise Predictions** N. Zawodny, D. Nark, D. Boyd, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2015-0742 **Normal Incidence Acoustic Transmission Loss of Perforated Plates Subject to Bias Flow** V. Phong, D. Papamoschou, University of California, Irvine, Irvine, CA	1530 hrs AIAA-2015-0743 **A Multi-Stage Surrogate Modeling Approach to Examine Vehicle-Level Technology Impacts at the Airport-Level** J. Bernardo, C. Besson, H. Pfaender, J. Schutte, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2015-0744 **Multiple Aircraft Approach Path Optimization for Noise Abatement Considering the Influence of Meteorological Conditions on Sound Propagation** A. Andreeva-Mori, H. Ishii, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1630 hrs AIAA-2015-0745 **Analysis of sonic boom propagation based on the KZK equation** J. Takeno, T. Misaka, K. Shimoyama, S. Obayashi, Tohoku University, Sendai, Japan	

Tuesday, 6 January 2015						
158-AFM-7	**AFM Best Student Paper Competition III**					**Captiva 1**
Chaired by: F. PRIOLO, Millennium Engineering and Integration Company						
1400 hrs AIAA-2015-0746 **Suppression of Wing Rock in Slender Delta Wing by Horizontal Strakes** S. Bakaul, Y. Wang, W. Guangxing, Beihang University, Beijing, China	1430 hrs AIAA-2015-0747 **Quadrotor System Identification Using the Multivariate Multiplex B-Spline** T. Visser, C. de Visser, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	1500 hrs AIAA-2015-0748 **Non-Iterative Adaptive Limit and Control Margin Estimation with Concurrent Learning** G. Gursoy, I. Yavrucuk, Middle East Technical University, Ankara, Turkey	1530 hrs AIAA-2015-0749 **Wing Sensor Placement for Gust Disturbance Rejection** L. Castano, University of Maryland, College Park, College Park, MD; S. Airoldi, T. McKenna, Aurora Flight Sciences, Manassas, VA; J. Humbert, University of Maryland, College Park, College Park, MD			

Tuesday, 6 January 2015						
159-AFM-8	**Aircraft Flight Dynamics, Handling Qualities and Performance III**					**Captiva 2**
Chaired by: D. MURRI, NASA Langley Research Center and B. ALSTROM, International Test Pilot School						
1400 hrs AIAA-2015-0750 **Evaluation of Aircraft Model Upset Behaviour Using Wind Tunnel Manoeuvre Rig** S. Araujo-Estrada, M. Lowenberg, S. Neilld, University of Bristol, Bristol, United Kingdom; M. Goman, De Montfort University, Leicester, United Kingdom	1430 hrs AIAA-2015-0751 **The Effects of Stick Force Gradient on Pilot Mental Demand** M. Bromfield, Coventry University, Coventry, United Kingdom; G. Gratton, M. Young, Brunel University, Uxbridge, United Kingdom	1500 hrs AIAA-2015-0752 **Improved Obstacle Clearance Capability of a Transport Aircraft Using a Modified Climb-Out Flight Profile** L. Bays, Aero Performance Engineering, LLC, Kennesaw, GA; K. Halpin, Elite Electronic Engineering, Inc., Downers Grove, IL	1530 hrs AIAA-2015-0754 **Power Efficient Trim Solutions for the Hybrid Wing Body in Approach Conditions** D. Garmendia, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2015-0755 **Aircraft Input Prediction in the Presence of Spatially Varying Wind Field** J. Kampoon, W. Okolo, S. Erturk, O. Daskiran, A. Dogan, University of Texas, Arlington, Arlington, TX	1630 hrs AIAA-2015-0756 **Wind Field Estimation and Its Utilization in Trajectory Prediction** J. Kampoon, W. Okolo, S. Erturk, O. Daskiran, A. Dogan, University of Texas, Arlington, Arlington, TX	

Tuesday, 6 January 2015						
160-APA-15	**Aerodynamic Design: Analysis, Methodologies & Optimization Techniques II**					**Destin 1**
Chaired by: J. LATZ, Northrop Grumman Aerospace Systems and G. ZHA, University of Miami						
1400 hrs AIAA-2015-0757 **Optimization of Waverider-Derived Crew Reentry Vehicles using a Rapid Aerodynamics Analysis Approach** M. Lobbia, The Aerospace Corporation, El Segundo, CA	1430 hrs AIAA-2015-0758 **Shape Optimization of an Airfoil in Ground Effect for Application to WIG Craft** Y. He, Washington University in St. Louis, St. Louis, MO; Q. Qu, Beihang University, Beijing, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO	1500 hrs AIAA-2015-0759 **Surrogate-Based Airfoil Design with Multi-Level Optimization and Adjoint Sensitivity** Y. Tesfahunegn, S. Koziel, L. Leifsson, Reykjavik University, Reykjavik, Iceland	1530 hrs AIAA-2015-0760 **Sensitivity Analysis for Uncertainty Propagation and Robust Design** D. Papadimitriou, C. Papadimitriou, University of Thessaly, Volos, Greece	1600 hrs AIAA-2015-0761 **Review of Aerofoil Parameterisation Methods for Aerodynamic Shape Optimisation** D. Masters, University of Bristol, Bristol, United Kingdom; N. Taylor, MBDA, Bristol, United Kingdom; T. Rendall, C. Allen, D. Poole, University of Bristol, Bristol, United Kingdom	1630 hrs AIAA-2015-0762 **Optimal Domain Element Shapes for Free-Form Aerodynamic Shape Control** D. Poole, C. Allen, T. Rendall, University of Bristol, Bristol, United Kingdom	1700 hrs AIAA-2015-0763 **Multi-objective aerodynamic optimization of supercritical wing with substantial pressure constraints** Z. Tong, Y. Zhang, H. Chen, Tsinghua University, Beijing, China

Tuesday, 6 January 2015						
161-APA-16	**Aerodynamic-Structural Dynamics Interaction II**					**Destin 2**
Chaired by: C. PASILIAO, AFRL/RWWV and C. SHENG, University of Toledo						
1400 hrs AIAA-2015-0764 **Combined translational and rotational galloping of square cylinders in cross-flow at low Reynolds numbers** B. Battaglia, Paris Institute of Technology, Palaiseau, France; S. Etienne, A. Hay, D. Pelletier, École Polytechnique de Montréal, Montréal, Canada	1430 hrs AIAA-2015-0765 **An Efficient Time-variant Fluid-Structure Interaction Analysis based on Coupling in Frequency Domain** S. Yi, Korea Advanced Institute of Science and Technology, Daejeon, Korea (the Republic of); S. Choi, D. Im, Virginia Polytechnic Institute and State University, Blacksburg, VA; D. Lee, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1500 hrs AIAA-2015-0766 **Nonlinear Aeroelastic Analysis of High Aspect-Ratio Wings Using Immersed Boundary Technique** K. Gobal, R. Grandhi, Wright State University, Dayton, OH	1530 hrs AIAA-2015-0767 **Comparison of Viscous and Inviscid Unsteady Aerodynamic Loads for Aeroelastic Analyses** R. Ihi, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; J. Azevedo, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil	1600 hrs AIAA-2015-0768 **Wing Flutter Computation Using Modified Spectral Volume Method for Hybrid Unstructured Mesh** Y. Sawaki, Tohoku University, Sendai, Japan; T. Haga, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; Y. Ogino, K. Sawada, Tohoku University, Sendai, Japan	1630 hrs AIAA-2015-0769 **Coupling of the Edge CFD Solver with External Solvers** A. Jirasek, O. Amoignon, P. Eliasson, Swedish Defense Research Agency (FOI), Stockholm, Sweden	

Tuesday, 6 January 2015						
162-APA-17	**Airfoil/Wing/Configuration Aerodynamics I**					**Naples 2**
Chaired by: M. POST, USAF Academy and J. MURRAY, Sandia National Laboratories						
1400 hrs AIAA-2015-0770 **Surrogates for the Aerodynamic Coefficients of Supersonic Airfoils** M. Ahmed, Military Technical College, Cairo, Egypt	1430 hrs AIAA-2015-0771 **Computational Aerodynamic Analysis of Annular Wing Unmanned Aerial Vehicle** A. Kanoria, K. Panchal, M. Damodaran, Indian Institute of Technology Gandhinagar, Ahmedabad, India	1500 hrs AIAA-2015-0772 **Conceptual Design of an Electric Airplane Utilizing Co-Flow Jet Flow Control** A. Lefebvre, G. Zha, University of Miami, Coral Gables, FL	1530 hrs AIAA-2015-0773 **Computed Effect of Wing Tip Configuration on Wing Load Characteristics of a High Speed Aircraft** J. Masud, O. Khan, Air University, Islamabad, Pakistan	1600 hrs AIAA-2015-0774 **Experimental and Numerical Research on Aerodynamic Characteristics of Rectangular Fin Mounted Vertically over the Wing** T. Omori, Y. Sunada, T. Imamura, University of Tokyo, Bunkyo, Japan		

Tuesday, 6 January 2015						
163-APA-18	**Special Session: Space Launch System (SLS) II**					**Naples 1**
Chaired by: K. ABDOL-HAMID, NASA Langley Research Center and J. PINIER, NASA Langley Research Center						
1400 hrs AIAA-2015-0775 **Space Launch System Liftoff and Transition Aerodynamic Characterization in the NASA Langley 14x22' Subsonic Wind Tunnel** J. Pinier, G. Erickson, J. Paulson, W. Tomek, D. Bennett, NASA Langley Research Center, Hampton, VA; J. Blevins, NASA Marshall Space Flight Center, Huntsville, AL	1430 hrs AIAA-2015-0776 **Results from DES Simulations of an SLS Variant at Liftoff Conditions with Comparison to Experiment** S. Krist, F. Ghaffari, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2015-0777 **Reduced-order Model for NASA Space Launch System Liftoff Aerodynamics** H. Carlson, R. Verberg, Clear Science Corporation, Harford, NY	1530 hrs AIAA-2015-0778 **CFD Simulations of the Space Launch System Ascent Aerodynamics and Booster Separation** S. Rogers, D. Dalle, W. Chan, NASA Ames Research Center, Moffett Field, CA	1600 hrs AIAA-2015-0779 **Aerodynamic Modeling and Database Development of the Space Launch System Booster Separation** B. Pamadi, J. Pei, C. Gumbert, L. Green, NASA Langley Research Center, Hampton, VA; J. Housman, J. Onufer, NASA Ames Research Center, Moffett Field, CA; et al.	1630 hrs AIAA-2015-0780 **Development of an Aerodynamic Database for the SLS Service Module Panel Jettison Event Utilizing Inviscid CFD and MATLAB** L. Hall, M. Applebaum, W. Eppard, D. Purinton, NASA Marshall Space Flight Center, Huntsville, AL	

Tuesday, 6 January 2015						
164-APA-19/FD-19	**Flow Control: Fluidic Oscillators**					**Sun Ballroom A**
Chaired by: E. WHALEN, Boeing Engineering Operations & Technology and D. LACY, Boeing Commercial Airplanes						
1400 hrs AIAA-2015-0781 **Experimental Comparison between the Flow Field of Two Common Fluidic Oscillator Designs** F. Ostermann, Technical University of Berlin, Berlin, Germany; R. Woszidlo, University of Kansas, Lawrence, Lawrence, KS; C. Nayeri, C. Paschereit, Technical University of Berlin, Berlin, Germany	1430 hrs AIAA-2015-0782 **Experimental Investigation of Compressibility Effects in a Fluidic Oscillator** F. von Gosen, F. Ostermann, Technical University of Berlin, Berlin, Germany; R. Woszidlo, University of Kansas, Lawrence, Lawrence, KS; C. Nayeri, C. Paschereit, Technical University of Berlin, Berlin, Germany	1500 hrs AIAA-2015-0783 **Control of Separation on a Swept Wing using Fluidic Oscillators** P. Tewes, L. Taubert, University of Arizona, Tucson, Tucson, AZ	1530 hrs AIAA-2015-0784 **Performance Enhancement of a Full-Scale Vertical Tail Model Equipped with Active Flow Control** E. Whalen, The Boeing Company, Hazelwood, MO; D. Lacy, The Boeing Company, Everett, WA; J. Lin, M. Andino, A. Washburn, NASA Langley Research Center, Hampton, VA; E. Graff, California Institute of Technology, Pasadena, CA; et al.	1600 hrs AIAA-2015-0785 **Flow Separation Control on a Full-Scale Vertical Tail Model using Sweeping Jet Actuators** M. Andino, J. Lin, A. Washburn, NASA Langley Research Center, Hampton, VA; E. Whalen, The Boeing Company, Hazelwood, MO; E. Graff, California Institute of Technology, Pasadena, CA; I. Wygnanski, University of Arizona, Tucson, Tucson, AZ	1630 hrs AIAA-2015-0786 **Experimental Investigation of the Flow Field behind a Bluff Body Equipped with Fluidic Oscillators** H. Schmidt, Technical University of Berlin, Berlin, Germany; R. Woszidlo, University of Kansas, Lawrence, Lawrence, KS; C. Nayeri, C. Paschereit, Technical University of Berlin, Berlin, Germany	

Tuesday, 6 January 2015						
165-AS-3	**Morphing Applications**					**Osceola Ballroom 6**
Chaired by: F. GANDHI, Rensselaer Polytechnic Inst and T. TURNER, NASA-Langley Research Center						
1400 hrs AIAA-2015-0787 **Extremely Anisotropic Multi-functional Skin for Morphing Applications** F. Previtali, Swiss Federal Institute of Technology, Zürich, Switzerland; T. Delpero, A. Bergamini, Empa, Dübendorf, Switzerland; A. Arrieta, P. Ermanni, Swiss Federal Institute of Technology, Zürich, Switzerland	1430 hrs AIAA-2015-0788 **A Bi-Stable System for Rotor Span Extension in Rotary-Wing Micro Aerial Vehicles** M. Misiorowski, M. Pontecorvo, F. Gandhi, Rensselaer Polytechnic Institute, Troy, NY	1500 hrs AIAA-2015-0789 **Efficient Active Rotor Concepts for In-Plane Noise Reduction** E. Corle, S. Schmitz, T. Yang, K. Brentner, Pennsylvania State University, University Park, PA	1530 hrs AIAA-2015-0790 **Design and manufacturing of morphing fan blades for experimental investigations in a cascaded wind tunnel** H. Monner, O. Huxdorf, J. Riemenschneider, R. Keimer, German Aerospace Center (DLR), Braunschweig, Germany	1600 hrs AIAA-2015-0791 **Experimental Evaluation of the Morphing Leading Edge Concept** J. Sodja, M. Martinez, Delft University of Technology, Delft, The Netherlands; J. Simpson, Fraunhofer, Valley, Germany; R. De Breuker, Delft University of Technology, Delft, The Netherlands	1630 hrs AIAA-2015-0792 **Development and Testing of a Corrugated Skin for a Camber Morphing Aerofoil** R. Navaratne, Swansea University, Swansea, United Kingdom	1700 hrs AIAA-2015-0793 **New Concept Bi-stable Structure: Adaptive Saddle-shaped Bi-stable Panel** J. Lee, J. Ryu, H. Lee, M. Cho, Seoul National University, Seoul, South Korea

Tuesday, 6 January 2015						
166-DA-1	**Digital Avionics**					**Osceola Ballroom 3**
Chaired by: J. RANKIN, The University of Arkansas						
1400 hrs AIAA-2015-0794 **Human-in-the-loop Evaluation of an Information Management and Notification System to Improve Aircraft State Awareness** P. Duan, Ohio University, Athens, OH; M. Yocius, University of Iowa, Iowa City, Iowa City, IA; M. Miltner, Ohio University, Athens, OH; J. Engler, T. Schnell, University of Iowa, Iowa City, Iowa City, IA; M. Uijt De Haag, Ohio University, Athens, OH	1430 hrs AIAA-2015-0795 **A Formally Verified Conflict Detection Algorithm for Polynomial Trajectories** A. Narkawicz, C. Munoz, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2015-0796 **TCAS Compatibility of Advanced Airborne Separation Assurance System Operations** H. Lenz, German Aerospace Center (DLR), Braunschweig, Germany	1530 hrs AIAA-2015-0797 **Application of Unified Departure Operation Spacing to a Large Hub Airport** G. Schwoch, German Aerospace Center (DLR), Braunschweig, Germany	1600 hrs AIAA-2015-0798 **Developing an Attitude and Heading Reference System based on Advanced MEMS Gyros** A. Simonetti, D. Accardo, University of Naples "Federico II", Naples, Italy; D. Domenico, P. Calcagni, Axitude S.r.l., Giugliano, Italy	1630 hrs AIAA-2015-0799 **Communication of Target Trajectory and Wind Information to Improve Airborne Interval Management Spacing Performance** L. Weitz, W. Penhallegon, B. Lascara, H. Stassen, R. Katkin, MITRE Corporation, McLean, VA	

Tuesday, 6 January 2015						
167-DE-2	**Design Education/Design Process**					**Sarasota 2**
Chaired by: J. WANG, Kingston University and J. CUTSHALL, Southwest Research Institute						
1400 hrs AIAA-2015-0800 **Mars Mission Design Strategy Board Game to Inspire STEM Students** R. Pidaparti, University of Georgia, Athens, Athens, GA	1430 hrs AIAA-2015-0801 **Leveraging Open Standards and Credit-Card-Sized Linux Computers in Embedded Control & Robotics Education** T. Bewley, J. Strawson, S. Ostovari, University of California, San Diego, La Jolla, CA; H. Briggs, ATA Engineering, Inc., San Diego, CA	1500 hrs AIAA-2015-0802 **A Survey of Integrated Tools for Air Vehicle Design, Part I** H. Briggs, ATA Engineering, Inc., San Diego, CA	1530 hrs AIAA-2015-0803 **A Survey of Integrated Tools for Air Vehicle Design, Part II** H. Briggs, ATA Engineering, Inc., San Diego, CA	1600 hrs AIAA-2015-0804 **Formulation and Applications of a Probabilistic Pareto Chart** K. Hart, B. Steinfeldt, R. Braun, Georgia Institute of Technology, Atlanta, GA		

Tuesday, 6 January 2015						
168-FD-20	**Actuators and Active Flow Control**					**Tallahassee 2**
Chaired by: P. MORGAN, Ohio Aerospace Institute and D. SCHATZMAN, Science and Technology Corporation						
1400 hrs AIAA-2015-0806 **A Combined Type of a Flow Control Actuator Composed of the Synthetic Jet and Vortex Generator** Y. Ono, Y. Kameya, M. Motosuke, S. Honami, Tokyo University of Science, Niijuku, Japan	1430 hrs AIAA-2015-0807 **Axisymmetric Synthetic Jets: Modeling of the Far-field Momentum Flux** X. Xia, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1500 hrs AIAA-2015-0808 **Suction and Oscillatory Blowing Interaction with Boundary Layers** D. Schatzman, Science and Technology Corporation, Moffett Field, CA; J. Wilson, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA; L. Maron, V. Palei, A. Seifert, Tel Aviv University, Tel Aviv, Israel; E. Arad, Rafael, Haifa, Israel	1530 hrs AIAA-2015-0809 **High-Accuracy Simulations of Robust LCO Control Using Synthetic Jet Actuators** L. Nguyen, V. Golubev, W. Mackunis, N. Ramos, Embry-Riddle Aeronautical University, Daytona Beach, FL; C. Pasiliao, Air Force Research Laboratory, Eglin AFB, FL	1600 hrs AIAA-2015-0810 **Active Flow Control to Improve the Outer-Wing Performance during Take-Off** C. Huehne, P. Scholz, Technical University of Braunschweig, Braunschweig, Germany	1630 hrs AIAA-2015-0811 **Flow Control for NACA 4418Airfoil Using an "Active Slat"** T. Tawfik, Petroleum Air Services, Cairo, Egypt; B. Elhadidi, M. Abdelrahman, Cairo University, Giza, Egypt	

Tuesday, 6 January 2015						
169-FD-21	**CFD Methods IV**					**Sanibel 1**
Chaired by: A. PROBST, DGLR						
1400 hrs AIAA-2015-0812 **Grid Convergence Study on a Finite Volume Code NSAWET** Z. Li, H. Chen, Y. Zhang, S. Fu, Tsinghua University, Beijing, China	1430 hrs AIAA-2015-0813 **Azure: An Advanced CFD Software Suite Based on High-Resolution and High-Order Methods** D. Drikakis, A. Antoniadis, P. Tsoutsanis, I. Kokkinakis, Z. Rana, Cranfield University, Cranfield, United Kingdom	1500 hrs AIAA-2015-0814 **The Performance Evaluation of an Improved Finite Volume Method for Solving the Navier Stokes Equation** F. Ferguson, H. Mrema, M. Dhanasar, North Carolina A&T State University, Greensboro, NC	1530 hrs AIAA-2015-0815 **A Low-Dissipation Low-Dispersion Second-Order Scheme for Unstructured Finite-Volume Flow Solvers** J. Löwe, A. Probst, T. Knopp, R. Kessler, German Aerospace Center (DLR), Göttingen, Germany	1600 hrs AIAA-2015-0816 **Scale-Resolving Simulations with a Low-Dissipation Low-Dispersion Second-Order Scheme for Unstructured Finite-Volume Flow Solvers** A. Probst, J. Löwe, S. Reuss, T. Knopp, R. Kessler, German Aerospace Center (DLR), Göttingen, Germany	1630 hrs AIAA-2015-0817 **Investigation on Hypersonic Aerodynamics Using Numerical and Analytical Methods** W. Luo, D. Li, J. Xiang, Beihang University, Beijing, China	1700 hrs AIAA-2015-0818 **A Verification Driven Process for Rapid Development of CFD Software** M. Galbraith, S. Allmaras, D. Darmofal, Massachusetts Institute of Technology, Cambridge, MA

Tuesday, 6 January 2015						
170-FD-22	**Discontinuous Galerkin Methods II**					**Sanibel 2**
Chaired by: J. EKATERINARIS, FORTH/IACM and K. FIDKOWSKI, University of Michigan						
1400 hrs AIAA-2015-0819 **High-order unstructured grid generation and Discontinuous Galerkin discretization applied to a 3D high-lift configuration** R. Hartmann, T. Leicht, German Aerospace Center (DLR), Braunschweig, Germany	1430 hrs AIAA-2015-0820 **High-order Discontinuous Galerkin Simulations on Moving Domains using ALE Formulations and Local Remeshing and Projections** L. Wang, P. Persson, University of California, Berkeley, Berkeley, CA	1500 hrs AIAA-2015-0821 **A mixed continuous/discontinuous finite element discretization of the incompressible NS equations** N. Kyriazis, J. Ekaterinaris, Embry-Riddle Aeronautical University, Daytona Beach, FL	1530 hrs AIAA-2015-0822 **OpenACC-based GPU Acceleration of a *p*-multigrid Discontinuous Galerkin Method for Compressible Flows on 3D Unstructured Grids** J. Lou, Y. Xia, L. Luo, H. Luo, J. Edwards, F. Mueller, North Carolina State University, Raleigh, NC	1600 hrs AIAA-2015-0823 **Discontinuous High-Order Finite-Volume/Finite-Element Method for Inviscid Compressible Flows** A. Ramezani, G. Stipcich, L. Remaki, Basque Center for Applied Mathematics, Bilbao, Spain		

Tuesday, 6 January 2015						
171-FD-23	**Flow Control (Fundamentals and Technology) I**					**Sanibel 3**
Chaired by: D. MILLER, Lockheed Martin Aeronautics and F. ALVI, Florida State University						
1400 hrs AIAA-2015-0824 **Flow Control of Unsteadiness in the Wake of a Turbine Blade** M. Irsch, RWTH Aachen University, Aachen, Germany; R. Davis, University of California, Davis, Davis, CA; J. Clark, Air Force Research Laboratory, Wright-Patterson AFB, OH; G. Paniagua, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1430 hrs AIAA-2015-0825 **Active flow control on an Ahmed body - An experimental study** J. McNally, F. Alvi, Florida State University, Tallahassee, FL; N. Mazellier, A. Kourta, University of Orléans, Orléans, France	1500 hrs AIAA-2015-0826 **Drag Reduction Control for Flow over a Hump with Surface-Mounted Thermoacoustic Actuator** C. Yeh, P. Munday, K. Taira, Florida State University, Tallahassee, FL; M. Munson, Army Research Laboratory, Aberdeen Proving Ground, MD	1530 hrs AIAA-2015-0827 **Unsteady Aerodynamic Loads Effected by Flow Control on a Moving Axisymmetric Bluff Body** T. Lambert, B. Vukasinovic, A. Glezer, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2015-0828 **Investigation of Flow Modifications Induced by an Undulating Airfoil Surface** G. Spencer, J. Krofta, R. LeBeau, M. McQuilling, Saint Louis University, St. Louis, MO	1630 hrs AIAA-2015-0829 **Aircraft Carrier Burble Mitigation With Alternating Current Dielectric Barrier Discharge Plasma Actuators** B. Munguia, N. Bui, B. Lewis, D. Richie, Ohio State University, Columbus, OH	

Tuesday, 6 January 2015						
172-FD-24	**High-Order Methods II**					**Daytona 1**
Chaired by: W. DAWES, Cambridge University and A. KATZ						
1400 hrs AIAA-2015-0830 **A High-Order Method for Solving Unsteady Incompressible Navier-Stokes Equations with Implicit Time Stepping on Unstructured Grids** C. Cox, C. Liang, M. Plesniak, George Washington University, Washington, DC	1430 hrs AIAA-2015-0831 **Large-Eddy Simulation of a Supersonic Jet using High-Order Flux Reconstruction Scheme** T. Haga, S. Tsutsumi, S. Kawai, R. Takaki, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1500 hrs AIAA-2015-0832 **A conservative cutcell method with adaptive mesh refinement for large eddy simulation of compressible flows** B. Muralidharan, S. Menon, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2015-0833 **Flow simulation system based on high order space-time extension of flux reconstruction method** Y. Lu, University of Cambridge, Cambridge, United Kingdom; K. Liu, Tsinghua University, Beijing, China; W. Dawes, University of Cambridge, Cambridge, United Kingdom	1600 hrs AIAA-2015-0834 **Aspects of the Flux Correction Method for Solving the Navier-Stokes Equations on Unstructured Meshes** D. Work, A. Katz, Utah State University, Logan, UT	1630 hrs AIAA-2015-0835 **High-Order Methods for Three-Dimensional Strand-Cartesian Grids** O. Tong, A. Katz, Utah State University, Logan, UT; A. Wissink, J. Sitaraman, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA	

Tuesday, 6 January 2015						
173-FD-25	**Hypersonic Boundary Layer Transition I**					**Tallahassee 1**
Chaired by: L. DUAN, Missouri University of Science and Technology						
1400 hrs AIAA-2015-0836 **Acoustic Radiation from High-Speed Turbulent Boundary Layers in a Tunnel-like Environment** L. Duan, Missouri University of Science and Technology, Rolla, MO; M. Choudhari, NASA Langley Research Center, Hampton, VA; C. Zhang, Missouri University of Science and Technology, Rolla, MO	1430 hrs AIAA-2015-0837 **Parametric study on stabilization of hypersonic boundary layer waves using 2-D surface roughness** K. Fong, X. Wang, X. Zhong, University of California, Los Angeles, Los Angeles, CA	1500 hrs AIAA-2015-0838 **Linearized Navier-Stokes Simulations of the Spatial Stability of a Hypersonic Boundary-Layer on a Flared Cone** L. Salemi, H. Fasel, University of Arizona, Tucson, Tucson, AZ				

Tuesday, 6 January 2015						
174-FD-26	**Jets, Plumes, & Reacting Flows**					**Daytona 2**
Chaired by: G. BLAISDELL, Purdue University and C. BOURASSA, GE Aviation						
1400 hrs AIAA-2015-0840 **Computational Fluid Dynamics Simulation of United Launch Alliance Delta IV Hydrogen Plume Mitigation Strategies** S. Guimond, M. Ni, N. Voce, A. Kassab, University of Central Florida, Orlando, FL; S. Song, Z. Richards, United Launch Alliance, Centennial, CO; et al.	1430 hrs AIAA-2015-0841 **Rocket Plume Modeling** C. Cai, New Mexico State University, Las Cruces, NM	1500 hrs AIAA-2015-0842 **Implementation of Thermochemistry and Chemical Kinetics in a GPU-based CFD Code** B. Taylor, D. Schwer, A. Corrigan, Naval Research Laboratory, Washington, DC	1530 hrs AIAA-2015-0843 **Large-Eddy Simulation of Coaxial LN2/GH2 Injection at Trans- and Supercritical Conditions** H. Müller, M. Pfitzner, University of the German Federal Armed Forces, Munich, Germany; J. Matheis, S. Hickel, Technical University of Munich, Munich, Germany	1600 hrs AIAA-2015-0844 **Large Eddy Simulation of Flame Flashback in Swirling Premixed CH4/H2-Air Flames** C. Lietz, V. Raman, University of Texas, Austin, Austin, TX		

Tuesday, 6 January 2015						
175-GNC-16	**Aerospace Robotics and Autonomous/Unmanned Systems IV**					**Sun Ballroom 3**
Chaired by: J. SASIADEK, Carleton University and D. PEREZ						
1400 hrs AIAA-2015-0845 **Real-Time Guidance of Quadrotor for Obstacle Mapping Using Vision System** J. Park, Y. Kim, Seoul National University, Seoul, South Korea	1430 hrs AIAA-2015-0846 **Image-based Visual Servoing Framework for a Multirotor UAV using Sampling-based Path Planning** S. Cho, D. Lee, D. Shim, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1500 hrs AIAA-2015-0847 **UAV Circumnavigation under a GPS-denied Environment: Algorithms and Experiments** Y. Cao, D. Kingston, S. Rasmussen, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2015-0848 **Vision Based Obstacle Detection and Avoidance for UAVs Using Image Segmentation** P. Agrawal, A. Ratnoo, D. Ghose, Indian Institute of Science, Bangalore, India			

Tuesday, 6 January 2015						
176-GNC-17	**Lander Technology Development at NASA II**					**Miami 1**
Chaired by: J. CARSON, NASA Jet Propulsion Laboratory and N. TRAWNY, Jet Propulsion Laboratory						
1400 hrs AIAA-2015-0849 **Project Morpheus: Tailored Systems Engineering of a Terrestrial Flight Testbed for Maturing NASA Lander Technologies** J. Devolites, J. Olansen, NASA Johnson Space Center, Houston, TX	1430 hrs AIAA-2015-0850 **Interpolation-Enhanced Powered Descent Guidance for Onboard Nominal, Off-Nominal, and Multi-X Scenarios** D. Scharf, S. Ploen, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; B. Acikmese, University of Texas, Austin, Austin, TX	1500 hrs AIAA-2015-0851 **Real-Time Terrain Relative Navigation Test Results from a Relevant Environment for Mars Landing** A. Johnson, Y. Cheng, J. Montgomery, N. Trawny, B. Tweddle, J. Zheng, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1530 hrs AIAA-2015-0852 **The Mighty Eagle Vertical Testbed** M. Hannan, NASA Marshall Space Flight Center, Huntsville, AL; T. McGee, Johns Hopkins University Applied Physics Laboratory, Columbia, MD; G. Chavers, J. Adam, L. Kennedy, J. Moore, NASA Marshall Space Flight Center, Huntsville, AL; et al.	1600 hrs AIAA-2015-0853 **APLNav: Development Status of an Onboard Passive Optical Terrain Relative Navigation System** T. McGee, P. Rosendall, A. Hill, W. Shyong, T. Criss, C. Reed, Johns Hopkins University Applied Physics Laboratory, Laurel, MD; et al.		

Tuesday, 6 January 2015						
177-GNC-18	**Control and Diagnostics of Air Vehicles and UAVs**					**Sun Ballroom 4**
Chaired by: A. KNOBLACH, DLR - German Aerospace Center and R. VENKATARAMAN, University of Minnesota						
1400 hrs AIAA-2015-0854 **Maximizing the Efficiency of a UAV on Perimeter Patrol** K. Kalyanam, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Pachter, Air Force Institute of Technology, Wright-Patterson AFB, OH; P. Chandler, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2015-0855 **Necessary Conditions for Control Effort Minimization of Euler-Lagrange Systems** A. L'Afflitto, W. Haddad, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2015-0856 **Disturbance Observer-Based Control to Suppress Air Resonance for the EC135 ACT/FHS Research Helicopter** S. Greiser, German Aerospace Center (DLR), Braunschweig, Germany	1530 hrs AIAA-2015-0857 **Model-Based Detection and Isolation of Rudder Faults for a Small UAS** R. Venkataraman, P. Seiler, University of Minnesota, Minneapolis, Minneapolis, MN	1600 hrs AIAA-2015-0858 **Worst Case Analysis of a Saturated Gust Loads Alleviation System** A. Knoblach, German Aerospace Center (DLR), Wessling, Germany; H. Pfifer, P. Seiler, University of Minnesota, Minneapolis, Minneapolis, MN	1630 hrs AIAA-2015-0859 **Aircraft Inertial Measurement Unit Fault Identification with Application to Real Flight Data** P. Lu, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	

Tuesday, 6 January 2015						
178-GNC-19	**Missile Autopilot and Integrated Control**					**Sun Ballroom 6**
Chaired by: S. KOWALCHUK, Sandia National Laboratories and R. RATLIFF, Boeing Defense, Space & Security						
1400 hrs AIAA-2015-0860 **Missile Autopilot Design During Boost Phase Using Robust Backstepping Approach** S. Lee, Y. Kim, Seoul National University, Seoul, Korea (the Republic of); G. Moon, B. Jun, Agency for Defense Development, Daejeon, South Korea	1430 hrs AIAA-2015-0861 **Missile Guidance Law Considering Constraints on Impact Angle and Terminal Angle of Attack** H. Kim, H. Kim, Seoul National University, Seoul, South Korea	1500 hrs AIAA-2015-0862 **Considerations on Boost Phase Modeling and Guidance Command Generation** R. Tekin, ASELSAN, Inc., Ankara, Turkey; K. Erer, ROKETSAN Missiles Industries, Inc., Ankara, Turkey	1530 hrs AIAA-2015-0863 **Lyapunov Based Nonlinear Impact Angle Guidance Law for Stationary Targets** U. Ates, ROKETSAN Missiles Industries, Inc., Ankara, Turkey	1600 hrs AIAA-2015-0864 **Autopilot Design for Aerial Vehicles with Aerodynamic Surfaces and Lateral Jets Using Explicit Hybrid MPC** B. Yang, Y. Zhao, Y. Yao, Harbin Institute of Technology, Harbin, China		

Tuesday, 6 January 2015						
179-GNC-20	**Spacecraft Guidance, Navigation, and Control I**					**Sun Ballroom 5**
Chaired by: F. MORA-CAMINO, ENAC and S. ULRICH, Carleton University						
1400 hrs AIAA-2015-0865 **SEXTANT - Station Explorer for X-ray Timing and Navigation Technology** J. Mitchell, M. Hassouneh, L. Winternitz, J. Valdez, S. Price, S. Semper, NASA Goddard Space Flight Center, Greenbelt, MD; et al.	1430 hrs AIAA-2015-0866 **A Comparison of Thruster Implementation Strategies for a Deep Space Nanosatellite** M. Nehrenz, M. Sorgenfrei, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2015-0867 **Assessing Nanosatellite Cluster Launch Scenarios** C. Wen, Beihang University, Beijing, China; P. Gurfil, Technion–Israel Institute of Technology, Haifa, Israel	1530 hrs AIAA-2015-0868 **On the development of a 6DoF GNC framework for docking multiple small satellites** M. Nunes, University of Hawaii, Honolulu, Honolulu, HI	1600 hrs AIAA-2015-0869 **Preliminary Design and Prototyping of a Low-Cost Spacecraft Attitude Determination and Control Setup** K. Turkoglu, A. Gong, San Jose State University, San Jose, CA	1630 hrs AIAA-2015-0870 **Attitude Control of Upper Stage with Gimbaled Thruster during Orbit Transfer** Z. Wang, Beihang University, Beijing, China	

Tuesday, 6 January 2015						
180-GTE-4	**Engine Systems II**					**Emerald 1**
Chaired by: K. MILLSAPS, Naval Postgraduate School and A. GORDON, University of Central Florida						
1400 hrs AIAA-2015-0871 **Unsteady Particle Dynamics within an Inertial Particle Separator** P. Snyder, Rolls-Royce Group plc, Indianapolis, IN; E. Loth, D. Barone, University of Virginia, Charlottesville, Charlottesville, VA	1430 hrs AIAA-2015-0872 **A Novel Approach to Life Prediction Analysis of a Turbine Engine Blade to Disk Attachment** S. Naboulsi, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2015-0873 **Turbine Engine Performance Estimation Using Particle Filters** B. Yang, P. Sengupta, P. Menon, Optimal Synthesis, Inc., Los Altos, CA	1530 hrs AIAA-2015-0874 **Comparison of Thermal Barrier Coating Stresses via High Energy X-Rays and Piezospectroscopy** A. Manero, K. Knipe, University of Central Florida, Orlando, FL; C. Meid, J. Wischek, German Aerospace Center (DLR), Cologne, Germany; C. Lacdao, M. Smith, Cleveland State University, Cleveland, OH; et al.	1600 hrs AIAA-2015-0875 **Three-Dimensional Numerical Modeling of Tip Leakage Flow over a Finite Blade** O. Khan, M. Khan, Tuskegee University, Tuskegee, AL		

Tuesday, 6 January 2015						
181-HSABP-5	**Pressure Gain Combustion - Rotating Detonation Engines II**					**Emerald 3**
Chaired by: V. TANGIRALA, General Electric and S. STANLEY, Aerojet Rocketdyne						
1400 hrs AIAA-2015-0876 **Numerical Investigation of Centerbodiless RDE Design Variations** W. Stoddard, E. Gutmark, University of Cincinnati, Cincinnati, OH	1430 hrs AIAA-2015-0877 **Experimental and Numerical Evaluation of Pressure Gain Combustion in a Rotating Detonation Engine** B. Rankin, Innovative Scientific Solutions, Inc., Dayton, OH; M. Fotia, National Research Council, Dayton, OH; D. Paxson, NASA Glenn Research Center, Cleveland, OH; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2015-0878 **Visualization of Rotating Detonation Waves in a Plane Combustor with a Cylindrical Wall Injector** S. Nakagami, K. Matsuoka, J. Kasahara, Nagoya University, Nagoya, Japan; A. Matsuo, Keio University, Yokohama, Japan; I. Funaki, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1530 hrs AIAA-2015-0879 **Numerical Investigation of Inlet Injection in a Rotating Detonation Engine** R. Driscoll, V. Anand, A. St. George, W. Stoddard, D. Munday, E. Gutmark, University of Cincinnati, Cincinnati, OH	1600 hrs AIAA-2015-0880 **Numerical Study of Heat Transfer in a Rotating Detonation Combustor** S. Randall, V. Anand, A. St. George, E. Gutmark, University of Cincinnati, Cincinnati, OH	1630 hrs AIAA-2015-0881 **Method of Characteristics Analysis of the Internal Flowfield in a Rotating Detonation Engine** R. Fievisohn, K. Yu, University of Maryland, College Park, College Park, MD	

Tuesday, 6 January 2015						
182-HSABP-6	**High Speed Air-Breathing Combustors I**					**Emerald 8**
Chaired by: C. BRUNO, United Technologies Research Center and J. CASTRO, Pratt & Whitney-Rocketdyne						
1400 hrs AIAA-2015-0882 **Effects of Inlet Distortion on Cavity Ignition in Supersonic Flow** T. Ombrello, S. Peltier, C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2015-0883 **Response of a Mach 3 Cavity Flameholder to a Shock-Induced Distortion** S. Peltier, C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2015-0884 **Numerical Investigation of Upstream Fuel Injection through Porous Media for Scramjet Engines via Surrogate-Assisted Evolutionary Algorithms** H. Ogawa, RMIT University, Melbourne, Australia; B. Capra, Queensland University of Technology, Brisbane, Australia; P. Lorain, University of New South Wales at the Australian Defence Force Academy, Canberra, Australia	1530 hrs AIAA-2015-0885 **Preliminary analysis of strategies for NOx reduction** A. Ingenito, A. Agresta, University of Rome "La Sapienza", Rome, Italy; R. Andriani, Technical University of Milan, Milan, Italy; F. Gamma, University of Rome "La Sapienza", Rome, Italy			

Tuesday, 6 January 2015						
183-IS-6	**Realizing the Potential for Genetic Fuzzy Systems**					**Osceola Ballroom 1**
Chaired by: K. COHEN, University of Cincinnati and N. ERNEST, University of Cincinnati						
1400 hrs AIAA-2015-0886 **Genetic Algorithm Based LQR for Attitude Control of a Magnetically Actuated CubeSat** S. Kukreti, University of Cincinnati, Cincinnati, OH; A. Walker, P. Putman, Sierra Lobo, Inc., Milan, OH; K. Cohen, University of Cincinnati, Cincinnati, OH	1430 hrs AIAA-2015-0887 **Genetic Fuzzy Approach for Control and Task Planning Applications** A. Sathyan, N. Ernest, K. Cohen, University of Cincinnati, Cincinnati, OH	1500 hrs AIAA-2015-0888 **Multi-agent Cooperative Decision Making using Genetic Cascading Fuzzy Systems** N. Ernest, University of Cincinnati, Cincinnati, OH; E. Garcia, Infoscitex Corporation, Dayton, OH; D. Casbeer, Air Force Research Laboratory, Wright-Patterson AFB, OH; K. Cohen, University of Cincinnati, Cincinnati, OH; C. Schumacher, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2015-0889 **Enhanced Approaches to Solving the Multiple Traveling Salesman Problem** N. Boone, A. Sathyan, K. Cohen, University of Cincinnati, Cincinnati, OH	1600 hrs AIAA-2015-0890 **Genetic Optimization of Fuzzy Logic Control for Coupled Dynamic Systems** A. Janson, N. Stockton, K. Cohen, University of Cincinnati, Cincinnati, OH		

Tuesday, 6 January 2015						
184-MAT-7	**Fatigue & Fracture I**					**Sarasota 1**
Chaired by: D. POWELL and R. FERTIG, University of Wyoming						
1400 hrs AIAA-2015-0891 **Regression Study to Standardize Piezoelectric Axial Fatigue Testing** O. Scott-Emuakpor, T. George, C. Holycross, J. Beck, C. Cross, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2015-0892 **Interlaminar and Intralaminar Dynamic Fracture Behaviors of CFRP: An Investigation Using Digital Image Correlation and High-Speed Photography** R. Bedsole, H. Tippur, Auburn University, Auburn, AL	1500 hrs AIAA-2015-0893 **Oblique plies for steering through-thickness delamination migration in fibre reinforced polymers** R. Luterbacher, R. Trask, I. Bond, University of Bristol, Bristol, United Kingdom	1530 hrs AIAA-2015-0894 **Fatigue Life of Selective Laser Melted and Hot Isostatically Pressed Ti-6Al-4v Absent of Surface Machining** K. Rekedal, D. Liu, Air Force Institute of Technology, Wright-Patterson AFB, OH	1600 hrs AIAA-2015-0895 **Fatigue Behavior and Modeling for Thermoplastics** R. Meyer, J. Simsiriwong, M. Lugo, N. Shamsaei, Mississippi State University, Mississippi State, MS		

Tuesday, 6 January 2015						
185-MDO-5	**MDO: Fundamental Algorithms & Processes II**					**Sarasota 3**
Chaired by: A. KO, Phoenix Integration, Inc. and J. HICKEN, Rensselaer Polytechnic Institute						
1400 hrs AIAA-2015-0896 **Application of Reduced Order Techniques for Sensitivity Analysis to Multidisciplinary Aerospace Systems** J. Parrish, M. Rais-Rohani, J. Janus, Mississippi State University, Mississippi State, MS	1430 hrs AIAA-2015-0897 **Standard Particle Swarm Optimization on Source Seeking Using Mobile Robots** R. Zou, V. Kalivarapu, S. Bhattacharya, E. Winer, J. Oliver, Iowa State University, Ames, IA	1500 hrs AIAA-2015-0898 **Sequential Radial Basis Function Optimization Strategy Using Support Vector Machine for Flight Vehicle Multidisciplinary Design Optimization** R. Shi, L. Liu, T. Long, X. Guo, L. Peng, Beijing Institute of Technology, Beijing, China	1530 hrs AIAA-2015-0899 **Sensitivity Analysis Methods for Mitigating Uncertainty in Engineering System Design** Q. Curran, K. Willcox, Massachusetts Institute of Technology, Cambridge, MA	1600 hrs AIAA-2015-0900 **Simultaneous aircraft allocation and mission optimization using a modular adjoint approach** J. Hwang, University of Michigan, Ann Arbor, Ann Arbor, MI; S. Roy, Purdue University, West Lafayette, IN; J. Kao, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI; W. Crossley, Purdue University, West Lafayette, IN	1630 hrs AIAA-2015-0901 **Effectiveness Indicators for Stopping Criteria based on Minimum Required Improvement** A. Chaudhuri, R. Haftka, University of Florida, Gainesville, Gainesville, FL	

Tuesday, 6 January 2015						
186-MST-7	**Model Design and Development**					**Sun Ballroom 1**
Chaired by: R. RUFF, Technical University Munich						
1400 hrs AIAA-2015-0902 **Development of an Aerodynamic Model for a Delta-Wing Equivalent Model II (EQ-II) Aircraft** W. Okolo, A. Dogan, University of Texas, Arlington, Arlington, TX; W. Blake, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2015-0903 **Updating a finite element based structural model of a small flexible aircraft** A. Gupta, C. Moreno, H. Pfifer, B. Taylor, G. Balas, University of Minnesota, Minneapolis, Minneapolis, MN	1500 hrs AIAA-2015-0904 **Systemic modeling and design approach for morphing wing aileron controller using Matlab/ Simulink** V. Jean-Baptiste, R. Botez, École de Technologie Supérieure, Montréal, Canada	1530 hrs AIAA-2015-0905 **Flight Dynamics Modeling of a Body Freedom Flutter Vehicle for Multidisciplinary Analyses** M. Leitner, A. Knoblach, T. Kier, German Aerospace Center (DLR), Wessling, Germany; C. Moreno, A. Kotikalpudi, H. Pfifer, University of Minnesota, Minneapolis, Minneapolis, MN; et al.	1600 hrs AIAA-2015-0906 **A Coupled Lateral/Directional Flight Dynamics and Structural Model for Flight Control Design** O. Juhasz, San Jose State University, Moffett Field, CA; M. Tischler, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA; S. Hagerott, D. Staples, J. Fuentealba, Cessna Aircraft Company, Wichita, KS		

Tuesday, 6 January 2015						
187-MST-8	**Multi-Domain Modeling and Simulation**					**Sun Ballroom 2**
Chaired by: A. ELMILIGUI, NASA Langley Research Center						
1400 hrs AIAA-2015-0907 **Development of a Reduced Order Model to Study Rotor/Ship Aerodynamic Interaction** N. Rajmohan, J. Zhao, C. He, Advanced Rotorcraft Technology, Inc., Sunnyvale, CA; S. Polsky, Naval Air Systems Command, Patuxent River, MD	1430 hrs AIAA-2015-0908 **Modeling Systems-of-Systems from Multiple Design Perspectives: Agents, Interfaces, and Architectures** D. Fry, R. Campbell, D. DeLaurentis, Purdue University, West Lafayette, IN	1500 hrs AIAA-2015-0909 **Coupling between non-local particle and finite element methods** E. Lin, H. Chen, Y. Liu, Arizona State University, Tempe, AZ				

Tuesday, 6 January 2015						
188-MVC-4	**Meshing Techniques, Including Surface and Volume Grids, and Moving/Deforming Meshes**					**Naples 3**
Chaired by: J. MASTERS, Aerospace Testing Alliance (ATA)						
1400 hrs AIAA-2015-0910 **A Survey of Overset Domain Assembly Methods** C. Druyor, NASA Langley Research Center, Hampton, VA; S. Karman, University of Tennessee, Chattanooga, Chattanooga, TN; W. Jones, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2015-0911 **Advances in Parallelization For Large Scale Oct-Tree Mesh Generation** M. O'Connell, NASA Langley Research Center, Hampton, VA; S. Karman, University of Tennessee, Chattanooga, Chattanooga, TN	1500 hrs AIAA-2015-0912 **An Overset Grid 2D/Infinite Swept Wing URANS Solver Using Recursive Cartesian Bucket Method** A. Levesque, A. Pigeon, E. Laurendeau, École Polytechnique de Montréal, Montréal, Canada	1530 hrs AIAA-2015-0913 **Mesh Manipulation for 3D Tetrahedral Meshes** J. Masters, Arnold Engineering Development Complex, Arnold AFB, TN	1600 hrs AIAA-2015-0914 **Adaptive curvature control grid generation algorithms for complex glaze ice shapes RANS simulations** K. Hasanzadeh Lashkajani, E. Laurendeau, I. Paraschivoiu, École Polytechnique de Montréal, Montréal, Canada	1630 hrs AIAA-2015-0915 **Alignment and orthogonality in anisotropic metric-based mesh adaptation** A. Loseille, French National Institute for Research in Computer Science and Control (INRIA), Paris, France; D. Marcum, Mississippi State University, Starkville, MS; F. Alauzet, French National Institute for Research in Computer Science and Control (INRIA), Paris, France	

Tuesday, 6 January 2015						
189-NDA-4	**Optimization under Uncertainty**					**Osceola Ballroom 5**
Chaired by: M. RAIS-ROHANI, Mississippi State University and E. TUEGEL, USAF						
1400 hrs AIAA-2015-0916 **Investigating Uncertainty in Capability versus Cost Decision-Making** E. Forster, P. Beran, R. Kolonay, Air Force Research Laboratory, Wright-Patterson AFB, OH; H. Bae, Wright State University, Dayton, OH	1430 hrs AIAA-2015-0917 **Multi-fidelity Robust Aerodynamic Design Optimization Under Mixed Uncertainty** H. Shah, S. Hosder, Missouri University of Science and Technology, Rolla, MO; L. Leifsson, S. Koziel, Y. Tesfahunegn, Reykjavik University, Reykjavik, Iceland	1500 hrs AIAA-2015-0918 **Robust Aeroelastic Design of a Composite Wing-Box** C. Scarth, P. Sartor, J. Cooper, P. Weaver, University of Bristol, Bristol, United Kingdom; G. Silva, Embraer, São José dos Campos, Brazil	1530 hrs AIAA-2015-0919 **Robust aerodynamic optimization of morphing airfoils for helicopter rotor blades** F. Fusi, G. Quaranta, A. Guardone, Technical University of Milan, Milan, Italy; P. Congedo, French National Institute for Research in Computer Science and Control (INRIA), Bordeaux, France	1600 hrs AIAA-2015-0920 **Robust Optimization of a Wing Under Structural and Material Uncertainties** K. Boopathy, M. Rumpfkeil, University of Dayton, Dayton, OH; R. Kolonay, US Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2015-0921 **Active Subspaces Applied to Range Safety Analysis and Optimization** F. Capristan, J. Alonso, Stanford University, Stanford, CA	

Tuesday, 6 January 2015		
190-PANEL-4 **1400 - 1600 hrs**	**Big Data Analytics in Aerospace**	**Osceola Ballroom B**

Moderator: Ashok Srivastava, Chief Data Scientist, Verizon

Panelists:

Eric Feron
Professor, School of Aerospace Engineering
Georgia Institute of Technology

John Kelly
Technical Lead, Data Analytics Initiatives
Corporate Engineering, Technology, & Operations
Lockheed Martin Corporation

Melanie Lorang
Associate Technical Fellow
The Boeing Company

Nikunj Oza
Leader, Data Sciences Group
NASA Ames Research Center

Tuesday, 6 January 2015						
191-PC-11	**Heterogeneous Combustion and Propellants**					**Emerald 5**
Chaired by: T. JACKSON, University of Florida Gainesville and J. MURPHY, The Aerospace Corporation						
1400 hrs AIAA-2015-0922 **Thermogravimetric Analysis of the Decomposition of a Paraffin Particle/HTPB Fuel Grain for Hybrid Rocket Motors** K. Cardoso, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; M. Nagamachi, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil; E. Kawachi, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; T. de Araújo, R. Nunes, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil	1430 hrs AIAA-2015-0923 **Combustion of Bio-derived Fuels With Additives and Research on the Losses of Unburned Fuel in Hybrid Propellant Rocket Engines** V. Naoumov, P. Skomin, P. Deptula, Central Connecticut State University, New Britain, CT	1500 hrs AIAA-2015-0924 **3D Printer for Paraffin Based Hybrid Rocket Fuel Grains** M. Creech, A. Crandell, N. Eisenhauer, S. Marx, T. Busari, A. Link, Purdue University, West Lafayette, IN; et al.	1530 hrs AIAA-2015-0925 **Experimental characterization of combustion regimes for micron-sized aluminum powders** R. Lomba, F. Halter, University of Orléans, Orléans, France; C. Chauveau, National Center for Scientific Research (CNRS), Orléans, France; S. Bernard, P. Gillard, C. Mounaim-Rousselle, University of Orléans, Orléans, France; et al.	1600 hrs AIAA-2015-0926 **Combustion characteristic of solid propellants used H2O** T. Sasaki, K. Takahashi, T. Kuwahara, Nihon University, Funabashi, Japan	1630 hrs AIAA-2015-0927 **Fabrication and Thermophysical Properties of Nickel-coated Aluminum Powder by Electroless Plating** S. Lee, W. Yoon, K. Noh, J. Lim, Yonsei University, Seoul, Korea (the Republic of); D. Lee, C. Kim, Agency for Defense Development, Daejeon, South Korea	

Tuesday, 6 January 2015						
192-PC-12	**Turbulent Combustion IV**					**Emerald 7**
Chaired by: E. MASTORAKOS, University of Cambridge and V. RAMAN, University of Texas at Austin						
1400 hrs AIAA-2015-0928 **Characteristics of Freely Propagating Premixed Flame Kernels in Supersonic Turbulent Channel Flows** B. Ochs, D. Scarborough, S. Menon, Georgia Institute of Technology, Atlanta, GA; N. Grady, R. Pitz, Vanderbilt University, Nashville, TN	1430 hrs AIAA-2015-0929 **Experimental Study on the Interaction between Swirl-stabilized Nozzles for Isothermal Flowfields** B. Dolan, R. Villalva Gomez, University of Cincinnati, Cincinnati, OH; H. Nawroth, Technical University of Berlin, Berlin, Germany; S. Pack, United Technologies Corporation, West Des Moines, IA; E. Gutmark, University of Cincinnati, Cincinnati, OH	1500 hrs AIAA-2015-0930 **Flame Extinction Dynamics of Lean Premixed Bluff-Body Stabilized Flames** M. Geikie, K. Ahmed, Old Dominion University, Norfolk, VA	1530 hrs AIAA-2015-0931 **Study on Flame Response Characteristics under Transverse Pressure Excitations** S. Seo, Y. Park, Hanbat National University, Daejeon, South Korea			

Tuesday, 6 January 2015						
193-PDL-3	**Diagnostics and Experimental Techniques**					**Emerald 2**
Chaired by: A. YALIN, Colorado State University						
1400 hrs AIAA-2015-0932 **Characterization of Dissociation and Gas Heating in Femtosecond Laser Plasma with Planar Rayleigh Scattering and Rayleigh Scattering Polarimetry** C. Limbach, R. Miles, Princeton University, Princeton, NJ	1430 hrs AIAA-2015-0933 **Methods for Enhancing Radar REMPI Sensitivity** S. McGuire, A. Dogariu, T. Chng, R. Miles, Princeton University, Princeton, NJ	1500 hrs AIAA-2015-0934 **Measurements of OH and H number density distributions in a near-surface discharge at the liquid water / water vapor interface** V. Petrishchev, Z. Yin, C. Winters, W. Lempert, I. Adamovich, Ohio State University, Columbus, OH	1530 hrs AIAA-2015-0935 **Electric Field Measurements in a Dielectric Barrier Nanosecond Pulse Discharge with Sub-nanosecond Time Resolution** B. Goldberg, Ohio State University, Columbus, OH; S. O'Byrne, University of New South Wales at the Australian Defence Force Academy, Canberra, Australia; W. Lempert, Ohio State University, Columbus, OH	1600 hrs AIAA-2015-0937 **Capillary nanosecond discharges as a tool for the measurement of quenching coefficients at high specific energy deposition** A. Klochko, A. Salmon, J. Lemainque, École Polytechnique, Palaiseau, France; N. Popov, Moscow State University, Moscow, Russia; S. Starikovskaia, École Polytechnique, Palaiseau, France		

Tuesday, 6 January 2015						
194-SATS-1	**Small Satellites - Technologies I**					**Miami 3**
Chaired by: A. SANTANGELO and J. STRAUB, University of North Dakota						
1400 hrs AIAA-2015-0938 **Micro-Cathode Arc Thruster for Small Satellite Propulsion** M. Keidar, George Washington University, Washington, DC	1430 hrs AIAA-2015-0939 **Attitude Control System of a Cube Satellite with Small Solar Sail** Y. Yoo, S. Koo, G. Kim, S. Kim, J. Suk, Chungnam National University, Daejeon, Korea (the Republic of); J. Kim, University of Glasgow, Glasgow, United Kingdom	1500 hrs AIAA-2015-0940 **A Practical Attitude Control System using Control Moment Gyros for Nano-Satellite TSUBAME** T. Hao, Tokyo Institute of Technology, Tokyo, Japan; S. Matunaga, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1530 hrs Oral Presentation **Crew Waste Water Electrical Propulsion System With Developed Arcjet Thruster** H. Tahara, Osaka Institute of Technology, Osaka, Japan; Y. Nogawa, Splije, LLC, Tsukuba, Japan	1600 hrs AIAA-2015-0941 **Modular Rapidly Manufactured Small Satellite (MRMSS)** G. Trinh, K. Cheung, NASA Ames Research Center, Moffett Field, CA		

Tuesday, 6 January 2015						
195-SCS-4	**Composite Material for Spacecraft Structures**					**Osceola Ballroom 4**
Chaired by: M. SANTER, Imperial College London and S. BRADFORD, Jet Propulsion Laboratory						
1400 hrs AIAA-2015-0942 **High Strain Composites** T. Murphey, High Strain Dynamics, Phoenix, NY; W. Francis, B. Davis, Roccor, LLC, Louisville, CO; J. Mejia-Ariza, L'Garde, Inc., Tustin, CA	1430 hrs AIAA-2015-0943 **High Strain Composite Slit Tubes for Large Roll-Out Structures** W. Francis, B. Davis, M. Hulse, P. Keller, D. Campbell, G. Freebury, Roccor, LLC, Louisville, CO	1500 hrs AIAA-2015-0944 **Dual-Matrix Composite Wideband Antenna Structures for CubeSats** M. Sakovsky, I. Maqueda Jimenez, C. Karl, S. Pellegrino, California Institute of Technology, Pasadena, CA; J. Costantine, California State University, Fullerton, CA	1530 hrs AIAA-2015-0945 **Preliminary Design of Deployable Flexible Shell Reflector of an X-band Satellite Payload** O. Soykasap, S. Karakaya, A. Gayretli, Y. Akcin, Afyon Kocatepe University, Afyonkarahisar, Turkey	1600 hrs AIAA-2015-0946 **The Strain Energy Deployed High Expansion Outer Barrel Assembly** M. Silver, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA; P. Warren, Physical Sciences, Inc., Andover, MA	1630 hrs AIAA-2015-0947 **Simulation of Non-Synchronous Deployment of the Large Deployable Hoop Truss Antenna** L. Liu, China Academy of Space Technology, Beijing, China; J. Shan, York University, Toronto, Canada; C. Tao, China Academy of Space Technology, Beijing, China	1700 hrs AIAA-2015-0948 **Hysteresis modeling and control system design for shape memory alloy actuators** I. Kim, J. Shan, York University, Toronto, Canada

Tuesday, 6 January 2015						
196-SD-8	**Special Session: Transformative Technologies for High-Speed/High-Efficiency Next-Gen Rotorcraft I**					**Tampa 2**
Chaired by: A. DATTA, Science & Technology Corporation and E. SMITH, Pennsylvania State University						
1400 hrs AIAA-2015-0949 **NASA Technology for Next Generation Vertical Lift Vehicles** S. Gorton, NASA Langley Research Center, Hampton, VA; I. Lopez, NASA Glenn Research Center, Cleveland, OH; C. Theodore, NASA Ames Research Center, Moffett Field, CA	1430 hrs AIAA-2015-0950 **Wind Tunnel Testing of an Instrumented Rotor at High Advance Ratio** B. Berry, I. Chopra, University of Maryland, College Park, College Park, MD	1500 hrs AIAA-2015-0951 **Aeromechanics of Slowed Rotors at High Advance Ratios** G. Bowen-Davies, I. Chopra, University of Maryland, College Park, College Park, MD	1530 hrs AIAA-2015-0952 **Leading- and Trailing-Edge Reversal of a Cambered Airfoil for Stopped Rotors** R. Niemiec, G. Jacobellis, F. Gandhi, Rensselaer Polytechnic Institute, Troy, NY	1600 hrs AIAA-2015-0953 **Multi-Plate Dry Clutch Design and Analysis for Dual Speed Rotorcraft Applications** H. Desmidt, University of Tennessee, Knoxville, Knoxville, TN; E. Smith, R. Bill, S. Rao, Pennsylvania State University, University Park, PA	1630 hrs AIAA-2015-0954 **Analysis of Pericyclic Mechanical Transmission with Straight Bevel Gears** T. Mathur, Pennsylvania State University, University Park, PA; Z. Saribay, Turkish Aerospace Industries, Inc., Ankara, Turkey; R. Bill, E. Smith, Pennsylvania State University, University Park, PA; H. Desmidt, University of Tennessee, Knoxville, Knoxville, TN	1700 hrs AIAA-2015-0955 **Blast Attenuating Aircraft Structure** D. McCarthy, L. Chiu, The Boeing Company, Mesa, AZ; M. Robeson, Army Aviation and Missile Research Development and Engineering Center, Fort Eustis, VA

Tuesday, 6 January 2015						
197-STR-9	**Special Session: Impact Damage in Composites**					**Sun Ballroom D**
Chaired by: A. NAJAFI, ANSYS, Inc. and M. RASSAIAN, Boeing Engineering Operations & Technology						
1400 hrs AIAA-2015-0956 **Face-on and Edge-on Impact Response of Composite Laminates** W. Ji, Ulsan National Institute of Science and Technology, Ulsan, Korea (the Republic of); S. Sringeri, S. Thorsson, C. Kosztowny, A. Waas, University of Michigan, Ann Arbor, Ann Arbor, MI; M. Rassaian, The Boeing Company, Seattle, WA; et al.	1430 hrs AIAA-2015-0957 **Low-Velocity Impact Damage and Delamination Crack Arrestment with Translaminar Reinforcements** V. Ranatunga, Miami University, Middletown, OH; S. Clay, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2015-0958 **Prediction of Low-velocity Impact Damage in Sandwich Composite Beams** J. Xie, S. Thorsson, J. Marek, A. Waas, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2015-0959 **An effective modeling strategy for drop test analysis of composite curved beam** D. Pham, Institute of High Performance Computing, Singapore, Singapore	1600 hrs AIAA-2015-0960 **Lagrange-based Modeling and Testing of Composite Structure Impact Dynamics** A. Baeten, Augsburg University of Applied Sciences, Augsburg, Germany	1630 hrs AIAA-2015-0961 **Comparison of Delamination Threshold Load Prediction of Composite Panels with Different Thickness** S. Gao, Z. Yu, H. Wang, Shanghai Jiao Tong University, Shanghai, China	

Tuesday, 6 January 2015						
198-STR-10	**Advanced Structures**					**Tampa 1**
Chaired by: J. ZIPAY, NASA-Johnson Space Center and P. GUSTAFSON, Western Michigan University						
1400 hrs AIAA-2015-0962 **Morphing structures: non-linear composite shells with irregular planforms** E. Lamacchia, E. Eckstein, A. Pirrera, P. Weaver, University of Bristol, Bristol, United Kingdom	1430 hrs AIAA-2015-0963 **Damage Detection Threshold of Optically-Digitized Gas-Turbine Engine Hardware** J. Wertz, C. Baudendistel, E. Henry, Universal Technology Corporation, Dayton, OH; J. Brown, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2015-0964 **Investigation the Finite Element Model and Impact Characteristics of Civil Aircraft** Y. Ren, Hunan University, Changsha, China; J. Xiang, Z. Luo, J. Zheng, Beihang University, Beijing, China	1530 hrs AIAA-2015-0965 **Isogeometric Weak Coupling of Shell Structures** Y. Guo, M. Ruess, Delft University of Technology, Delft, The Netherlands	1600 hrs AIAA-2015-0966 **Structural Characterization of Advanced Composite Tow-Steered Shells with Large Cutouts** K. Wu, NASA Langley Research Center, Hampton, VA; J. Turpin, Kansas Space Grant Consortium, Wichita, KS; N. Gardner, Analytical Services & Materials, Inc., Hampton, VA; B. Stanford, R. Martin, NASA Langley Research Center, Hampton, VA		

Tuesday, 6 January 2015						
199-STR-11	**Failure Analysis and Prediction II**					**Tallahassee 3**
Chaired by: S. SMELTZER, NASA Langely Research Center and P. MURTHY, NASA Glenn Research Center						
1400 hrs AIAA-2015-0967 **Modeling cure induced damage in Fiber Reinforced Composites** R. D'Mello, M. Maiaru, A. Waas, University of Michigan, Ann Arbor, Ann Arbor, MI; P. Prabhakar, University of Texas, El Paso, El Paso, TX	1430 hrs AIAA-2015-0968 **The effect of free edges on inter-laminar performance of curved laminates** T. Kim, T. Fletcher, T. Dodwell, R. Butler, R. Scheichl, University of Bath, Bath, United Kingdom; J. Ankersen, GKN Aerospace Engine Systems, Bristol, United Kingdom; et al.	1500 hrs AIAA-2015-0969 **A novel two-scale progressive failure analysis method for laminated fiber-reinforced composites** D. Zhang, D. Patel, A. Waas, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2015-0970 **Fatigue Crack Initiation Analysis of Roller Bearing Using Multiscale modeling** M. Ghaffari, S. Xiao, University of Iowa, Iowa City, Iowa City, IA	1600 hrs AIAA-2015-0971 **Damage Development 3D-RUC of Polymer Matrix with Randomly Distributed Fibers** N. Parambil, S. Gururaja, Indian Institute of Science, Bangalore, India	1630 hrs AIAA-2015-0972 **Statistical Strength Determination of Carbon Fibres Using a Generalized Weibull Model** H. Rajendran, P. Mohite, C. Upadhyay, Indian Institute of Technology Kanpur, Kanpur, India	1700 hrs AIAA-2015-0973 **Simulation of Distributed Co-Crack Propagation in Cellular Automata by Time Warp Synchronization** Y. Park, D. Mavris, Georgia Institute of Technology, Atlanta, GA

Tuesday, 6 January 2015						
200-SUR-1	**Air and Space Survivability**					**Tampa 3**
Chaired by: J. RIMOLI, Georgia Institute of Technology and S. POROSEVA, The University of New Mexico						
1400 hrs AIAA-2015-0974 **Advanced Vertical Lift Aircraft Demonstrator: Design for Certification of a Hover Lift-Drive System** J. Silva-Martinez, W. Lee, A. Boshinski, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2015-0975 **Development of Methods for Characterization of Hydrodynamic Ram Cavity Dynamics** A. Lingenfelter, D. Liu, Air Force Institute of Technology, Wright-Patterson AFB, OH	1500 hrs AIAA-2015-0976 **Topology Optimization of an Aircraft Wing** D. Walker, D. Liu, Air Force Institute of Technology, Wright-Patterson AFB, OH	1530 hrs AIAA-2015-0977 **Characterization of Spin Effects on Warhead Fragment Flyout Distance** J. Trombetta, M. Bennett, J. Hand, S. Carpenter, D. Liu, Air Force Institute of Technology, Wright-Patterson AFB, OH			

Tuesday, 6 January 2015						
201-TP-5	**Nonequilibrium Flows and Radiation II**					**Sun Ballroom B**
Chaired by: M. WINTER, University of Kentucky and D. HASH, NASA Ames Research Center						
1400 hrs AIAA-2015-0978 **Modeling of Non-equilibrium Plasmas in an Inductively Coupled Plasma Facility** W. Zhang, University of Illinois, Urbana-Champaign, Urbana, IL; A. Lani, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium; M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL	1430 hrs AIAA-2015-0979 **Nonequilibrium Plasma Flow Computation with Atomic and Molecular State Transitions** Y. Ogino, K. Totani, N. Ohnishi, Tohoku University, Sendai, Japan	1500 hrs AIAA-2015-0980 **Radiative Gasdynamics of Re-entry Space Vehicle of Large Size with Superorbital Velocity** S. Surzhikov, Russian Academy of Sciences, Moscow, Russia	1530 hrs AIAA-2015-0981 **Measurements of Surface Accommodation Coefficients for Rarefied Aerodynamics** T. Ozawa, T. Suzuki, K. Fujita, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1600 hrs AIAA-2015-0982 **Sensitivity Analysis of Non-equilibrium Martian Entry Flow to Chemical and Thermal Modelling** A. Preci, German Aerospace Center (DLR), Cologne, Germany; M. Auweter-Kurtz, German Aerospace Academy, Böblingen, Germany	1630 hrs AIAA-2015-0983 **'Uncertainty Quantification Study of Non-Equilibrium Viscous Shock-Layer'** T. Kino, K. Totani, T. Ishihara, Y. Ogino, N. Ohnishi, Tohoku University, Sendai, Japan	1700 hrs AIAA-2015-0984 **Bluntness Effects on Hypersonic Leading Edge Separation** A. Khraibut, S. Gai, A. Neely, University of New South Wales, Canberra, Australia

Tuesday, 6 January 2015						
202-UMS-3	**UAS Sensor Technologies**					**Osceola Ballroom 2**
Chaired by: R. STANSBURY, Embry-Riddle Aeronautical University						
1400 hrs AIAA-2015-0985 **From Radiosonde To Papersonde: The Use of Conductive Inkjet Printing in the Massive Atmospheric Volume Instrumentation System (MAVIS) Project** P. King, J. Scanlan, A. Sobester, University of Southampton, Southampton, United Kingdom	1430 hrs AIAA-2015-0986 **Obstacle Avoidance System for UAVs using Computer Vision** S. Bhandari, B. Richards, M. Gan, J. Dayton, M. Enriquez, J. Liu, California Polytechnic State University, Pomona, CA; et al.	1500 hrs AIAA-2015-0987 **SDAC-UAS: A Sensor Data Acquisition Unmanned Aerial System for Flight State Monitoring and Aerodynamic Data Collection** O. Dantsker, A. Louis, R. Mancuso, M. Caccamo, M. Selig, University of Illinois, Urbana-Champaign, Urbana, IL	1530 hrs AIAA-2015-0988 **Validation and Calibration of a High Resolution Sensor in Unmanned Aerial Vehicles for Producing Images in the IR Range Utilizable in Precision Agriculture** P. Jimenez Soler, D. Agudelo, University of San Buenaventura, Bogota, Colombia	1600 hrs AIAA-2015-0989 **Autonomous Wall-Following Based Navigation of Unmanned Aerial Vehicles in Indoor Environments** A. Nemati, M. Sarim, M. Hashemi, M. Kumar, University of Toledo, Toledo, OH	1630 hrs AIAA-2015-0990 **A Ground Control Station for Multivehicular Control and Data Visualization** S. Bhandari, M. Heid, A. Bettadapura, E. Ito, D. Tang, California Polytechnic State University, Pomona, CA	

Tuesday, 6 January 2015						
203-WE-7	**Wind Energy Aerodynamics and Aeroacoustics III**					**Emerald 6**
Chaired by: E. WHITE, Texas A&M University and R. CHOW, University of California Davis						
1400 hrs AIAA-2015-0991 **Flow Field Around a Serrated Trailing Edge at Incidence** C. Arce, LM Wind Power, Kolding, Denmark; D. Ragni, S. Pröbsting, F. Scarano, Delft University of Technology, Delft, The Netherlands	1430 hrs AIAA-2015-0992 **ECN-G1-21 Airfoil: Design and Wind Tunnel Testing** F. Grasso, Energy Research Center of the Netherlands, Petten, The Netherlands	1500 hrs AIAA-2015-0993 **Aerodynamic Drag and Aeroacoustic Noise Mitigation of Flatback Airfoil with Spanwise Wavy Trailing Edge** S. Yang, J. Baeder, University of Maryland, College Park, College Park, MD	1530 hrs AIAA-2015-0994 **Study of distributed roughness effect over wind turbine airfoils performance using CFD** B. Mendez, X. Munduate, CENER, Sarriguren, Spain	1600 hrs AIAA-2015-0995 **Aerodynamic Response of a Wind Turbine Airfoil to Gurney Flap Deployment** P. Nikoueeyan, J. Strike, A. Magstadt, M. Hind, J. Naughton, University of Wyoming, Laramie, Laramie, WY	1630 hrs AIAA-2015-0996 **New airfoil family design for large wind turbine blades** M. Canal Vila, D. Miguel Alfaro, Alstom, Barcelona, Spain	

Tuesday, 6 January 2015						
204-WE-8	**Wind Energy Materials, Mechanics, and Sensing**					**Emerald 4**
Chaired by: D. MILLER, Mechanical and Industrial Engineering						
1400 hrs AIAA-2015-0997 **Fatigue Resistance of Wind Blade Laminates Containing In-Plane Waviness Flaws** D. Samborsky, D. Miller, D. Cairns, J. Mandell, A. Lolatte, Montana State University, Bozeman, MT	1430 hrs AIAA-2015-0998 **Development and Assessment of Advanced Inspection Methods for Wind Turbine Blades Using a Focused WINDIE Experiment** D. Roach, S. Neidigk, T. Rice, R. Duvall, J. Paquette, Sandia National Laboratories, Albuquerque, NM	1500 hrs AIAA-2015-0999 **Assessment of the Effect of Hybrid GRFP-CFRP Usage in Wind Turbine Blades on the Reduction of Fatigue Damage Equivalent Loads in the Wind Turbine System** O. Gözcü, T. Farsadi, C. Tola, A. Kayran, Middle East Technical University, Ankara, Turkey	1530 hrs AIAA-2015-1000 **Development and Commissioning of a Small / Mid-Size Wind Turbine Test Facility** D. Valyou, T. Arsenault, K. Janoyan, P. Marzocca, Clarkson University, Potsdam, NY; N. Post, National Renewable Energy Laboratory, Golden, CO; C. Grappasonni, University of Rome "La Sapienza", Rome, Italy; et al.	1600 hrs AIAA-2015-1001 **A Robust Algorithm to Detecting Wind Turbine Blade Health Using Vibro-Acoustic Modulation and Sideband Spectral Analysis** N. Myrent, D. Adams, Vanderbilt University, Nashville, TN; G. Rodriguez-Rivera, D. Ulybyshev, J. Vitek, Purdue University, West Lafayette, IN; E. Blanton, Fiji Systems, Inc., South Bend, IN; et al.	1630 hrs AIAA-2015-1002 **Evaluating the Aerodynamic Performance of Small Horizontal Axis Wind Turbines** B. Wallace, D. McLaughlin, S. Stewart, Pennsylvania State University, University Park, PA	

Tuesday, 6 January 2015		
205-LEC-4 **1730 - 1830 hrs**	**Dryden Lectureship in Research** **Aeroacoustics**	**Osceola Ballroom CD**
Ann P. Dowling President Royal Academy of Engineering		

Tuesday, 6 January 2015		
206-NW-1 **1830 - 2000 hrs**	**Reception in the Exhibit Hall**	**Exhibit Hall B/C**

Wednesday, 7 January 2015		
207-PLNRY-3 0800 - 0900 hrs	The Future of Design	Osceola Ballroom CD

Moderator: Richard Christiansen, Vice President, Sierra Lobo, Inc.

Panelists:

Juan Alonso
Associate Professor, Department of Aeronautics
Stanford University

Robert Liebeck
Senior Technical Fellow
The Boeing Company

Mark Maughmer
Professor of Aerospace Engineering
Pennsylvania State University

Wednesday, 7 January 2015						
208-AA-7	Jet Noise Prediction II					Miami 2
Chaired by: P. MORRIS, Pennsylvania State University						
0930 hrs AIAA-2015-1003 **The Prediction of Scattered Broadband Shock-Associated Noise** S. Miller, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2015-1004 **Linear Analysis of Jet-Engine Core Noise Based upon High-Fidelity Combustor and Turbine Simulations** J. O'Brien, J. Kim, M. Ihme, Stanford University, Stanford, CA	1030 hrs AIAA-2015-1005 **Empirical Source Strength Correlations for RANS-Based Acoustic Analogy Methods** M. Kube-McDowell, G. Blaisdell, Purdue University, West Lafayette, IN; A. Lyrintzis, Embry-Riddle Aeronautical University, Daytona Beach, FL	1100 hrs AIAA-2015-1006 **Towards a Low-Cost Wavepacket Model of the Jet Noise Source** D. Papamoschou, J. Xiong, F. Liu, University of California, Irvine, Irvine, CA	1130 hrs AIAA-2015-1007 **Assessing Prediction and Reduction Technique of Lift-off Acoustics Using Epsilon Flight Data** S. Tsutsumi, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; T. Ishii, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; K. Ui, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan; S. Tokudome, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; K. Wada, Science Service, Inc., Chuuou-ku, Japan		

Wednesday, 7 January 2015						
209-ACD-2	High Speed Aircraft Design					Tallahassee 2
Chaired by: S. KOMADINA, Northrop Grumman Aerospace Systems						
0930 hrs AIAA-2015-1008 **The Design, Analysis and Performance Evaluation of Waverider Configurations for Hypersonic Vehicle Applications** F. Ferguson, N. Dasque, M. Dhanasar, North Carolina A&T State University, Greensboro, NC	1000 hrs AIAA-2015-1009 **On the Conceptual Design of Waverider Forebody Geometries** K. Kontogiannis, A. Sobester, University of Southampton, Southampton, United Kingdom; N. Taylor, MBDA, Bristol, United Kingdom	1030 hrs AIAA-2015-1010 **A Design Space Exploration Methodology to Support Decisions under Evolving Requirements' Uncertainty and its Application to Suborbital Vehicles** C. Frank, O. Pinon-Fischer, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1100 hrs Oral Presentation **TU Delft Advanced Transonic Trainer, Winner AIAA Undergraduate Individual Design Competition** S. van Schie, Delft University of Technology, Delft, The Netherlands	1130 hrs Oral Presentation **TU Delft SMART, Winner AIAA Graduate Team Aircraft Design Competition** R. Klein, Delft University of Technology, Delft, The Netherlands		

Wednesday, 7 January 2015						
210-ACD-3	Aircraft Design Tools					Naples 3
Chaired by: A. HAHN, NASA-Langley Research Center						
0930 hrs AIAA-2015-1012 **Closing the Loop on Aircraft Conceptual Sizing using the Merlin Flight Simulator** A. Altman, University of Dayton, Dayton, OH	1000 hrs AIAA-2015-1013 **Artificial Neural Networks Applied to Airplane Design** N. Secco, B. Mattos, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1030 hrs AIAA-2015-1014 **Interactive Reconstruction of 3D Models in the OpenVSP Parametric Geometry Tool** R. McDonald, California Polytechnic State University, San Luis Obispo, CA	1100 hrs AIAA-2015-1015 **Multi-section Wing Capability for the Vehicle Sketch Pad Structural Analysis Module** A. Chaput, University of Texas, Austin, Austin, TX	1130 hrs AIAA-2015-1016 **Parametric Identification of Surface Regions in OpenVSP for Improved Engineering Analysis** A. Gary, R. McDonald, California Polytechnic State University, San Luis Obispo, CA	1200 hrs Oral Presentation **Demonstration of new Capabilities of OpenVSP v3.0.0** R. McDonald, California Polytechnic State University, San Luis Obispo, CA	

Wednesday, 7 January 2015						
211-AFM-9	**Launch Vehicle, Missile, and Projectile Flight Mechanics I**					**Captiva 2**
Chaired by: P. WERNERT, French-German Research Institute of Saint-Louis (ISL)						
0930 hrs AIAA-2015-1017 **Integration of Grid Fins for the Optimal Design of Missile Systems** T. Ledlow, J. Burkhalter, R. Hartfield, Auburn University, Auburn, AL	1000 hrs AIAA-2015-1018 **An Improved Method to Calculate the Nonlinear Rolling Moment Due to Differential Fin Deflection of Canard Controlled Missiles** F. Moore, L. Moore, G. McGowan, Aeroprediction, Inc., King George, VA	1030 hrs AIAA-2015-1019 **Robust Stability Evaluation of the Space Launch System Control Design: A Singular Value Approach** J. Pei, NASA Langley Research Center, Hampton, VA; J. Newsom, Analytical Mechanics Associates, Inc., Hampton, VA	1100 hrs AIAA-2015-1020 **Euler-Lagrange Optimal Control for Symmetric Projectiles** B. Burchett, A. Nash, Rose-Hulman Institute of Technology, Terre Haute, IN	1130 hrs AIAA-2015-1021 **Elliptical Trajectory Guidance Law with Terminal Impact Angle Constraint** T. Zhang, H. She, Beijing Institute of Technology, Beijing, China		

Wednesday, 7 January 2015		
212-AFM-10 **0930 - 1230 hrs**	**Air Launch to Orbit (Invited)**	**Sun Ballroom B**
Chaired by: J. DEL FRATE, NASA Dryden Flight Research Center and P. WILLIAMS-HAYES, NASA Armstrong Flight Research Center		

This session will focus on efforts to develop air-launch systems that place small satellites and payloads into low Earth orbit without the use of conventional ground-based launch systems. Speakers from the U.S. Air Force, Defense Advanced Research Projects Agency (DARPA), Federal Aviation Administration (FAA), Orbital Sciences Corporation, and National Aeronautics and Space Administration (NASA) efforts will brief results of past programs and discuss current progress. Following these informational briefings, a group of panelists will participate in a discussion with the audience. This session is intended to gather a community of practice and provide networking opportunities for attendees.

Moderators: John F. Carter, Director, Exploration and Space Technology Missions, NASA Neil A. Armstrong Flight Research Center
John Del Frate, Director, Advanced Planning and Partnerships, NASA Neil A. Armstrong Flight Research Center

Invited Speakers:

Doug Pearson	**Mitchell Burnside Clapp**	**Jerry Budd**	**Antonio Elias**	**Michael S. Kelly**
U.S. Air Force (Gen, Retired)	Program Manager DARPA Tactical Technology Office	Air Launch Development Project Manager NASA Neil A. Armstrong Flight Research Center	Executive Vice President and Chief Technical Officer Orbital Sciences Corporation	Chief Engineer, Office of Commercial Space Transportation Federal Aviation Administration

Wednesday, 7 January 2015						
213-AMT-3	**Novel Diagnostics in Reacting Flows**					**Tallahassee 1**
Chaired by: B. MA, GE Global Research Center and C. JOHANSEN, University of Calgary						
0930 hrs AIAA-2015-1022 **Experimental Characterization of Decay Rates in Bluff-Body Stabilized Flames Using Sodium Injection** J. Monfort, University of Dayton, Dayton, OH; A. Caswell, V. Belovich, Air Force Research Laboratory, Wright-Patterson AFB, OH; B. Huelskamp, Innovative Scientific Solutions, Inc., Dayton, OH	1000 hrs AIAA-2015-1023 **Experimental study of transverse jet mapping using PLIF** L. Thompson, G. Natsui, C. Velez, J. Kapat, S. Vasu, University of Central Florida, Orlando, FL	1030 hrs AIAA-2015-1024 **Multi-Beam, High-Repetition-Rate Thermometry in a Gas Turbine Combustor Test Rig using Time-Division-Multiplexed Tunable Diode Lasers** A. Caswell, Air Force Research Laboratory, Wright-Patterson AFB, OH; K. Rein, S. Roy, Spectral Energies, LLC, Dayton, OH; S. Stouffer, University of Dayton, Dayton, OH; A. Lynch, E. Corporan, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	1100 hrs AIAA-2015-1025 **Quantitative Temperature Imaging in Turbulent Non-Premixed Flames Using Filtered Rayleigh Scattering** T. McManus, J. Sutton, Ohio State University, Columbus, OH			

Wednesday, 7 January 2015						
214-APA-20	**Propeller/Rotorcraft/Wind Turbine Aerodynamics I**					**Naples 2**
Chaired by: K. KARA, Khalifa University of Science, Technology & Research and C. SHENG, University of Toledo						
0930 hrs AIAA-2015-1026 **Analysis of propeller-airframe interaction effects through a combined numerical simulation and wind-tunnel testing approach** A. Gomariz-Sancha, M. Maina, A. Peace, Aircraft Research Association, Ltd., Bedford, United Kingdom	1000 hrs AIAA-2015-1027 **Computational Simulation of Pusher-Tractor Propeller Configurations for Unmanned Air Vehicles** U. Kaynak, TOBB University of Economics and Technology, Ankara, Turkey	1030 hrs AIAA-2015-1028 **Testing and Evaluation of Passively Actuated Vanes Operating near Propeller Tip** W. Loh, J. Jacob, Oklahoma State University, Stillwater, OK	1100 hrs AIAA-2015-1029 **Experimental Feasibility Assessment of Counter-Rotating Propellers for Stratospheric Airships** P. Liu, Z. Tang, Y. Chen, H. Guo, Beihang University, Beijing, China	1130 hrs AIAA-2015-1030 **Effect of Duct-Rotor Aerodynamic Interactions on Blade Design for Hover and Axial Flight** B. Jimenez, Oak Ridge Institute for Science and Education, Aberdeen, MD; R. Singh, Army Research Laboratory, Aberdeen Proving Ground, MD		

Wednesday, 7 January 2015						
215-APA-21	**Airfoil/Wing/Configuration Aerodynamics II**					**Destin 2**
Chaired by: A. MCCOMAS, TLG Aerospace and J. LATZ, Northrop Grumman Aerospace Systems						
0930 hrs AIAA-2015-1031 **Demonstration of a Conceptual Design Tool for Multiple Lifting Elements** W. Bissonnette, G. Bramesfeld, Ryerson University, Toronto, Canada	1000 hrs AIAA-2015-1032 **Numerical Study of Intermittent Laminar Bubble Bursting and Vortex Shedding on an NACA 64_3-618 Airfoil** A. Jost, J. Zhang, Florida Institute of Technology, Melbourne, FL	1030 hrs AIAA-2015-1033 **3D stall-cells investigation on a NACA64418** D. Ragni, C. Simao Ferreira, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2015-1034 **Airfoil Designs for a Small and Large Horizontal Axis Wind Turbine** D. Hall, Self, Mechanicsville, MD	1130 hrs AIAA-2015-1035 **Simulation of a MW rotor equipped with vortex generators using CFD and an actuator shape model** N. Troldborg, N. Sørensen, F. Zahle, P. Réthoré, Technical University of Denmark, Roskilde, Denmark		

Wednesday, 7 January 2015						
216-APA-22	**Flow Control Applications & Demonstrations (Active & Passive) I**					**Naples 1**
Chaired by: B. CYBYK, The Johns Hopkins University Applied Physics Laboratory and J. GEORGE, Metrolaser Inc.						
0930 hrs AIAA-2015-1036 **Plasma Flow Control on a Landing Gear Model** M. Wicks, F. Thomas, T. Corke, University of Notre Dame, Notre Dame, IN; C. Nelson, M. Patel, A. Cain, Innovative Technology Applications Company, LLC, Chesterfield, MO	1000 hrs AIAA-2015-1037 **Analysis of the Near-Field of an Asymmetrically Controlled Supersonic Round Jet** D. Gonzalez, Naval Surface Warfare Center, Indian Head, MD; D. Gaitonde, Ohio State University, Columbus, OH; M. Lewis, Science and Technology Policy Institute, Washington, DC	1030 hrs AIAA-2015-1038 **Dynamic Stall Alleviation for an SC1095 Airfoil using Synthetic Jets** S. Tran, A. Fisher, Rensselaer Polytechnic Institute, Troy, NY; D. Corson, Altair Engineering, Inc., Clifton Park, NY; O. Sahni, Rensselaer Polytechnic Institute, Troy, NY	1100 hrs AIAA-2015-1039 **Effect of Vertical Strakes on Suppression of Wing Rock in Slender Delta Wing** S. Bakaul, Military Institute of Science and Technology, Dhaka, Bangladesh; Y. Wang, W. Guangxing, Beihang University, Beijing, China			

Wednesday, 7 January 2015						
217-APA-23	**Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-up Air Vehicles III**					**Destin 1**
Chaired by: N. HARIHARAN, CREATE-AV and R. JAIN, AFDD, US Army						
0930 hrs AIAA-2015-1040 **Applications of CREATE-AV KestrelTM v5 with Cartesian Adaptive Mesh Refinement** T. Shafer, Naval Air Systems Command, Patuxent River, MD; T. Eymann, CREATE AV Team, Eglin AFB, FL; J. Forsythe, B. Hallissy, D. Hine, Naval Air Systems Command, Patuxent River, MD	1000 hrs AIAA-2015-1041 **Dual Mesh CFD Solver Comparison of Low Mach Flow over the ROBIN Fuselage** J. Abras, Naval Air Systems Command, Patuxent River, MD; N. Hariharan, CREATE AV Team, Lorton, VA	1030 hrs AIAA-2015-1042 **Dynamic Modeling of an Aircraft Primary Thrusting Nozzle** J. Masters, Arnold Engineering Development Complex, Arnold AFB, TN	1100 hrs AIAA-2015-1043 **A-10 Analysis Using HPCMP CREATETM-AV Kestrel Product Utilizing the Firebolt Propulsion Component** J. Klepper, R. Nichols, J. Jenkins, AEDC, Tullahoma, TN			

Wednesday, 7 January 2015						
218-APA-24	**Special Session: Low Boom Activities I**					**Miami 3**
Chaired by: L. BANGERT, NASA Langley Research Center and K. WAITHE, Gulfstream Aerospace Corporation						
0930 hrs AIAA-2015-1044 **Computational and Experimental Study of Supersonic Nozzle Flow and Shock Interactions** M. Carter, A. Elmiligui, NASA Langley Research Center, Hampton, VA; S. Nayani, Analytical Services & Materials, Inc., Hampton, VA; R. Castner, NASA Glenn Research Center, Cleveland, OH; W. Bruce, University of Virginia, Charlottesville, Charlottesville, VA; J. Inskeep, West Virginia University, Morgantown, WV	1000 hrs AIAA-2015-1045 **Airframe-Nozzle-Plume Interactions in the Context of Low Sonic Boom Design** M. Wintzer, NASA Langley Research Center, Hampton, VA; R. Castner, NASA Glenn Research Center, Cleveland, OH	1030 hrs AIAA-2015-1046 **Plume and Shock Interaction Effects on Sonic Boom in the 1-foot by 1-foot Supersonic Wind Tunnel** R. Castner, NASA Glenn Research Center, Cleveland, OH; S. Cliff, NASA Ames Research Center, Moffett Field, CA; A. Elmiligui, C. Winski, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2015-1047 **Aerodynamic Shape Optimization of a Two-Stream Supersonic Plug Nozzle** C. Heath, NASA Glenn Research Center, Cleveland, OH; E. Nielsen, M. Park, NASA Langley Research Center, Hampton, VA; J. Gray, NASA Glenn Research Center, Cleveland, OH	1130 hrs AIAA-2015-1048 **Acoustically Induced Shock Oscillations of a Low-Boom Inlet** S. Candon, E. Loth, University of Virginia, Charlottesville, Charlottesville, VA		

Wednesday, 7 January 2015						
219-AS-4	**Compliant Structures**					**Osceola Ballroom 6**
Chaired by: W. YU, Purdue University and R. BOTEZ						
0930 hrs AIAA-2015-1049 **Design and Testing of a Compliant Mechanism-based Demonstrator for a Droop-Nose Morphing Device** S. Vasista, J. Riemenschneider, H. Monner, German Aerospace Center (DLR), Braunschweig, Germany	1000 hrs AIAA-2015-1050 **Variable Camber Compliant Wing - Design** J. Joo, Air Force Research Laboratory, Wright-Patterson AFB, OH; C. Marks, L. Zientarski, University of Dayton, Dayton, OH; A. Culler, Sierra Lobo, Inc., Wright-Patterson AFB, OH	1030 hrs AIAA-2015-1051 **Variable Camber Compliant Wing - Wind Tunnel Testing** C. Marks, L. Zientarski, University of Dayton, Dayton, OH; A. Culler, B. Hagen, Sierra Lobo, Inc., Wright-Patterson AFB, OH; B. Smyers, J. Joo, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2015-1052 **Implementation of a Contact Model in a Topology Optimization Method for the Design of Compliant Mechanisms for Thermal Control** P. Thurier, G. Lesieutre, M. Frecker, J. Adair, Pennsylvania State University, University Park, PA	1130 hrs AIAA-2015-1053 **Chiral Morphing Wing Tip Design and Test** C. Wales, R. Cheung, J. Cooper, University of Bristol, Bristol, United Kingdom	1200 hrs AIAA-2015-1054 **Active Camber Morphing Wings Based on Compliant Structures: an Aeroelastic Assessment** A. De Gaspari, S. Ricci, L. Travaglini, L. Cavagna, Technical University of Milan, Milan, Italy; A. Antunes, F. Odaguil, Embraer, São José dos Campos, Brazil; et al.	

Wednesday, 7 January 2015						
220-FD-28	**Current Challenges for Computational Fluid Dynamics, Industry and Government Interests I (Invited)**					**Sun Ballroom A**
Chaired by: H. HUYNH, NASA Glenn Research Center and N. KROLL, DLR - German Aerospace Center						
0930 hrs Oral Presentation **Challenges for the Application of CFD in a Production Aircraft Design Environment (Invited)** J. Vassberg, The Boeing Company, Long Beach, CA	1000 hrs Oral Presentation **Current Challenges for Industrial Application of LES Turbulence Models (Invited)** R. Bush, Pratt & Whitney, East Hartford, CT	1030 hrs Oral Presentation **Challenges to the use of CFD in the Military Aircraft Industry (Invited)** B. Smith, Lockheed Martin Corporation, Fort Worth, TX	1100 hrs Oral Presentation **Current Challenges for CFD (Invited)** B. Glaz, Army Research Laboratory, Aberdeen Proving Ground, MD	1130 hrs Oral Presentation **Towards an end to end integrated high order flow simulation system (Invited)** W. Dawes, Y. Lu, Cambridge University, Cambridge, United Kingdom	1200 hrs Oral Presentation **CFD, past, present, and future (Invited)** A. Jameson, Stanford University, Stanford, CA	

Wednesday, 7 January 2015						
221-FD-29	**Flow Control (Fundamentals and Technology) II**					**Sanibel 3**
Chaired by: D. WILLIAMS, Illinois Institute of Technology and J. BONS, Ohio State University						
0930 hrs AIAA-2015-1055 **Control of a Model Secondary Flow Targeting Convective Instabilities** S. Benton, J. Bons, Ohio State University, Columbus, OH	1000 hrs AIAA-2015-1056 **Comparison of a Separated Flow Response to Localized and Global-type Disturbances** B. Monnier, D. Williams, Illinois Institute of Technology, Chicago, IL; T. Weier, T. Albrecht, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany	1030 hrs AIAA-2015-1057 **Spatial Growth of the Spanwise Disturbance Induced by a Synthetic Jet on Separation Control over an Airfoil** Y. Abe, University of Tokyo, Sagamihara, Japan; T. Nonomura, K. Fujii, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1100 hrs AIAA-2015-1058 **Model Reduction and Analysis of Deep Dynamic Stall on a Plunging Airfoil using Dynamic Mode Decomposition** A. Mohan, Ohio State University, Columbus, OH; M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH; D. Gaitonde, Ohio State University, Columbus, OH	1130 hrs AIAA-2015-1059 **Control of Three-Dimensional Cavity Flow Using Leading-Edge Slot Blowing** B. George, L. Ukeiley, University of Florida, Gainesville, Gainesville, FL; L. Cattafesta, K. Taira, Florida State University, Tallahassee, FL	1200 hrs AIAA-2015-1060 **Concept of Fluid Motion Scale Control and Its Realization** N. Yurchenko, National Academy of Sciences of Ukraine, Kiev, Ukraine	

Wednesday, 7 January 2015						
222-FD-30	**Hypersonic Flows**					**Daytona 1**
Chaired by: E. STEPHEN, Vanderbilt University and R. BOWERSOX, Texas A&M University						
0930 hrs AIAA-2015-1061 **Gas flow in a generic inlet with blunted leading edges** V. Radchenko, V. Borovoy, V. Mosharov, A. Skuratov, I. Struminskaya, TsAGI, Zhukovsky, Russia	1000 hrs AIAA-2015-1062 **Large-Eddy Simulation of a Three-Dimensional Hypersonic Shock Wave Turbulent Boundary Layer Interaction of a Single-Fin** J. Fang, Beihang University, Beijing, China; Y. Yao, University of the West of England, Bristol, United Kingdom; A. Zheltovodov, Russian Academy of Sciences, Novosibirsk, Russia; L. Lu, Beihang University, Beijing, China	1030 hrs AIAA-2015-1063 **Three dimensional vortex modes of hypersonic steady-state flow on the blunted bodies leading age** S. Drozdov, TsAGI, Zhukovsky, Russia	1100 hrs AIAA-2015-1064 **Preliminary LES of Hypersonic Shock/Turbulent Boundary Layer Interactions** C. Helm, M. Martin, University of Maryland, College Park, College Park, MD			

Wednesday, 7 January 2015						
223-FD-31	**Unsteady Flow I**					**Sun Ballroom 6**
Chaired by: R. GORDNIER, Air Force Reseach Laboratory and Z. YANG, Wright State University						
0930 hrs AIAA-2015-1065 **Streamwise oscillation of airfoils into reverse flow** K. Granlund, M. Ol, Air Force Research Laboratory, Wright-Patterson AFB, OH; A. Jones, University of Maryland, College Park, College Park, MD	1000 hrs AIAA-2015-1066 **Streamwise-oriented vortex interactions with a NACA0012 wing** D. Garmann, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2015-1067 **Implicit LES Computation of a Vortical-Gust/Wing Interaction for Transitional Flow** R. Gordnier, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2015-1068 **Investigation of Incompressible Dynamic Stall Physics by Application of a Parametric Proper Orthogonal Decomposition** D. Coleman, F. Thomas, S. Gordeyev, K. Heintz, T. Corke, University of Notre Dame, Notre Dame, IN	1130 hrs AIAA-2015-1069 **Unsteady Aerodynamic Response Modeling: A Parameter-Varying Approach** M. Hemati, S. Dawson, C. Rowley, Princeton University, Princeton, NJ		

Wednesday, 7 January 2015						
224-GNC-21	**Advances in UAS Technologies I**					**Miami 1**
Chaired by: S. CHUNG, University of Illinois at Urbana-Champaign and J. VALASEK, Texas A&M University						
0930 hrs AIAA-2015-1070 **Position Control for Free-Designed Generic Multi Rotor Vehicle Systems with Augmented L1 Adaptive Control** Z. Wang, F. Holzapfel, Technical University of Munich, Munich, Germany	1000 hrs AIAA-2015-1071 **Source Localization For A Turbulent Plume Model Using Bayesian Occupancy Grid Mapping** H. Abdelghaffar, C. Woolsey, Virginia Polytechnic Institute and State University, Blacksburg, VA	1030 hrs AIAA-2015-1072 **High Velocity Path Control of Quadrotors** J. Wang, T. Raffler, F. Holzapfel, Technical University of Munich, Munich, Germany	1100 hrs AIAA-2015-1073 **Synthesis and flight test of an automatic landing controller using Quantitative Feedback Theory** T. Woodbury, J. Valasek, Texas A&M University, College Station, TX	1130 hrs AIAA-2015-1074 **Disturbance Rejection with Distributed Acceleration and Strain Sensing** G. Gremillion, L. Castano, J. Humbert, University of Maryland, College Park, College Park, MD		

Wednesday, 7 January 2015						
225-GNC-22	**Trajectory Planning and Optimization I**					**Sun Ballroom 3**
Chaired by: A. LAMPTON, Systems Technology, Inc. and F. HUGON, Gulfstream Aerospace Corporation						
0930 hrs AIAA-2015-1075 **Dynamic Programming Trajectory Optimization by Piecewise Linear Approximation** A. Harada, H. Matsuda, Y. Miyazawa, Kyushu University, Fukuoka, Japan	1000 hrs AIAA-2015-1076 **Rapid Mission Planning for Aircraft Thermal Management** D. Doman, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2015-1077 **Mobile Target Tracking Using an Unmanned Aerial Vehicle with a Non-Gimbaled Video Sensor** L. Sun, D. Pack, University of Texas, San Antonio, San Antonio, TX	1100 hrs AIAA-2015-1078 **Multiresolution Aircraft Guidance in a Spatiotemporally-varying Threat Field** R. Cowlagi, Worcester Polytechnic Institute, Worcester, MA	1130 hrs AIAA-2015-1079 **Optimal Cruise Altitude for Aircraft Thermal Management** D. Doman, Air Force Research Laboratory, Wright-Patterson AFB, OH	1200 hrs AIAA-2015-1080 **Vulnerability of UAV Sense and Avoid to Exploitations: Non-Cooperative Trajectory Modifications** P. Pierpaoli, R. Zanforlin, A. Rahmani, University of Miami, Coral Gables, FL	

Wednesday, 7 January 2015						
226-GNC-23	**Optimization Based Methods for Estimation and Control of Flight Vehicles**					**Sun Ballroom 4**
Chaired by: Z. ZHAO, University of Calgary and A. RAO, University of Florida						
0930 hrs AIAA-2015-1081 **Estimated Time of Arrival Prediction based on State-Dependent Transition Hybrid Estimation Algorithm** J. Wei, J. Lee, I. Hwang, Purdue University, West Lafayette, IN	1000 hrs AIAA-2015-1082 **Modeling and Simulation of a Fish-like Swimmer in an Ideal Flow with Lateral-line Flow Sensors** Y. Xu, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1030 hrs AIAA-2015-1083 **Fault Detection and Isolation for Air Data Sensors Using Real-Time Moving Horizon Estimation** Y. Wan, T. Keviczky, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2015-1084 **A Split-Bernstein/MCMC Approach to Probabilistically Constrained Optimization** Z. Zhao, M. Kumar, University of Florida, Gainesville, Gainesville, FL	1130 hrs AIAA-2015-1085 **Utilizing the Algorithmic Differentiation Package ADiGator for Solving Optimal Control Problems Using Direct Collocation** M. Weinstein, M. Patterson, A. Rao, University of Florida, Gainesville, Gainesville, FL	1200 hrs AIAA-2015-1086 **Impulsive Spacecraft Formation Maneuvers with Optimal Firing Times** L. Sobiesiak, C. Damaren, University of Toronto, Toronto, Canada	

Wednesday, 7 January 2015						
227-GNC-24	**Spacecraft Guidance, Navigation, and Control II**					**Sun Ballroom 5**
Chaired by: K. BOLLINO, AFOSR/EOARD						
0930 hrs AIAA-2015-1087 **Flywheel Parameters and Configuration Skew Angle Distribution for Variable Speed Control Moment Gyro** F. Liu, Harbin Institute of Technology, Harbin, China	1000 hrs AIAA-2015-1088 **Fault-Tolerant Attitude Control Systems using Multi-Objective Optimization for a Spacecraft Equipped with Control Moment Gyros** A. Noumi, M. Takahashi, Keio University, Yokohama, Japan; T. Kanzawa, M. Haruki, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan	1030 hrs AIAA-2015-1090 **Generalized Dynamics of A Spacecraft with Plural MEDs and Attitude Control with DGVSCMGs via LPV Control Theory** T. Sasaki, T. Shimomura, Osaka Prefecture University, Sakai, Japan	1100 hrs AIAA-2015-1091 **An Integrated Steering Law Considering Biased Loads and Singularity for Control Moment Gyroscopes** Y. Nanamori, M. Takahashi, Keio University, Yokohama, Japan	1130 hrs AIAA-2015-1092 **Singularity Analysis of Control Moment Gyros on Gyroelastic Body** Q. Hu, Z. Wang, J. Zhang, Y. Jia, Beihang University, Beijing, China; M. Liu, Z. Zhou, China Academy of Space Technology, Beijing, China		

Wednesday, 7 January 2015						
228-GT-3	**ETW Test on Separated Wing Flow within the EU FP7 ESWIRP Project (Invited)**					**Sanibel 1**
Chaired by: J. QUEST, ETW GmbH and R. PARYZ						
0930 hrs Oral Presentation **ETW scientific Access in ESWIRP** T. Lutz, University of Stuttgart, Stuttgart, Germany; J. Quest, European Transonic Windtunnel, Cologne, Germany; J. Godard, ONERA, Paris, France	1000 hrs AIAA-2015-1093 **Comparison of the NASA Common Research Model European Transonic Wind Tunnel Test Data to NASA Test Data (Invited)** M. Rivers, NASA Langley Research Center, Hampton, VA; R. Rudnik, German Aerospace Center (DLR), Braunschweig, Germany; J. Quest, European Transonic Windtunnel, Cologne, Germany	1030 hrs AIAA-2015-1094 **Time-resolved Prediction and Measurement of the Wake past the CRM at high Reynolds number stall conditions** T. Lutz, University of Stuttgart, Stuttgart, Germany	1100 hrs AIAA-2015-1095 **High-Speed PIV Applied to Wake of NASA CRM Model in ETW Under High Re-Number Stall Conditions for Sub- and Transonic Speeds** R. Konrath, German Aerospace Center (DLR), Göttingen, Germany	1130 hrs AIAA-2015-1096 **Unsteady Wake Flow Analysis of an Aircraft under low-speed Stall Conditions using DES and PIV** A. Waldmann, University of Stuttgart, Stuttgart, Germany	1200 hrs AIAA-2015-1097 **Dynamic Measurements on the NASA CRM Model tested in ETW** H. Quix, A. Hensch, European Transonic Windtunnel, Cologne, Germany	

Wednesday, 7 January 2015						
229-GTE-5	**Gas Turbine Combustion II**					**Emerald 1**
Chaired by: S. VASU, University of Central Florida						
0930 hrs AIAA-2015-1098 **The Effect of Fluid Mechanics on the Temperature Evolution of Spark Kernels** S. Okhovat, D. Blunck, Oregon State University, Corvallis, OR	1000 hrs AIAA-2015-1099 **High-Speed Imaging of Combustion Oscillations in a Multiple Nozzle Staged Combustor** B. Dolan, R. Villalva Gomez, University of Cincinnati, Cincinnati, OH; G. Zink, S. Pack, United Technologies Corporation, West Des Moines, IA; E. Gutmark, University of Cincinnati, Cincinnati, OH	1030 hrs AIAA-2015-1100 **Ignition of Hydrogen-Air and Methane-Air Mixtures by PS DBD Plasma at Elevated Pressures** A. Starikovskiy, Princeton University, Princeton, NJ				

Wednesday, 7 January 2015						
230-HSABP-7	**Pressure Gain Combustion - Rotating Detonation Engines III**					**Emerald 3**
Chaired by: D. PAXSON, NASA Glenn Research Center and F. LU, University of Texas at Arlington						
0930 hrs AIAA-2015-1101 **Comparison of Numerically Simulated and Experimentally Measured Performance of a Rotating Detonation Engin** D. Paxson, NASA Glenn Research Center, Cleveland, OH; M. Fotia, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2015-1102 **Comparison of Transient Response of Pressure Measurement Techniques with Application to Detonation Waves** C. Stevens, Innovative Scientific Solutions, Inc., Dayton, OH; M. Fotia, National Research Council, Dayton, OH; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2015-1103 **Statistical Treatment of Wave Instability in Rotating Detonation Combustors** V. Anand, A. St. George, R. Driscoll, E. Gutmark, University of Cincinnati, Cincinnati, OH	1100 hrs AIAA-2015-1104 **Experimental Investigation of a Rotating Detonation Engine Injector Temporal Response** A. Naples, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2015-1105 **Experimental Analogue of a Pre-Mixed Rotating Detonation Engine In Plane Flow** I. Andrus, P. King, Air Force Institute of Technology, Wright-Patterson AFB, OH; M. Fotia, F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH		

Wednesday, 7 January 2015						
231-HSABP-8	**High Speed Air-Breathing Combustors II**					**Emerald 8**
Chaired by: F. MALO-MOLINA, Air Force Reseach Laboratory and R. SPRINGER, The Johns Hopkins University Applied Physics Laboratory						
0930 hrs AIAA-2015-1106 **Thrust Augmentation Optimisation through Supersonic After-Burning in Scramjet Engine Nozzles via Surrogate-Assisted Evolutionary Algorithms** M. Candon, H. Ogawa, G. Dorrington, RMIT University, Melbourne, Australia	1000 hrs AIAA-2015-1107 **Analysis of High Temperature Deposition as Flow Control in a Supersonic Combustor** F. Malo-Molina, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2015-1108 **Design Modifications of a Supersonic Wind Tunnel for High Speed Mixing Research of a Novel Injector in a Scramjet Combustor** L. Smith, S. Farokhi, University of Kansas, Lawrence, Lawrence, KS	1100 hrs AIAA-2015-1109 **Numerical investigation of high-pressure combustion in rocket engines using Flamelet/Progress-variable models** A. Cocite, Technical University of Milan, Bari, Italy; L. Cutrone, Italian Aerospace Research Center (CIRA), Capua, Italy; G. Pascazio, P. De Palma, Technical University of Milan, Bari, Italy			

Wednesday, 7 January 2015						
232-IS-7	**Intelligent Interactions between Humans and Machines**					**Osceola Ballroom 3**
Chaired by: M. GOMBOLAY, MIT and J. SHAH, MIT - Massachusetts Institute of Technology						
0930 hrs AIAA-2015-1110 **Toward the Development of a Low-Altitude Air Traffic Control Paradigm for Networks of Small, Autonomous Unmanned Aerial Vehicles** A. Hutchins, M. Cummings, M. Aubert, S. Uzumcu, Duke University, Durham, NC	1000 hrs AIAA-2015-1112 **Flight Envelope Information-Augmented Display for Enhanced Pilot Situational Awareness** K. Ackerman, E. Xargay, D. Talleur, R. Carbonari, A. Kirlik, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL; et al.	1030 hrs AIAA-2015-1113 **Trajectory Prediction and Alerting for Aircraft Mode and Energy State Awareness** K. Shish, Millennium Engineering and Integration Company, Moffett Field, CA; J. Kaneshige, D. Acosta, S. Schuet, NASA Ames Research Center, Moffett Field, CA; T. Lombaerts, German Aerospace Center (DLR), Wessling, Germany; L. Martin, San Jose State University, Moffett Field, CA; et al.	1100 hrs AIAA-2015-1114 **Verifying Correctness of Information in Flight-Deck User Interface using Hybrid System Observability** B. Yang, P. Menon, Optimal Synthesis, Inc., Los Altos, CA; I. Hwang, Purdue University, West Lafayette, IN	1130 hrs AIAA-2015-1111 **Designing a Human-Computer Cooperation Decision Planning System for Aircraft Carrier Deck Scheduling** Z. Zhang, S. Lin, R. Dong, Q. Zhu, Harbin Engineering University, Harbin, China		

Wednesday, 7 January 2015						
233-IS-8	**Model-Based Systems and Software Engineering for Complex Aerospace Systems**					**Osceola Ballroom 2**
Chaired by: M. INGHAM, Jet Propulsion Laboratory						
0930 hrs AIAA-2015-1115 **Ontology and Modeling Patterns for State-Based Behavior Representation** J. Castet, M. Rozek, M. Ingham, N. Rouquette, S. Chung, J. Jenkins, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; et al.	1000 hrs Oral Presentation **The Engineering Modeling System: A Model-Based Engineering Environment for Integrated Systems Engineering** C. Delp, D. Lam, C. Lee, B. Clement, S. Wong, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1030 hrs AIAA-2015-1116 **Connecting Requirements to Architecture and Analysis via Model-Based Systems Engineering** B. Cole, J. Jenkins, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1100 hrs AIAA-2015-1117 **Intelligent Planning Systems for Space Resiliency** P. Zetocha, R. Sivilli, Air Force Research Laboratory, Kirtland AFB, NM; D. Surka, Applied Technology Associates, Albuquerque, NM			

Wednesday, 7 January 2015						
234-MAT-8	**Constitutive Modeling & Metallics**					**Sarasota 1**
Chaired by: V. TOMAR, Purdue University and M. SANGID, Purdue University						
0930 hrs AIAA-2015-1118 **Modeling Rate Dependent Response of Shape Memory Alloys Using a Thermo-Mechanical Continuum Phase Field Approach** B. Agboola, D. Lagoudas, Texas A&M University, College Station, TX	1000 hrs Oral Presentation **Fractal Patterns in Mechanics of Materials** S. Kale, S. Koric, M. Ostoja-Starzewski, A. Saharan, University of Illinois, Urbana-Champaign, Urbana, IL	1030 hrs AIAA-2015-1119 **The effective elastic and fracture properties of particulate reinforced composites using a new non-local particle method** H. Chen, Y. Liu, Arizona State University, Tempe, AZ	1100 hrs Oral Presentation **Numerical Modeling of Ice Behavior at High Strain Rates** S. Balunna, T. Sain, North Carolina A&T State University, Greensboro, NC	1130 hrs AIAA-2015-1120 **Experimental Investigation and Modelling of Laser Machining of Sapphire for High Temperature Pressure Transducers** J. Collins, W. Oates, Florida State University, Tallahassee, FL; M. Sheplak, D. Blood, University of Florida, Gainesville, Gainesville, FL		

Wednesday, 7 January 2015						
235-MAT-9	**Materials Testing & Characterization I**					**Sarasota 2**
Chaired by: R. NAIK, Pratt & Whitney and D. JAWORSKE, NASA Glenn Research Center						
0930 hrs AIAA-2015-1121 **Wave Amplification in Double Negative Elastic Metamaterials** Y. Su, C. Sun, Purdue University, West Lafayette, IN	1000 hrs AIAA-2015-1122 **A Versatile In-Situ Ablation Recession and Thermal Sensor Adaptable for Different Types of Ablatives** J. Koo, M. Natali, KAI, LLC, Austin, TX; B. Lisco, E. Yao, O. Ezekoye, University of Texas, Austin, Austin, TX	1030 hrs AIAA-2015-1123 **Damage Mapping of Composites with Piezospectroscopic Coatings** G. Freihofer, S. Raghavan, University of Central Florida, Orlando, FL	1100 hrs AIAA-2015-1124 **Particle Size Effect on Load Transfer in Single Particle Composite Samples via X-Ray Diffraction** E. Durnberg, K. Knipe, G. Freihofer, I. Hanhan, University of Central Florida, Orlando, FL; R. Feng, Canadian Light Source, Saskatoon, Canada; S. Raghavan, University of Central Florida, Orlando, FL	1130 hrs AIAA-2015-1125 **Improved Aircraft Tire Life through Laboratory Tire Wear Testing and Computational Modeling** A. Zakrajsek, 96 TG/OL-ACL Landing Gear Test Facility, Wright-Patterson AFB, OH; S. Naboulsi, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Bohun, M. Vogel, 96 TG/OL-ACL Landing Gear Test Facility, Wright-Patterson AFB, OH; B. Fiepke, R. Vogel, Air Force Life Cycle Management Center, Wright-Patterson AFB, OH; et al.	1200 hrs AIAA-2015-1126 **Environmental Effects on Long Term Displacement Data of Woven Fabric Webbings Under Constant Load for Inflatable Structures** W. Kenner, NASA Langley Research Center, Hampton, VA	

Wednesday, 7 January 2015						
236-MDO-6	**MDO: AeroStructure Design I**					**Sarasota 3**
Chaired by: J. MARTINS, University of Michigan and V. BALABANOV, Boeing Commercial Airplanes						
0930 hrs AIAA-2015-1127 **Aeroelastic Tailoring of Transport Wings Including Transonic Flutter Constraints** B. Stanford, C. Wieseman, NASA Langley Research Center, Hampton, VA; C. Jutte, Craig Technologies, Inc., Cape Canaveral, FL	1000 hrs AIAA-2015-1128 **Level-Set Topology Optimization with Aeroelastic Constraints** P. Dunning, National Institute of Aerospace, Hampton, VA; B. Stanford, NASA Langley Research Center, Hampton, VA; H. Kim, University of Bath, Bath, United Kingdom	1030 hrs AIAA-2015-1129 **Aerostructural Design Optimization of an Adaptive Morphing Trailing Edge Wing** D. Burdette, G. Kenway, Z. Lyu, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2015-1130 **Time-dependent Aero-elastic Adjoint-based Aerodynamic Shape Optimization of Helicopter Rotors in Forward Flight** A. Mishra, K. Mani, D. Mavriplis, J. Sitaraman, University of Wyoming, Laramie, Laramie, WY	1130 hrs AIAA-2015-1131 **Robust Design of Aeroelastically Tailored Composite Plates Using a New Formulation of Anti-Optimization and Optimization** S. Phelan, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1200 hrs AIAA-2015-1132 **High-Fidelity Aerostructural Optimization with Integrated Geometry Parameterization and Mesh Movement** Z. Zhang, S. Khosravi, D. Zingg, University of Toronto, Toronto, Canada	

Wednesday, 7 January 2015						
237-MST-9	**Modeling of Vehicle Dynamics I**					**Sun Ballroom 1**
Chaired by: D. GINGRAS, Bihrle Applied Research Inc.						
0930 hrs AIAA-2015-1133 **Modeling of aircraft with time-varying inertia properties** J. Han, G. Hong, Beihang University, Beijing, China	1000 hrs AIAA-2015-1134 **Symmetric dual solutions and nongreat-circle effect of out-of-plane equilibrium formation** Y. Shi, C. Han, Beihang University, Beijing, China	1030 hrs AIAA-2015-1135 **Rapid State Space Modeling Tool for Rectangular Wing Aeroservoelastic Studies** P. Suh, NASA Armstrong Flight Research Center, Edwards, CA; H. Conyers, NASA Stennis Space Center, Stennis Space Center, MS; D. Mavris, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2015-1136 **Dynamic Modeling, Simulation and Safe Boundary Evaluation of Catapult launch for Carrier-based airplane** C. Jing, H. Zheng-Chun, China Aerodynamics Research and Development Center, Mianyang, China	1130 hrs AIAA-2015-1137 **An Integrated Modeling, Simulation and Analysis Environment for Coupled Aircraft Subsystems to Facilitate Control Synthesis and Validation** M. Yasar, InnoVital Systems, Inc., Beltsville, MD; H. Kwatny, Drexel University, Philadelphia, PA; G. Bajpai, Techno-Sciences, Inc., Beltsville, MD	1200 hrs AIAA-2015-1138 **Modeling, Analysis and Validation of a Small Airplane Flight Dynamics** A. Kamal, A. Aly, A. Elshabka, Military Technical College, Cairo, Egypt	

Wednesday, 7 January 2015						
238-MST-10	**Motion Systems, Visual Systems, Image Generation**					**Sun Ballroom 2**
Chaired by: F. CARDULLO, State University of NY						
0930 hrs AIAA-2015-1139 **Automatic Optimization of Motion Drive Algorithms using OMCT** K. De Ridder, M. Roza, National Aerospace Laboratory (NLR), Amsterdam, The Netherlands	1000 hrs AIAA-2015-1140 **Evolutionary System Identification of Flight Motion Simulators** T. Vu, R. Thamm, Defence Science & Technology Organisation, Adelaide, Australia	1030 hrs AIAA-2015-1141 **State of the Art Flight Motion Simulator Controller** T. Vu, R. Thamm, Defence Science & Technology Organisation, Adelaide, Australia	1100 hrs AIAA-2015-1142 **Aircraft Upset and Recovery Simulation with the DLR Robot Motion Simulator** Y. Nie, T. Bellmann, A. Labusch, G. Looye, German Aerospace Center (DLR), Wessling, Germany; E. Van Kampen, Q. Chu, Delft University of Technology, Delft, The Netherlands			

Wednesday, 7 January 2015						
239-NDA-5	**Random Fatigue, Fracture and Life Prediction**					**Osceola Ballroom 5**
Chaired by: T. KRISHNAMURTHY, NASA-Langley Research Center and B. THACKER, Southwest Research Institue						
0930 hrs AIAA-2015-1143 **Methods of Determining Equivalent Initial Flaw Size (EIFS) Distributions Containing Suspended Data** L. Domyancic, Southwest Research Institute, San Antonio, TX	1000 hrs AIAA-2015-1144 **A Fleet Risk Prediction Methodology for Mistuned IBRs using Geometric Mistuning Models** E. Henry, Wright State University, Dayton, OH; J. Brown, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Slater, Wright State University, Dayton, OH	1030 hrs AIAA-2015-1145 **Probabilistic fatigue life prediction of composite laminates using Bayesian updating** T. Peng, Y. Liu, Arizona State University, Tempe, AZ	1100 hrs AIAA-2015-1146 **Free vibration analysis of angle-ply composite plates with uncertain properties** S. Adhikari, Swansea University, Swansea, United Kingdom			

Wednesday, 7 January 2015		
240-PANEL-5 **0930 - 1130 hrs**	**Advanced Manufacturing and its Impact on the Design Process of the Future**	**Osceola Ballroom B**

Moderator: Graeme Kennedy, Assistant Professor, School of Aerospace Engineering, Georgia Institute of Technology

Panelists:

Steven Betza
Corporate Director, Advanced Manufacturing & Development
Lockheed Martin Corporation

Andrew Bicos
Director, Manufacturing Technology Domain Enterprise Technology Strategy, Office of the CTO
The Boeing Company

David Rosen
Morris M. Bryan, Jr. Professor and Associate Chair for Administration, The George W. Woodruff School of Mechanical Engineering
Georgia Institute of Technology

Mark Shaw
Additive Programs Leader
GE Aviation

Arthur Weiss
Executive Director, Defense Advanced Programs
Aerojet Rocketdyne

Wednesday, 7 January 2015						
241-PC-13	**Advanced Combustion Concepts III**					**Emerald 5**
Chaired by: L. SMITH, United Technologies Research Center						
0930 hrs AIAA-2015-1147 **Enhanced Homogeneous Catalysis in a Monopropellant Microthruster** M. McDevitt, GreenScale Technologies, South Burlington, VT; D. Hitt, University of Vermont, Burlington, Burlington, VT	1000 hrs AIAA-2015-1148 **Optical Measurements of Density and Species Concentration in a Low Reynolds Number Micro-Nozzle Flow** D. Rosenberg, B. Williams, S. Tuttle, M. Osborn, Naval Research Laboratory, Washington, DC; L. Williams, Praxis, Inc., Alexandria, VA	1030 hrs AIAA-2015-1149 **Numerical Modeling of Fuel Pyrolysis and Oxidation in a Laminar Micro-flow Tube Reactor** M. Rahimi, R. Johnson, H. Chelliah, University of Virginia, Charlottesville, Charlottesville, VA	1100 hrs AIAA-2015-1150 **Experimental Investigation on The Ignition limits of Plasma-assisted Ignition in Propane-Air Mixture** Y. Jinlu, H. Liming, D. Wei, Air Force Engineering University, Xi'an, China	1130 hrs AIAA-2015-1151 **Impact of Phase transitions on the Flow Structure of Gaseous Jets Injected into Water** X. Zhang, Y. Tang, J. Tang, S. Li, N. Wang, Beijing Institute of Technology, Beijing, China	1200 hrs AIAA-2015-1152 **An Evaluation of a PCM-based power plant for Micro Aerial Vehicles (MAV)** A. Lidor, D. Weihs, E. Sher, Technion–Israel Institute of Technology, Haifa, Israel	

Wednesday, 7 January 2015						
242-PC-14	**Combustion Diagnostics**					**Emerald 7**
Chaired by: C. CADOU, University of Maryland						
0930 hrs AIAA-2015-1153 **A Method for Eliminating Beam Steering Error for the Modulated Absorption-Emission Thermometry Technique** E. Coy, Air Force Research Laboratory, Edwards AFB, CA	1000 hrs AIAA-2015-1154 **Study of Swirl Stabilized Burner with Interchangeable Swirler Using Chirped-Probe-Pulse Femtosecond Coherent Anti-Stokes Raman Scattering for Thermometry and CH4 Concentration Measurements** C. Dennis, D. Cruise, H. Mongia, G. King, R. Lucht, Purdue University, West Lafayette, IN	1030 hrs AIAA-2015-1155 **Characterization of Unsteady Combustion Phenomena in a University Scale Rocket Combustor** A. Dasari, M. Gamba, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2015-1156 **Methane Absorbance Measurements at Pressure/ Temperature Conditions Associated With Hypersonic Flight** D. Maqbool, C. Cadou, University of Maryland, College Park, College Park, MD	1130 hrs AIAA-2015-1157 **Quantitative Experimental and Model-based Imaging of Mid-Infrared Radiation from a Turbulent Luminous Flame** R. Kapaku, Purdue University, West Lafayette, IN; B. Rankin, Innovative Scientific Solutions, Inc., Dayton, OH; M. Mueller, Princeton University, Princeton, NJ; H. Lalit, J. Gore, Purdue University, West Lafayette, IN	1200 hrs AIAA-2015-1158 **Shock Tube/Laser Absorption Measurements of Jet Fuel Pyrolysis and Oxidation** Y. Zhu, R. Hanson, D. Davidson, Stanford University, Stanford, CA	

Wednesday, 7 January 2015						
243-PDL-13	**Plasma & Laser Technology**					**Emerald 2**
Chaired by: J. DRAKES, Aerojet and R. WALTER, University of Texas at San Antonio						
0930 hrs AIAA-2015-1159 **Kinetics of NO Formation and Decay in Nanosecond Pulse Discharges in Air-Fuel Mixtures** D. Burnette, I. Shkurenkov, I. Adamovich, W. Lempert, Ohio State University, Columbus, OH	1000 hrs AIAA-2015-1160 **Laser Pointing for Orbital Debris Mitigation Using Higher Order Sliding Mode Control and Observation Techniques** A. Palosz, Gleason Research Associates, Huntsville, AL; Y. Shtessel, R. Fork, University of Alabama, Huntsville, Huntsville, AL					

Wednesday, 7 January 2015						
244-SCS-6	**Analysis of Lightweight Spacecraft Structures**					**Osceola Ballroom 4**
Chaired by: J. FOOTDALE, Load Path, LLC and T. MURPHEY, Air Force Reseach Laboratory						
0930 hrs AIAA-2015-1161 **Stability of Skin Added Lattice Structure** S. Yoshino, T. Aoki, T. Yokozeki, University of Tokyo, Tokyo, Japan; K. Terashima, T. Kamita, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan	1000 hrs AIAA-2015-1162 **Assessment of Existing Models for Honeycomb Homogenized Properties** H. Soliman, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1030 hrs AIAA-2015-1163 **Structural Design of with Multi-Mission Space Exploration Vehicle (MMSEV)/Human Airlock (HAL) Concept Mission** G. Hrinda, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2015-1164 **Analysis of Thermal-Mechanical Interactions of STEM Booms** J. Blandino, Virginia Military Institute, Lexington, VA	1130 hrs AIAA-2015-1165 **Deployment Dynamic Analysis of a Tetrahedral Truss Reflector** X. Wang, Y. Wang, H. Fang, Shanghai YS Information Technology Company, Ltd., Shanghai, China; P. Huang, Xi'an Institute of Space Radio Technology, Xi'an, China; Z. Chen, MSC Software Corporation, Beijing, China		

Wednesday, 7 January 2015						
245-SD-9	**Cable/Beam Modeling II**					**Tampa 3**
Chaired by: C. HEBERT, Sierra Nevada Corporation						
0930 hrs AIAA-2015-1166 **A Novel Scheme to Accurately Compute Higher Vibration Modes using the Ritz Method and a Two-point BVP Solver** P. Sudalagunta, C. Sultan, R. Kapania, L. Watson, P. Raj, Virginia Polytechnic Institute and State University, Blacksburg, VA	1000 hrs AIAA-2015-1167 **Free Vibration Analysis of an Integrally Stiffened Plate with Plate-Strip Stiffeners using a Set of Static Timoshenko Beam Functions** N. Ahmad, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1030 hrs AIAA-2015-1168 **Improved Solution of Nonlinear Reduced-Order Models for Static and Dynamic Response Prediction** P. O'Hara, J. Hollkamp, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2015-1169 **Modeling and Dynamic Analysis of a Cable Towed Decoy** K. Liu, D. Li, J. Xiang, Y. Yan, Beihang University, Beijing, China	1130 hrs AIAA-2015-1170 **On the Nonlinear Dynamics of Buckled Beams for Energy Harvesting** S. Emam, United Arab Emirates University, Al Ain, United Arab Emirates		

Wednesday, 7 January 2015						
246-SD-13/GEPC-5	**Special Session: Subsonic Ultra Green Aircraft Research (SUGAR) Truss Braced Wing Aeroelasticity**					**Sun Ballroom C**
Chaired by: R. SCOTT, NASA-Langley Research Center and C. FUNK						
0930 hrs AIAA-2015-1171 **SUGAR Truss Braced Wing Full Scale Aeroelastic Analysis and Dynamically Scaled Wind Tunnel Model Development** T. Allen, The Boeing Company, Huntington Beach, CA; B. Sexton, The Boeing Company, St. Louis, MO; M. Scott, NextGen Aeronautics, Torrance, CA	1000 hrs AIAA-2015-1172 **Aeroservoelastic Wind-Tunnel Test of the SUGAR Truss Braced Wing Wind-Tunnel Model** R. Scott, NASA Langley Research Center, Hampton, VA; T. Allen, The Boeing Company, Huntington Beach, CA; M. Castelluccio, The Boeing Company, Seattle, WA; B. Sexton, The Boeing Company, St. Louis, MO; S. Claggett, The Boeing Company, Seattle, WA; J. Dykman, The Boeing Company, Huntington Beach, CA; et al.	1030 hrs AIAA-2015-1173 **Nonlinear Aeroelastic Analysis of SUGAR Truss-braced Wing (TBW) Wind-tunnel Model (WTM) Under In-plane Loads** W. Zhao, R. Kapania, J. Schetz, J. Coggin, Virginia Polytechnic Institute and State University, Blacksburg, VA	1100 hrs AIAA-2015-1174 **Aeroelastic Analysis of SUGAR Truss-Braced Wing Wind-Tunnel Model Using FUN3D and a Nonlinear Structural Model** R. Bartels, R. Scott, NASA Langley Research Center, Hampton, VA; T. Allen, The Boeing Company, Huntington Beach, CA; B. Sexton, The Boeing Company, St. Louis, MO	1130 hrs AIAA-2015-1175 **Aeroelastic Analysis and Optimization of Flexible Wing Aircraft with a Novel Control Effector** W. Mallik, R. Kapania, J. Schetz, Virginia Polytechnic Institute and State University, Blacksburg, VA	1200 hrs AIAA-2015-1176 **Low-Weight Low-Drag Truss-Braced Wing Design Using Variable Camber Continuous Trailing Edge Flaps** P. Chen, Z. Zhou, S. Ghoman, ZONA Technology, Inc., Scottsdale, AZ; N. Falkiewicz, The Boeing Company, Huntington Beach, CA	

Wednesday, 7 January 2015						
247-SRE-1	**Lunar Resource Utilization**					**Daytona 2**
Chaired by: D. LINNE, NASA Glenn Research Center						
0930 hrs Oral Presentation **Technologies and Techniques for Lunar Prospecting: Results from 2014 Field Testing Campaign** M. Cross, University of Western Ontario, London, Canada	1000 hrs AIAA-2015-1177 **Impact of Drilling Operations on Lunar Volatiles Capture: Thermal Vacuum Tests** J. Kleinhenz, NASA Glenn Research Center, Cleveland, OH; K. Zacny, Honeybee Robotics, Pasadena, CA; J. Smith, NASA Kennedy Space Center, Cape Canaveral, FL	1030 hrs AIAA-2015-1178 **Internal Combustion Engine Solar Independent Propulsion for the Exploration of Permanently Shaded Lunar Craters** W. Platts, Groundhog GeoScience, LLC, Pinedale, WY; C. Dyess, American Performance Technologies, Kansas City, MO	1100 hrs AIAA-2015-1179 **Thermite Reactions in the Mixtures of Magnesium with Lunar and Martian Regolith Simulants** A. Delgado, E. Shafirovich, University of Texas, El Paso, El Paso, TX	1130 hrs AIAA-2015-1180 **Development of a Molten Regolith Electrolysis Reactor Model for Lunar In-Situ Resource Utilization"** S. Schreiner, Massachusetts Institute of Technology, Cambridge, MA; L. Sibille, J. Dominguez, NASA Kennedy Space Center, Cape Canaveral, FL; A. Sirk, University of Victoria, Victoria, Canada; J. Hoffman, Massachusetts Institute of Technology, Cambridge, MA; G. Sanders, NASA Johnson Space Center, Houston, TX	1200 hrs AIAA-2015-1181 **A Systematic Assessment of Asteroid Redirection Methods for Resource Exploration** M. Bazzocchi, M. Emami, University of Toronto, Toronto, Canada	

Wednesday, 7 January 2015						
248-STR-12	**Special Session: Challenges in the Design of Joined Wings II**					**Tampa 1**
Chaired by: L. DEMASI, San Diego State University College of Engineering and A. PALAZOTTO, AFIT						
0930 hrs AIAA-2015-1182 **for Challenges in the Design of Joined Wings Special Session: Comparison of Aeroelastic Stability of Conventional and Joined-Wing Highly Flexible Aircraft** Z. Sotoudeh, Rensselaer Polytechnic Institute, Troy, NY	1000 hrs AIAA-2015-1183 **For Challenges in the Design of Joined Wings Special Session: Joined-wing Aircraft in the Twenty-First Century and Beyond** Z. Sotoudeh, Rensselaer Polytechnic Institute, Troy, NY	1030 hrs AIAA-2015-1184 **PrandtlPlane Joined Wing: Body Freedom Flutter, Limit Cycle Oscillation and Freeplay Studies** R. Cavallaro, University of California, San Diego, San Diego, CA; L. Demasi, San Diego State University, San Diego, CA; R. Bombardieri, A. Iannelli, University of Pisa, Pisa, Italy	1100 hrs AIAA-2015-1185 **Amphibious PrandtlPlane: Preliminary Design Aspects Including Propellers Integration and Ground Effect** R. Cavallaro, San Diego State University, San Diego, CA; M. Nardini, University of Pisa, Pisa, Italy; L. Demasi, San Diego State University, San Diego, CA; E. Santarpia, University of California, San Diego, San Diego, CA	1130 hrs AIAA-2015-1186 **Design of an airfreight system based on an innovative PrandtlPlane aircraft** A. Frediani, F. Oliviero, University of Pisa, Pisa, Italy; E. Rizzo, SkyBox Engineering, Pisa, Italy	1200 hrs AIAA-2015-1187 **Buckling Alleviation for Joined-Wing Aircraft** L. Lambert, J. Cooper, R. Nangia, University of Bristol, Bristol, United Kingdom	

Wednesday, 7 January 2015						
249-STR-13	**Special Sessions in Honor of Prof. Harry H. Hilton III**					**Tallahassee 3**
Chaired by: M. HYER, University of Calgary and C. MERRETT, Carleton University						
0930 hrs AIAA-2015-1188 **A Multi-Objective Nonlinear Piezoaeroelastic Wing Solution for Energy Harvesting and Load Alleviation: Modeling and Simulation** C. Bruni, G. Frulla, E. Cestino, Technical University of Turin, Turin, Italy; P. Marzocca, Clarkson University, Potsdam, NY	1000 hrs AIAA-2015-1189 **Higher Order ZigZag Laminated Composite Shell Theory for Viscoelastic Behavior** N. Nguyen Sy, J. Lee, M. Cho, Seoul National University, Seoul, Korea (the Republic of)	1030 hrs AIAA-2015-1190 **Statistical Characterization of Viscoelastic Modulus using a Spectrum Function Approach** R. Sullivan, J. Simsiriwong, Mississippi State University, Mississippi State, MS	1100 hrs AIAA-2015-1191 **Multiscale Modeling of Ceramic Matrix Composites** B. Bednarcyk, NASA Glenn Research Center, Cleveland, OH; S. Mital, University of Toledo, Toledo, OH; E. Pineda, S. Arnold, NASA Glenn Research Center, Cleveland, OH	1130 hrs AIAA-2015-1192 **For Special Session in Honor of Harry H. Hilton Manipulating Natural Frequencies with Tunable Spring Masses** N. Hall, J. Hackel, J. Girard, Ball Aerospace & Technologies Corporation, Boulder, CO		

Wednesday, 7 January 2015						
250-TP-6	**Heat Transfer II**					**Captiva 1**
Chaired by: D. PYTEL, Lockheed Martin Space Systems and A. HASHEMI, Lockheed Martin Space Systems						
0930 hrs AIAA-2015-1193 **Effect of Airflow on Heat Transfer of Air-to-Refrigerant Airfoil Heat Exchanger** Y. Ito, T. Goto, T. Nagasaki, Tokyo Institute of Technology, Yokohama, Japan	1000 hrs AIAA-2015-1194 **A numerical study of thermal effects on vortex-induced vibration** H. Wan, S. Patnaik, Air Force Research Laboratory, Wright-Patterson AFB, OH; B. Ervin, University of Cincinnati, Cincinnati, OH	1030 hrs AIAA-2015-1195 **Time-Accurate CFD Conjugate Analysis of Transient Measurements of the Heat-Transfer Coefficient** S. Sathyanarayanan, S. Ramachandran, T. Shih, Purdue University, West Lafayette, IN	1100 hrs AIAA-2015-1196 **Development of a Full Scale Experimental and Simulation Tool for Environmental Control System Optimisation and Fault Detection** T. Childs, A. Jones, R. Chen, Loughborough University, Loughborough, United Kingdom			

Wednesday, 7 January 2015						
251-UMS-4	**UAS Airspace Integration: Policies and Guidelines**					**Osceola Ballroom 1**
Chaired by: D. MARSHALL, New Mexico State Universtiy and S. COOK, The MITRE Corporation						
0930 hrs AIAA-2015-1197 **An Alternative UAS Classification and Analysis Approach for Integration into the National Airspace System** R. Stansbury, K. Rigby, J. Clifford, Embry-Riddle Aeronautical University, Daytona Beach, FL; D. Rudolph, University of Florida, Gainesville, Gainesville, FL	1000 hrs AIAA-2015-1198 **Verification and Validation Considerations for UAS Test Sites to Facilitate Civil Certification of Remotely Piloted Aircraft** L. Mutuel, CGH Technologies, Inc., Washington, DC	1030 hrs AIAA-2015-1199 **Learning and Predicting Pilot Behavior in Uncontrolled Airspace** C. Lowe, J. How, Massachusetts Institute of Technology, Cambridge, MA	1100 hrs AIAA-2015-1200 **Improvements in UAV & their applications** A. Rashid, Ghulam Ishaq Khan Institute of Engineering Sciences and Technology, Topi, Pakistan	1130 hrs AIAA-2015-1201 **Dynamic Mobile Areas: opportunities for RPAS emergency management** A. Joulia, T. Dubot, ONERA, Toulouse, France	1200 hrs AIAA-2015-1202 **Efficient Deployment of Multiple RPAS - Approaches towards Optimal Mission Planning Techniques** J. Zillies, D. Geister, German Aerospace Center (DLR), Braunschweig, Germany	

Wednesday, 7 January 2015						
252-WE-9	**Offshore Wind Energy Systems**					**Emerald 4**
Chaired by: J. JONKMAN, National Renewable Energy Laboratory and F. WENDT						
0930 hrs AIAA-2015-1203 **Wake Influence on Dynamic Characteristics of Offshore Floating Wind Turbines** M. Jeon, S. Lee, S. Lee, Seoul National University, Seoul, South Korea	1000 hrs AIAA-2015-1204 **Verification of New Floating Capabilities in FAST v8** F. Wendt, A. Robertson, J. Jonkman, G. Hayman, National Renewable Energy Laboratory, Golden, CO	1030 hrs AIAA-2015-1205 **Verification of the new FAST v8 Capabilities for the Modeling of Fixed-Bottom Offshore Wind Turbines** B. Barahona, J. Jonkman, R. Damiani, A. Robertson, G. Hayman, National Renewable Energy Laboratory, Golden, CO	1100 hrs AIAA-2015-1206 **Optimization and Design of a 105m Blade for a 10MW Hurricane-Resilient Wind Turbine** A. Raina, K. Lee, K. Wetzel, Wetzel Engineering, Inc., Pflugerville, TX	1130 hrs AIAA-2015-1207 **An Experimental Investigation on the Performance and the Wake Characteristics of a Wind Turbine Subjected to Surge Motion** H. Hu, M. Morteza Khosravi, P. Sarkar, Iowa State University, Ames, IA	1200 hrs AIAA-2015-1208 **Surface Ice Effects on the Extreme and Fatigue Loading of Bottom Fixed Offshore Wind Turbines** T. McCoy, A. Byrne, DNV GL, Seattle, WA	

Wednesday, 7 January 2015						
253-WE-10	**Wind Turbine Loads, Control, and Dynamics**					**Emerald 6**
Chaired by: S. FROST, NASA-Ames Research Center and P. SEILER, University of Minnesota						
0930 hrs AIAA-2015-1209 **Field Test Results from Lidar Measured Yaw Control for Improved Power Capture with the NREL Controls Advanced Research Turbine** A. Scholbrock, P. Fleming, A. Wright, National Renewable Energy Laboratory, Golden, CO; C. Slinger, J. Medley, M. Harris, Zephir Lidar, Hollybush, United Kingdom	1000 hrs AIAA-2015-1210 **LPV Active Power Control and Robust Analysis for Wind Turbines** S. Wang, P. Seiler, University of Minnesota, Minneapolis, Minneapolis, MN	1030 hrs AIAA-2015-1211 **Study on Controller Tuning of Wind Turbines with Backward Swept Blades** C. Pavese, C. Tibaldi, T. Kim, Technical University of Denmark, Lyngby, Denmark	1100 hrs AIAA-2015-1212 **Adaptive Individual Blade Pitch Control for Large Wind Turbines with LiDAR Measurement of Wind Speed** K. Thapa Magar, M. Balas, Embry-Riddle Aeronautical University, Daytona Beach, FL	1130 hrs AIAA-2015-1213 **Wind Turbine Envelope Riding** V. Petrovic, C. Bottasso, Technical University of Munich, Munich, Germany		

Wednesday, 7 January 2015		
254-LUNCH-3 1230 - 1400 hrs	Luncheon in the Exposition Hall	Exhibit Hall B/C

Wednesday, 7 January 2015						
255-AA-8	Airframe Noise and Shielding					Miami 2
Chaired by: R. THOMAS, NASA Langley Research Center						
1400 hrs AIAA-2015-1214 **Open Rotor Noise Shielding by Blended-Wing-Body Aircraft** Y. Guo, M. Czech, The Boeing Company, Huntington Beach, CA; R. Thomas, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2015-1215 **System Noise Assessment of Blended-Wing-Body Aircraft with Open Rotor Propulsion** Y. Guo, The Boeing Company, Huntington Beach, CA; R. Thomas, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2015-1216 **Noise Generation in Flow past a Full-Span Trailing-Edge Flap** W. Li, H. Liu, Shanghai Jiao Tong University, Shanghai, China	1530 hrs AIAA-2015-1217 **Computational Aeroacoustics Analysis for Noise Minimization on the G550 Nose Landing Gear** A. de Paula, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; R. Queiroz, Embraer, São José dos Campos, Brazil; J. Meneghini, University of São Paulo, São Paulo, Brazil			

Wednesday, 7 January 2015						
256-AMT-4	Laser Based Aerodynamic Diagnostic Tools					Tallahassee 1
Chaired by: S. KEARNEY, Sandia National Laboratories and B. THUROW, Auburn University						
1400 hrs AIAA-2015-1218 **Pulse-Burst PIV in a High-Speed Wind Tunnel** S. Beresh, S. Kearney, J. Wagner, Sandia National Laboratories, Albuquerque, NM; S. Roy, N. Jiang, M. Slipchenko, Spectral Energies, LLC, Dayton, OH; et al.	1430 hrs AIAA-2015-1219 **Limitations on High-Spatial Resolution Measurements of Turbulence Using Femtosecond Laser Tagging** M. Edwards, C. Limbach, R. Miles, Princeton University, Princeton, NJ; A. Tropina, Kharkov National Automobile and Highway University, Kharkov, Ukraine	1500 hrs AIAA-2015-1220 **Simultaneous High-Resolution kHz-Rate 2-D Conserved Scalar and 3-Component Velocity Field Measurements in Gas-Phase Turbulent Jets** M. Papageorge, J. Sutton, Ohio State University, Columbus, OH	1530 hrs AIAA-2015-1221 **Comparing Tomographic Reconstruction Algorithms for Plenoptic-PIV** T. Fahringer, B. Thurow, Auburn University, Auburn, AL	1600 hrs AIAA-2015-1222 **Multi-parameter estimation for spatially-resolved measurement of two-component velocity using absorption tomography** M. Gamba, University of Michigan, Ann Arbor, Ann Arbor, MI	1630 hrs AIAA-2015-1223 **Particle Image Velocimetry Applications Using Fluorescent Dye-doped Particles** B. Petrosky, K. Lowe, Virginia Polytechnic Institute and State University, Blacksburg, VA; P. Bardet, George Washington University, Washington, DC; P. Tiemsin, C. Wohl, P. Danehy, NASA Langley Research Center, Hampton, VA; et al.	1700 hrs AIAA-2015-1224 **An Experimental Investigation on Supercooled Large Droplet Icing by using Molecular Tagging Thermometry Technique** H. Hu, H. Li, F. Chen, Iowa State University, Ames, IA

Wednesday, 7 January 2015						
257-APA-25	Aerodynamic Testing: Wind Tunnel & Flight Testing II					Destin 1
Chaired by: B. MCGRATH, JHU/Applied Physics Laboratory and J. FARNSWORTH, University of Colorado Boulder						
1400 hrs AIAA-2015-1225 **Implementation of an innovative ice crystal generation system to the Icing Wind Tunnel Braunschweig** A. Baumert, S. Bansmer, Technical University of Braunschweig, Braunschweig, Germany; M. Bacher, Neuschnee GmbH, Perchtoldsdorf, Austria	1430 hrs AIAA-2015-1226 **Stall Behavior of the HINVA KH-A320-HA Highlift Model in ETW** N. Bier, R. Rudnik, German Aerospace Center (DLR), Braunschweig, Germany; J. Quest, A. Rechlin, European Transonic Windtunnel, Cologne, Germany	1500 hrs AIAA-2015-1227 **Experimental Study of Splitter Plates for Use with Semispan Wing Models** J. Diebold, B. Woodard, University of Illinois, Urbana-Champaign, Urbana, IL; M. Monastero, Rensselaer Polytechnic Institute, Troy, NY; M. Bragg, University of Washington, Seattle, Seattle, WA	1530 hrs AIAA-2015-1228 **Experimental Study on Aerodynamic Characteristics of Blended-Wing-Body by a Wake Integration Method** M. Kashitani, Y. Suganuma, H. Date, National Defense Academy, Yokosuka, Japan; S. Nakao, Nagasaki Institute of Applied Science, Nagasaki, Japan; Y. Takita, National Defense Academy, Yokosuka, Japan; Y. Yamaguchi, Nagasaki Institute of Applied Science, Nagasaki, Japan	1600 hrs AIAA-2015-1229 **Reynolds Number Effects on Flow Topology Above Blunt-edged Delta Wing VFE-2 Configurations** M. Said, S. Mat, S. Mansor, A. Abdul-Latif, T. Mat Lazim, University of Technology, Malaysia, Johor Bahru, Malaysia	1630 hrs AIAA-2015-1230 **Compressible Boundary Layer Turbulence Transition Measurements with In-depth thermocouples** X. Zhao, China Academy of Aerospace Aerodynamics, Beijing, China	

Wednesday, 7 January 2015						
258-APA-26	**Applied CFD & Numerical Correlations with Experimental Data I**					**Destin 2**
Chaired by: M. JURKOVICH, US Air Force and J. DEBONIS, NASA Glenn Research Center						
1400 hrs AIAA-2015-1231 **A Numerical Study on Transitional Flows by Means of a Correlation-Based Transition Model** G. Halila, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; E. Bigarella, Embraer, São José dos Campos, Brazil; J. Azevedo, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil	1430 hrs AIAA-2015-1232 **Further Developments to a Local Correlation Based Roughness Model for Boundary Layer Transition Prediction** C. Langel, R. Chow, C. Van Dam, University of California, Davis, Davis, CA	1500 hrs AIAA-2015-1233 **Effects of Step-Excrescence Location on Swept-Wing Transition** B. Crawford, G. Duncan, M. Tufts, W. Saric, H. Reed, Texas A&M University, College Station, TX	1530 hrs AIAA-2015-1234 **Helicopter Blade NACA 8H12 Performance Prediction with Laminar-Turbulent Transition Effects: Integral Boundary-Layer and CFD Results compared with Experimental Data** G. Silva, ATS4i Aero-Thermal Solutions for Industry, São Paulo, Brazil; D. de Andrade, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; C. Rafael, Federal University of ABC, Santo André, Brazil; D. Pio, ATS4i Aero-Thermal Solutions for Industry, São Paulo, Brazil	1600 hrs AIAA-2015-1235 **Fluid-Structure Interaction of a Variable Camber Compliant Wing** S. Miller, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Rumpfkeil, University of Dayton, Dayton, OH; J. Joo, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Wednesday, 7 January 2015						
259-APA-27	**Flow Control Applications & Demonstrations (Active & Passive) II**					**Naples 1**
Chaired by: C. TILMANN, Air Force Reseach Laboratory and L. UKEILEY, University of Florida						
1400 hrs AIAA-2015-1236 **Experiments with Vortex Generators applied to a Notchback Car Model** D. Wieser, C. Nayeri, C. Paschereit, Technical University of Berlin, Berlin, Germany	1430 hrs AIAA-2015-1237 **Experimental Investigation of Vortex Generator Effect on Two- and Three-Dimensional NASA Common Research Models** S. Koike, K. Nakakita, T. Nakajima, S. Koga, M. Sato, H. Kanda, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; et al.	1500 hrs AIAA-2015-1238 **Effect of Vortex Generators on Transonic Swept Wings** Y. Ito, K. Yamamoto, K. Kusunose, S. Koike, K. Nakakita, M. Murayama, Japan Aerospace Exploration Agency (JAXA), Mitaka, Japan; et al.	1530 hrs AIAA-2015-1239 **Experimental Study of Fillets to Reduce Corner Effects in an Oblique Shock-Wave/Boundary-Layer Interaction** S. Hirt, NASA Glenn Research Center, Cleveland, OH	1600 hrs AIAA-2015-1240 **LES Study on Mechanism of Reduction of Shock Induced Flow Separation by MVG** Y. Yang, Y. Yan, C. Liu, University of Texas, Arlington, Arlington, TX	1630 hrs AIAA-2015-1241 **The Use of Actuated Flexible Plates for Adaptive Shock Control Bumps** E. Jinks, P. Bruce, M. Santer, Imperial College London, London, United Kingdom	

Wednesday, 7 January 2015						
260-APA-28	**Special Session: Simulation of Rotor in Hover - Rotorcraft DG I**					**Naples 2**
Chaired by: N. HARIHARAN, CREATE-AV and T. EGOLF, Sikorsky Aircraft Corporation						
1400 hrs AIAA-2015-1242 **Standardized Evaluation of S-76 Rotor-in-hover: Summary of the first (2014) special session** N. Hariharan, CREATE AV Team, Lorton, VA; T. Egolf, Sikorsky Aircraft Corporation, Stratford, CT; L. Sankar, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2015-1243 **Hover Performance Assessment of Several Tip Shapes using OVERFLOW** R. Narducci, The Boeing Company, St. Louis, MO	1500 hrs AIAA-2015-1244 **Hover Predictions for the S-76 Rotor with Tip Shape Variation using CREATE-AV Helios** R. Jain, U.S. Army, Moffett Field, CA	1530 hrs AIAA-2015-1245 **The Effects of Turbulence Modelings on CFD Simulations of S76 Hovering Rotor** P. Anusonti-Inthra, University of Tennessee, Tullahoma, Tullahoma, TN	1600 hrs AIAA-2015-1246 **Assessment of S-76 Rotor Aerodynamic Performance in Hover on Unstructured Mixed Meshes** J. Hwang, J. Choi, O. Kwon, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1630 hrs AIAA-2015-1247 **Analysis of a Hovering Rotor using UT-GENCAS: A Modified Hybrid Navier-Stokes/Free-Wake Method** B. Min, B. Wake, United Technologies Corporation, East Hartford, CT	1700 hrs AIAA-2015-1248 **Predicting the Influence of Blade Tip Shape on Hovering Rotor Performance with Comprehensive Analyses** G. Whitehouse, D. Wachspress, T. Quackenbush, Continuum Dynamics, Inc., Ewing, NJ

Wednesday, 7 January 2015						
261-APA-29	**Special Session: Low Boom Activities II**					**Miami 3**
Chaired by: K. WAITHE, Gulfstream Aerospace Corporation and L. BANGERT, NASA Langley Research Center						
1400 hrs AIAA-2015-1249 **Analysis of a Low Boom Supersonic Flying Wing Preliminary Design** J. Gan, G. Zha, Rush University, Miami, FL	1430 hrs AIAA-2015-1250 **Unstructured Grids for Sonic Boom Analysis and Design** R. Campbell, NASA Langley Research Center, Hampton, VA; S. Nayani, Analytical Services & Materials, Inc., Hampton, VA; M. Lynde, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2015-1251 **Sonic Boom Pressure Signature Uncertainty Calculation and Propagation to Ground Noise (Invited)** E. Walker, J. Pinier, NASA Langley Research Center, Hampton, VA; T. West, Missouri University of Science and Technology, Rolla, MO; K. Bretl, Massachusetts Institute of Technology, Cambridge, MA	1530 hrs AIAA-2015-1252 **Near field Sonic Boom calculation of Benchmark Cases** J. Gan, G. Zha, University of Miami, Coral Gables, Coral Gables, FL	1600 hrs AIAA-2015-1253 **Near Field Pressure Measurement around Free Flight 69 Degree Swept Back Delta Wing Model** A. Toyoda, A. Sasoh, T. Imaizumi, T. Ooyama, Nagoya University, Nagoya, Japan; M. Kanamori, T. Aoyama, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan		

Wednesday, 7 January 2015						
262-AS-5	**Adaptive Actuation**					**Osceola Ballroom 6**
Chaired by: A. CHATTOPADHYAY, Arizona State University and J. KAUFFMAN, University of Central Florida						
1400 hrs AIAA-2015-1254 **Stiffness Control with Pneumatic Artificial Muscle Inclusions in a Cellular Honeycomb Unit** M. Pontecorvo, F. Gandhi, F. Foerster, Rensselaer Polytechnic Institute, Troy, NY	1430 hrs AIAA-2015-1255 **Semi-Active Control of Torsional Vibrations Using a New Hybrid Torsional Damper** E. Abouobaia, R. Bhat, R. Sedaghati, Concordia University, Montréal, Canada	1500 hrs AIAA-2015-1256 **New methodology for the controller of an electrical actuator for morphing a wing** M. Tchatchueng Kammegne, S. Khan, R. Botez, École de Technologie Supérieure, Montréal, Canada	1530 hrs AIAA-2015-1257 **Galloping Piezoelectric Energy Harvester with Bio-inspired Square Bluff Body** F. Ewere, G. Wang, K. Frendi, University of Alabama, Huntsville, Huntsville, AL	1600 hrs AIAA-2015-1258 **Optimal Resonance Frequency Detuning Switch Trigger Determination Using Measurable Response Characteristics** G. Lopp, J. Kauffman, University of Central Florida, Orlando, FL	1630 hrs AIAA-2015-1259 **Design and Testing of a FMC Actuated Morphing Aileron** E. Doepke, M. Philen, Virginia Polytechnic Institute and State University, Blacksburg, VA	

Wednesday, 7 January 2015						
263-FD-32	**CFD Methods V**					**Sanibel 2**
Chaired by: M. FOSSATI, McGill University and G. ZHA, University of Miami						
1400 hrs AIAA-2015-1260 **Dynamic Mesh Deformation with Radial Basis Functions for the Non-Linear Frequency Domain Method** P. Tardif, S. Nadarajah, McGill University, Montréal, Canada	1430 hrs AIAA-2015-1261 **Development of a Jacobian-free Finite Element Solver for Aerothermodynamic Design** M. Fossati, W. Habashi, S. Gao, P. Yin, McGill University, Montréal, Canada; D. Isola, G. Baruzzi, Newmerical Technologies International, Montréal, Canada; et al.	1500 hrs AIAA-2015-1262 **Adjoint and Truncation Error Based Adaptation for Finite Volume Schemes with Error Estimates** J. Derlaga, T. Phillips, C. Roy, J. Borggaard, Virginia Polytechnic Institute and State University, Blacksburg, VA	1530 hrs AIAA-2015-1263 **Implicit Time Marching Methods for Large-Scale High-Accuracy Simulations of Compressible Flows** Y. Du, J. Ekaterinaris, Embry-Riddle Aeronautical University, Daytona Beach, FL	1600 hrs AIAA-2015-1264 **Accuracy of Discretization Error Estimation by the Error Transport Equation on Unstructured Meshes** G. Yan, C. Ollivier Gooch, University of British Columbia, Vancouver, Canada	1630 hrs AIAA-2015-1265 **A Primitive Variable Central Flux Scheme for All Mach Number Flows** K. Shi, S. Morris, A. Jemcov, University of Notre Dame, Notre Dame, IN	

Wednesday, 7 January 2015						
264-FD-33	**Current Challenges for Computational Fluid Dynamics, Industry and Government Interests II (Invited)**					**Sun Ballroom A**
Chaired by: H. HUYNH, NASA Glenn Research Center and N. KROLL, DLR - German Aerospace Center						
1400 hrs Oral Presentation **Status and challenges of CFD for aircraft design at Dassault Aviation (Invited)** M. Mallet, Dassault Group, Saint Cloud, France	1430 hrs Oral Presentation **Current challenges for CFD at Onera (Invited)** V. Couaillier, ONERA, Châtillon, France	1500 hrs Oral Presentation **Current Status and Challenges in CFD at the DLR Institute of Aerodynamics and Flow Technology** N. Kroll, German Aerospace Center (DLR), Braunschweig, Germany	1530 hrs Oral Presentation **The Challenges of Present and Future Industrial CFD (Invited)** C. Hirsch, NUMECA International, Brussels, Belgium			

Wednesday, 7 January 2015						
265-FD-34	**Flow Control (Fundamentals and Technology) III**					**Sanibel 3**
Chaired by: M. VISBAL, USAF AFRL/RQVA and I. GURSUL, University of Bath						
1400 hrs AIAA-2015-1266 **Flow Control on an Airfoil in Fully-Reversed Condition with Actuation on Both Leading and Trailing Edges** C. Clifford, M. Samimy, Ohio State University, Columbus, OH	1430 hrs AIAA-2015-1267 **Control of Dynamic Stall on a Pitching Airfoil Using High-Frequency Actuation** M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2015-1268 **Parametric Optimization of Control for a Post-Stall Airfoil Using Pulsed Jets** K. Hipp, S. Benton, M. Walker, J. Bons, Ohio State University, Columbus, OH	1530 hrs AIAA-2015-1269 **Post-Stall Lift Enhancement of a Flat Plate Airfoil by Suction** Z. Wang, I. Gursul, J. Wu, University of Bath, Bath, United Kingdom	1600 hrs AIAA-2015-1270 **Experimental Investigation of the Aerodynamic Lift Response of an Active Finite Gurney Flap** A. Bach, R. Berg, Technical University of Berlin, Berlin, Germany; G. Pechlivanoglou, Smart Blade GmbH, Berlin, Germany; C. Nayeri, C. Paschereit, Technical University of Berlin, Berlin, Germany	1630 hrs AIAA-2015-1271 **Wake Vortex Field of an Airfoil Equipped with an Active Finite Gurney Flap** A. Bach, Technical University of Berlin, Berlin, Germany; G. Pechlivanoglou, Smart Blade GmbH, Berlin, Germany; C. Nayeri, C. Paschereit, Technical University of Berlin, Berlin, Germany	

Wednesday, 7 January 2015						
266-FD-35	**Fundamental Vortex Flows and Channel Flows**					**Tallahassee 2**
Chaired by: J. AHMAD, NASA and Y. SEE, University of Michigan						
1400 hrs AIAA-2015-1272 **Vortex force and lift induced drag in compressible flows** B. Mele, M. Ostieri, R. Tognaccini, University of Naples "Federico II", Naples, Italy	1430 hrs AIAA-2015-1273 **Vortex structure of low-aspect-ratio wings in sideslip** A. DeVoria, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1500 hrs AIAA-2015-1274 **Prediction of Turbulent Secondary Flows in Ducts Using Equilibrium Wall-Modeled LES** Z. Vane, S. Lele, Stanford University, Stanford, CA	1530 hrs AIAA-2015-1275 **An Experimental Study of Homogeneous Anisotropic Turbulence in Channel Flow** T. Slais, B. Ochs, D. Scarborough, S. Menon, Georgia Institute of Technology, Atlanta, GA; N. Grady, R. Pitz, Vanderbilt University, Nashville, TN	1600 hrs AIAA-2015-1276 **Adverse Pressure Gradient Effects in the Turbulent Kinetic Energy Budget for Channel Flows** L. Schiavo, A. Jesus, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; J. Azevedo, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil; W. Wolf, University of Campinas, Campinas, Brazil	1630 hrs AIAA-2015-1277 **Investigation on Turbulence Characteristics of Channel Flow over the Compliant Wall** N. Fujimatsu, Toyo University, Kawagoe, Japan	

Wednesday, 7 January 2015						
267-FD-36	**Multiphase Flows**					**Daytona 2**
Chaired by: C. TSAI, Lockheed Martin Space Systems and J. KUHLMAN, West Virginia University						
1400 hrs AIAA-2015-1278 **Modelling of Drop Deformation and Breakup** C. Rodrigues, J. Barata, A. Silva, University of Beira Interior, Covilha, Portugal	1430 hrs AIAA-2015-1279 **Fruit Fly Impact Outcomes and Residue Components on an Aerodynamic Surface** K. Krishnan, A. Milionis, M. Starr, E. Loth, University of Virginia, Charlottesville, Charlottesville, VA	1500 hrs AIAA-2015-1280 **Stress dependent slip boundary condition for single- and two-phase fluid flow on a substrate** J. Thalakkottor, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1530 hrs AIAA-2015-1281 **Spray Droplet Impingement onto a Smooth Flat Surface** J. Kuhlman, J. Taylor, West Virginia University, Morgantown, WV			

Wednesday, 7 January 2015						
268-FD-37	**Turbulence Modeling I**					**Captiva 2**
Chaired by: P. HAMLINGTON and Z. WANG, University of Kansas						
1400 hrs AIAA-2015-1282 **Wall - Distance - Free Modifications to Spalart - Allmaras Turbulence Model** M. Rahman, Aalto University, Helsinki, Finland; R. Agarwal, Washington University in St. Louis, St. Louis, MO; M. Lampinen, T. Siikonen, Aalto University, Helsinki, Finland	1430 hrs AIAA-2015-1283 **A priori and a posteriori evaluations of subgrid stress models with the Burgers' equation** Y. Li, Z. Wang, University of Kansas, Lawrence, Lawrence, KS	1500 hrs AIAA-2015-1284 **New Approaches in Turbulence and Transition Modeling Using Data-driven Techniques** K. Duraisamy, Z. Zhang, A. Singh, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2015-1285 **Autonomic Subgrid-Scale Closure for Large Eddy Simulations** R. King, P. Hamlington, University of Colorado, Boulder, Boulder, CO; W. Dahm, Arizona State University, Tempe, AZ	1600 hrs AIAA-2015-1286 **CPR High-order Discretization of the RANS Equations with the SA Model** C. Zhou, Z. Wang, University of Kansas, Lawrence, Lawrence, KS	1630 hrs AIAA-2015-1287 **A Machine Learning Strategy to Assist Turbulence Model Development** B. Tracey, Stanford University, Stanford, CA; K. Duraisamy, University of Michigan, Ann Arbor, Ann Arbor, MI; J. Alonso, Stanford University, Stanford, CA	1700 hrs AIAA-2015-1288 **Closure in Reduced-Order Model of Burgers Equation** H. Imtiaz, I. Akhtar, National University of Sciences and Technology, Rawalpindi, Pakistan

Wednesday, 7 January 2015						
269-FD-38	**Unsteady Flow II**					**Sun Ballroom 6**
Chaired by: K. GRANLUND, Air Force Research Laboratory and Z. ZHANG, University of Tennessee						
1400 hrs AIAA-2015-1289 **Unsteady Behavior of a Pressure-Induced Turbulent Separation Bubble** J. Weiss, A. Mohammed-Taifour, Q. Schwaab, École de Technologie Supérieure, Montréal, Canada	1430 hrs AIAA-2015-1290 **Investigation of Low-Pressure Turbine Endwall Flows: Simulations and Experiments** A. Gross, New Mexico State University, Las Cruces, NM; R. Sondergaard, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2015-1291 **Complex Geometry Effects on Subsonic Cavity Flows** K. Casper, J. Wagner, S. Beresh, J. Henfling, R. Spillers, B. Pruett, Sandia National Laboratories, Albuquerque, NM	1530 hrs AIAA-2015-1292 **Acoustics of a Supersonic Cavity with a Generic Store** G. Robertson, R. Kumar, Florida State University, Tallahassee, FL; S. Doyle, M. Baker, K. Roughen, M4 Engineering, Inc., Long Beach, CA; R. Johnson, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2015-1293 **Response of a Store with Tunable Natural Frequencies in Compressible Cavity Flow** J. Wagner, K. Casper, S. Beresh, J. Henfling, R. Spillers, B. Pruett, Sandia National Laboratories, Albuquerque, NM	1630 hrs AIAA-2015-1294 **Low-Frequency Unsteadiness in 3D Shock-Wave/Boundary-Layer Interactions in a Supersonic Crossflow** D. Drikakis, Z. Rana, Cranfield University, Cranfield, United Kingdom	1700 hrs AIAA-2015-1295 **Bluff-body wake stability for unsteady inflow conditions** T. Cleaver, K. Granlund, A. Comer, A. Briones, V. Belovich, Air Force Research Laboratory, Wright-Patterson AFB, OH

Wednesday, 7 January 2015						
270-FD-39	**Wing Aerodynamics I**					**Daytona 1**
Chaired by: A. JONES, University of Maryland and K. TAIRA, Florida State University						
1400 hrs AIAA-2015-1296 **Effect of Aspect Ratio and Leading and Trailing Edge Form on the Flow Around an Impulsively Pitching Flat Plate** O. Son, O. Cetiner, Istanbul Technical University, Istanbul, Turkey	1430 hrs AIAA-2015-1297 **Vortex Characterization and Force Production on Two- and Three-Dimensional Wing Kinematics** F. Manar, P. Mancini, A. Jones, University of Maryland, College Park, College Park, MD	1500 hrs AIAA-2015-1298 **Three Dimensional Unsteady Wake of a Trapezoidal Pitching Panel** T. Rice, M. Green, Syracuse University, Syracuse, NY	1530 hrs AIAA-2015-1299 **Aerodynamic Comparison of Flat and Cambered Frames for Flexible MAV Wings** A. Wrist, Z. Zhang, D. Pepley, J. Hubner, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1600 hrs AIAA-2015-1300 **Direct Numerical Simulations of Membrane Wings at Low Reynolds Number** S. Serrano Galiano, R. Sandberg, University of Southampton, Southampton, United Kingdom	1630 hrs AIAA-2015-1301 **High fidelity simulations of electroactive membrane wings** G. Cetraro, R. Sandberg, University of Southampton, Southampton, United Kingdom	

Wednesday, 7 January 2015						
271-GEPC-4/SAT-1	**Green Engineering/Society and Aerospace Technology**					**Sun Ballroom C**
Chaired by: R. JUSTICE, The Georgia Center of Innovation for Aerospace						
1400 hrs AIAA-2015-1302 **Regenerative Electric Flight Synergy and Integration of Dual role Machines** J. Barnes, Pelican Aero Group, San Pedro, CA	1430 hrs AIAA-2015-1303 **Model of Fast Pyrolysis of a Small Volume-Fraction of Biomass Within an Gas of Transient Temperature and Pressure** N. Parziale, Stevens Institute of Technology, Hoboken, NJ	1500 hrs AIAA-2015-1304 **Maple Seed Performance as a Wind Turbine** J. Holden, T. Caley, M. Turner, University of Cincinnati, Cincinnati, OH	1530 hrs AIAA-2015-1305 **Antares DLR H2 - Test bed for electric propulsion** J. Kallo, S. Flade, T. Stephan, J. Schirmer, German Aerospace Center (DLR), Stuttgart, Germany	1600 hrs AIAA-2015-1306 **NASA Innovation Ecosystem: Innovation for Government Technology** J. Hardash, Booz Allen Hamilton, Los Angeles, CA; A. Landegger, Booz Allen Hamilton, Washington, DC; B. Decker, V. Thompson, NASA Headquarters, Washington, DC	1630 hrs AIAA-2015-1307 **Role of UAVs in Daily Life** A. Rashid, Z. Shahid, Ghulam Ishaq Khan Institute of Engineering Sciences and Technology, Topi, Pakistan	

Wednesday, 7 January 2015						
272-GNC-25	**Robust and Fault Tolerant Control**					**Miami 1**
Chaired by: S. MEHTA, Vanderbilt University and F. HUGON, Gulfstream Aerospace Corporation						
1400 hrs AIAA-2015-1308 **Disturbance Rejection using Micro-jet Actuators with a MPC Policy** M. McCourt, University of Florida, Shalimar, Shalimar, FL; J. Klotz, University of Florida, Gainesville, Gainesville, FL; S. Mehta, University of Florida, Shalimar, Shalimar, FL; J. Curtis, Air Force Research Laboratory, Eglin AFB, FL	1430 hrs AIAA-2015-1309 **Diverging Engine Failure Paths on Standard Instrument Departures** B. Masson, M. Bain, J. Page, University of New South Wales, Sydney, Australia	1500 hrs AIAA-2015-1310 **Fault Tolerant Control Design for the Longitudinal Aircraft Dynamics using Quantitative Feedback Theory** D. Ossmann, German Aerospace Center (DLR), Oberpfaffenhofen, Germany	1530 hrs AIAA-2015-1311 **Air Data Sensor Fault Detection and Diagnosis with Application to Real Flight Data** P. Lu, L. Van Eykeren, E. Van Kampen, Q. Chu, Delft University of Technology, Delft, The Netherlands	1600 hrs AIAA-2015-1312 **Active Fault-Tolerant Control System using Incremental Backstepping Approach** P. Lu, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	1630 hrs AIAA-2015-1313 **Pilot-in-the-Loop Evaluation of a Bio-Inspired Adaptive Fault Tolerant Control System in a Motion Based Flight Simulator** A. Perez Rocha, H. Moncayo, Embry-Riddle Aeronautical University, Daytona Beach, FL; A. Togayev, M. Perhinschi, D. Al Azzawi, West Virginia University, Morgantown, WV	

Wednesday, 7 January 2015						
273-GNC-26	**Trajectory Planning and Optimization II**					**Sun Ballroom 3**
Chaired by: D. DOMAN, Air Force Research Laboratory and P. SHANKAR, California State Univ						
1400 hrs AIAA-2015-1314 **Trajectory Design and Coverage Control for Solar-Powered UAVs** S. Vasisht, M. Mesbahi, University of Washington, Seattle, Seattle, WA	1430 hrs AIAA-2015-1315 **Design of a Track Guidance Algorithm for Formation Flight of UAVs** D. Lee, S. Kim, J. Suk, Chungnam National University, Daejeon, South Korea	1500 hrs AIAA-2015-1316 **An Optimal Control Approach to Aircraft Automatic Ground Collision Avoidance** A. Suplisson, R. Cobb, W. Baker, D. Jacques, Air Force Institute of Technology, Wright-Patterson AFB, OH	1530 hrs AIAA-2015-1317 **Lyapnov-Based Three-Dimensional Nonlinear Path-Following Guidance Law** N. Cho, Y. Kim, Seoul National University, Seoul, South Korea	1600 hrs AIAA-2015-1318 **Correlation between Flight Time and Fuel Consumption in Airliner Flight Plan with Trajectory Optimization** N. Wickramasinghe, M. Brown, S. Fukushima, Y. Fukuda, Electronic Navigation Research Institute, Tokyo, Japan; A. Harada, Y. Miyazawa, Kyushu University, Fukuoka, Japan		

Wednesday, 7 January 2015						
274-GNC-27	**Nonlinear Control of Aircraft/UAV**					**Sun Ballroom 4**
Chaired by: M. SPETZLER, University of Washington and M. IDAN, Technion - Israel Institute of Technology						
1400 hrs AIAA-2015-1319 **Nonlinear H-infinity Control applied to a UAS in Trajectory Following** G. Garcia, S. Keshmiri, University of Kansas, Lawrence, Lawrence, KS	1430 hrs AIAA-2015-1320 **Continuation Analysis of Nonlinear Systems with Equality Constraints on States, Parameters, and Eigenvalues** M. Spetzler, A. Narang-Siddarth, University of Washington, Seattle, Seattle, WA	1500 hrs AIAA-2015-1321 **Integrator-Backstepping Control Design for Nonlinear Flight System Dynamics** T. Tran, B. Newman, Old Dominion University, Norfolk, VA	1530 hrs AIAA-2015-1322 **Seeker Head Line-of-Sight Sliding Mode Control** G. Fursht, M. Idan, Technion–Israel Institute of Technology, Haifa, Israel	1600 hrs AIAA-2015-1323 **Advanced Sliding Mode Online Training for Neural Network Flight Control Applications** P. Schnetter, J. Kaste, Technical University of Braunschweig, Braunschweig, Germany; T. Krüger, Aerodata AG, Braunschweig, Germany		

Wednesday, 7 January 2015						
275-GNC-28	**Guidance, Navigation and Control Concepts in Air Traffic Control Systems I**					**Sun Ballroom 2**
Chaired by: A. CHAKRAVARTHY, Wichita State University and X. BAI						
1400 hrs AIAA-2015-1324 **Intent Based Trajectory Prediction by Multiple Model Prediction and Smoothing** Y. Liu, X. Li, University of New Orleans, New Orleans, LA	1430 hrs AIAA-2015-1325 **The Application of Probability Flow for Conflict Detection near Airports** L. Pienaar, T. Jones, University of Stellenbosch, Stellenbosch, South Africa	1500 hrs AIAA-2015-1326 **Enhancing the Traffic Management Advisor's Schedule by Time Advance** M. Wu, University of California, Santa Cruz, Moffett Field, CA; H. Swenson, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2015-1327 **Near-Optimal Conflict-Free Trajectory Generation in the Presence of Uncertainty** Y. Matsuno, T. Tsuchiya, University of Tokyo, Bunkyo, Japan	1600 hrs AIAA-2015-1328 **Evaluation of Time Arrival Uncertainties Associated with NextGen FMS Capabilities** V. Vaddi, X. Bai, Optimal Synthesis, Inc., Los Altos, CA; S. Park, Georgia Institute of Technology, Atlanta, GA	1630 hrs AIAA-2015-1329 **Optimization Approaches to the Single Airport Ground Hold Problem** J. Cox, M. Kochenderfer, Stanford University, Stanford, CA	

Wednesday, 7 January 2015						
276-GNC-29	**Spacecraft Guidance, Navigation, and Control III**					**Sun Ballroom 5**
Chaired by: O. TEKINALP, Middle East Technical University and S. KOWALTSCHEK, European Space Agency						
1400 hrs AIAA-2015-1330 **Receding-Horizon Unscented Kalman Filter using Successive Unscented Transformation for Spacecraft Attitude Estimation** R. Hirasawa, Keio University, Yokohama, Japan; Y. Nakajima, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan; M. Takahashi, Keio University, Yokohama, Japan	1430 hrs AIAA-2015-1331 **A Multi Sensor Based Integrated Navigation for Pin-Point Landing on Mars** Z. Yu, R. Xu, P. Cui, Beijing Institute of Technology, Beijing, China	1500 hrs AIAA-2015-1332 **Star Position Estimation Improvements for Accurate Star Tracker Attitude Estimation** T. Delabie, Catholic University of Leuven, Heverlee, Belgium	1530 hrs AIAA-2015-1333 **Interacting Multiple Model Estimation for Spacecraft Maneuver Detection and Characterization** S. Lee, I. Hwang, Purdue University, West Lafayette, IN	1600 hrs AIAA-2015-1334 **Autonomous Optical Navigation for Earth-Observing Satellites using Coastline Matching** M. Straub, J. Christian, West Virginia University, Morgantown, WV	1630 hrs AIAA-2015-1335 **Satellite Angular Velocity Estimation Based on Optical Flow Technique** L. Kazemi, J. Enright, T. Dzamba, K. Raahemifar, Ryerson University, Toronto, Canada	

Wednesday, 7 January 2015						
277-GT-4	**Hypersonic Test Capabilities I (Invited)**					**Sanibel 1**
Chaired by: K. BERGER, NASA-Langley Research Center and J. LAFFERTY, AEDC						
1400 hrs AIAA-2015-1336 **Hypersonic Test Capabilities in Tunnels B and C at AEDC's von Karman Facility** M. Mills, Aerospace Testing Alliance, Arnold AFB, TN	1430 hrs AIAA-2015-1337 **NASA Langley Aerothermodynamics Laboratory: Hypersonic Testing Capabilities** K. Berger, NASA Langley Research Center, Hampton, VA; K. Hollingsworth, S. Wright, Jacobs, Hampton, VA; S. Rufer, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2015-1338 **Modernization of Sandia's Hypersonic Wind Tunnel** S. Beresh, K. Casper, J. Wagner, J. Henfling, R. Spillers, B. Pruett, Sandia National Laboratories, Albuquerque, NM	1530 hrs Oral Presentation **Review of CUBRC LENS Hypervelocity Tunnels and Recent Research and Testing Activities** M. Holden, T. Wadhams, M. MacLean, A. Dufrene, CUBRC, Buffalo, NY	1600 hrs AIAA-2015-1339 **Hypersonic Testing Capabilities at the NASA Ames Ballistic Ranges** M. Wilder, NASA Ames Research Center, Moffett Field, CA; D. Bogdanoff, ERC, Inc., Moffett Field, CA; C. Cornelison, NASA Ames Research Center, Moffett Field, CA	1630 hrs AIAA-2015-1340 **The Hypervelocity Wind Tunnel No. 9; Continued Excellence Through Improvement and Modernization** J. Lafferty, Arnold Engineering Development Complex, White Oak, MD	

Wednesday, 7 January 2015						
278-GTE-6	**Compressors**					**Emerald 1**
Chaired by: R. WEBSTER, University of Tennessee at Chattanooga						
1400 hrs AIAA-2015-1341 **Vane Wake Characterization Including Variability in a Multistage Compressor** J. Methel, N. Smith, N. Key, Purdue University, West Lafayette, IN	1430 hrs AIAA-2015-1342 **Experimental and Computational Study of Forced Response in a Multistage Axial Compressor** D. Monk, W. Murray, N. Key, Purdue University, West Lafayette, IN; R. Fulayter, Rolls-Royce Group plc, Indianapolis, IN	1500 hrs AIAA-2015-1343 **Reduction of Rotor Forced Response Using Stator Asymmetry in a Multistage Compressor** D. Monk, N. Key, Purdue University, West Lafayette, IN; R. Fulayter, Rolls-Royce Group plc, Indianapolis, IN	1530 hrs AIAA-2015-1344 **Computational Simulation of the Fan and Low-pressure Compressor Stages of the Energy Efficient Engine** R. Webster, K. Sreenivas, C. Hilbert, University of Tennessee, Chattanooga, Chattanooga, TN	1600 hrs AIAA-2015-1345 **Validation and Simulation of a Small-Scale Pressure Wave Supercharger** M. Mataczynski, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH; J. Nees, Innovative Scientific Solutions, Inc., Dayton, OH; D. Paxson, NASA Glenn Research Center, Cleveland, OH		

Wednesday, 7 January 2015						
279-HSABP-9/GTE-8	**Pressure Gain Combustion - Pulse Detonation Engines**					**Emerald 3**
Chaired by: K. KAILASANATH, Naval Research Laboratory and D. PAXSON, NASA Glenn Research Center						
1400 hrs AIAA-2015-1346 **10 kHz Mid-IR TDLAS of Detonation Events with a Fiber-Coupled Laser Diagnostic** B. Sell, Innovative Scientific Solutions, Inc., Dayton, OH; M. Fotia, National Research Council, Wright-Patterson AFB, OH; A. Caswell, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2015-1347 **Development and Investigation of an Air-Breathing, Pulse Detonation Engine-Crossover System** R. Driscoll, A. St. George, V. Anand, D. Munday, E. Gutmark, University of Cincinnati, Cincinnati, OH	1500 hrs AIAA-2015-1348 **Experimental Magnetohydrodynamic Energy Extraction from a Pulsed Detonation Tube** K. Teope, P. King, Air Force Institute of Technology, Wright-Patterson AFB, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH	1530 hrs AIAA-2015-1349 **Study of Unsteady Thrust Characteristics of Pulse Detonation Engines** D. Joshi, F. Lu, University of Texas, Arlington, Arlington, TX	1600 hrs AIAA-2015-1350 **Optical Measurement of Detonation with a Focusing Schlieren Technique** C. Stevens, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2015-1351 **Effect of initial flow velocity on the flame propagation in obstructed channels** J. Gray, J. Moeck, C. Paschereit, Technical University of Berlin, Berlin, Germany	1700 hrs AIAA-2015-1352 **Performance Model for Fully and Partially Filled Pulse Detonation Engine** R. Bello, F. Lu, University of Texas, Arlington, Arlington, TX

Wednesday, 7 January 2015		
280-IS-9 **1400 - 1700 hrs**	**Invited Panel Discussion - Roadmap for Intelligent Systems**	**Osceola Ballroom 3**

This invited session will discuss recent efforts focused towards developing a roadmap which charts a course for integrating Intelligent Systems into the aerospace technology. Presentations will include summaries of the discussions at the August 2014 Intelligent Systems Workshop in focus areas of Autonomy, Adaptive Control and Air Traffic Management.

Moderator: Kelly Cohen, University of Cincinnati

Panelists:

Paul Zetocha	Ella Atkins	Nhan Ngugen	Christine Belcastro	Sam Adhikari	Chris Tschan
Air Force Research Laboratory	University of Michigan	NASA Ames	NASA Langley	Sysoft	The Aerospace Corporation

Wednesday, 7 January 2015						
281-MAT-10	**Materials & Design for Additive Manufacturing**					**Sarasota 1**
Chaired by: J. KOO, The University of Texas at Austin; S. WANTHAL, The Boeing Company and T. CLEMENT, Raytheon						
1400 hrs AIAA-2015-1353 **Electrically Conductive Polyamide 11 Nanocomposites for Selective Laser Sintering: Properties Characterization** B. Ong, H. Wu, J. Koo, University of Texas, Austin, Austin, TX	1430 hrs AIAA-2015-1354 **Fatigue Behavior of a Titanium Alloy Additively Manufactured by a Direct Deposition Method** N. Shamsaei, M. Lugo, D. Seely, S. Thompson, A. Sterling, Mississippi State University, Mississippi State, MS	1500 hrs AIAA-2015-1355 **Microstructural Features and Mechanical Properties of 316L Stainless Steel fabricated by Laser Additive Manufacture** D. Seely, N. Shamsaei, B. Patton, Mississippi State University, Starkville, MS	1530 hrs AIAA-2015-1356 **Effect of Substrate Thickness on Micro-Hardness of Direct Laser Deposited Ti-6Al-4V Parts** G. Marshall, W. Young, S. Thompson, D. Seely, N. Shamsaei, Mississippi State University, Mississippi State, MS	1600 hrs AIAA-2015-1357 **Reducing Production Costs of E-Mobility Components by Using Polyjet 3D Printing** C. Reinders, RWTH Aachen University, Aachen, Germany		

Wednesday, 7 January 2015						
282-MAT-11	**Fatigue & Fracture II**					**Sarasota 2**
Chaired by: S. ARNOLD, University of Heidelberg, Germany and J. DUSTIN, GE-Aviation						
1400 hrs AIAA-2015-1358 **Experimental and numerical monitoring of strain gradients in notched composites under tension loading** B. Aidi, S. W.Case, Virginia Polytechnic Institute and State University, Blacksburg, VA	1430 hrs AIAA-2015-1359 **Investigation of Cyclic Behavior and Structure-property Relations of a 304 Stainless Steel** M. Lugo, J. Pegues, N. Shamsaei, Mississippi State University, Mississippi State, MS	1500 hrs AIAA-2015-1360 **Combined Multiscale Creep Strain and Creep Rupture Modeling for Composite Materials** E. Jensen, R. Fertig, University of Wyoming, Laramie, Laramie, WY	1530 hrs AIAA-2015-1361 **Multiscale Stochastic Analysis of FRP based on variability in fiber volume fraction, epoxy stiffness and strength** S. Sanei, E. Jensen, R. Fertig, University of Wyoming, Laramie, Laramie, WY			

Wednesday, 7 January 2015						
283-MDO-7	**MDO: Decision Making/Value Driven Design**					**Sarasota 3**
Chaired by: J. HICKEN, Rensselaer Polytechnic Institute and G. KENNEDY, Georgia Institute of Technology						
1400 hrs AIAA-2015-1362 **Sensitivity analysis of surrogate-based methodology for real-time structural assessment** L. Mainini, K. Willcox, Massachusetts Institute of Technology, Cambridge, MA	1430 hrs AIAA-2015-1363 **Defining and Mitigating Requirements-Induced Value Gaps** A. Abbas, University of Illinois, Urbana-Champaign, Urbana, IL; C. Bloebaum, B. Mesmer, Iowa State University, Ames, IA	1500 hrs AIAA-2015-1364 **Organization Design in the Context of Value-Driven Design** B. Kwasa, C. Bloebaum, B. Mesmer, Iowa State University, Ames, IA	1530 hrs AIAA-2015-1365 **Variable-Fidelity Design Using Kriging Surrogate Model with Fidelity Indicator** Y. Jo, Korea Advanced Institute of Science and Technology, Daejeon, Korea (the Republic of); S. Choi, Virginia Polytechnic Institute and State University, Blacksburg, VA; D. Lee, Korea Advanced Institute of Science and Technology, Daejeon, South Korea			

Wednesday, 7 January 2015		
284-MST-11 **1400 - 1700 hrs**	**MST Panel: Flight Simulation Training Device Qualification Testing**	**Sun Ballroom 1**

Chaired by: B. MAZZACAVALLO, The Boeing Company

Flight training requires an accurate representation of a flying aircraft with the fidelity and realism to affect a positive standard of behavior in flight crews. Qualification Test Guides (QTGs) are the method currently used to ensure the device remains faithful to the original design and qualification data. Recent discussions at industry conferences and events have discussed the topic of alternative methods to discern changes in an Flight Simulation Training Devices (FSTDs) accurate modeling of an aircraft type and/ or impacts and changes to the training being performed. This panel brings together industry experts and will endeavor to highlight the current state of the art and expose opportunities to utilize research and design expertise, academia and other simulation expertise to help optimize and develop new solutions to validating the training simulator system while minimizing the touch labor required. The current tools are used as an initial validation and recurring - new solutions to both requirements will be explored.

Moderator: Brandon Mazzacavallo, Senior Manager of Simulator Management Services/Flight Operations Support at Boeing

Panelists:

Kip Caudrey
The Boeing Company

Eric Fuilla-Weishaupt
Airbus

Jim Knezevich
FAA National Simulator Program

Wednesday, 7 January 2015		
285-MVC-5	**Visualization for Feature Detection, Integration Techniques and Frameworks, and Multi-Scale Models**	**Naples 3**

Chaired by: R. DAVIS, University of California Davis

1400 hrs AIAA-2015-1366 **Visualization and Post-Processing of Large Scale Engineering Applications using In-Situ Data Extracts and Proper Orthogonal Decomposition** E. Duque, D. Hiepler, Intelligent Light, Rutherford, NJ; S. Gorrell, M. Jones, T. Blanc, Brigham Young University, Provo, UT	1430 hrs AIAA-2015-1367 **Recent advances in the integration of CFD into the missile concept design process** N. Taylor, MBDA, Filton, United Kingdom	1500 hrs AIAA-2015-1368 **Analysis of Stable and Unstable Manifolds in Fluid Flows Using Lagrangian Coherent Structures** A. Ahmed, I. Akhtar, I. Aziz, National University of Sciences and Technology, Islamabad, Pakistan	1530 hrs AIAA-2015-1369 **Visualization and Quantification of Rotor Tip Vortices in Helicopter Flows** D. Kao, J. Ahmad, T. Holst, NASA Ames Research Center, Moffett Field, CA	1600 hrs AIAA-2015-1370 **Design Sensitivity Calculations Directly on CAD-based Geometry** J. Dannenhoffer, Syracuse University, Syracuse, NY; R. Haimes, Massachusetts Institute of Technology, Cambridge, MA		

Wednesday, 7 January 2015		
286-NDA-6	**Model Verification and Validation & Optimization under Uncertainty**	**Osceola Ballroom 5**

Chaired by: H. BAE, Wright State University and J. BROWN

1400 hrs AIAA-2015-1371 **Experimental Validation of an Optically Measured Geometric Mistuning Model Using a System ID Approach** A. Kaszynski, J. Brown, J. Beck, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2015-1372 **Locally-Optimized Covariance Kriging for Engineering Design Exploration** D. Clark, H. Bae, Wright State University, Dayton, OH; R. Penmetsa, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2015-1373 **Validation of Geometric Mistuning Reduced-Order Models for Single and Dual Flow-Path Integrally Bladed Rotors** J. Beck, Air Force Research Laboratory, Wright-Patterson AFB, OH; A. Kaszynski, Universal Technology Corporation, Beavercreek, OH; O. Scott-Emuakpor, J. Brown, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2015-1374 **Evaluation of Model Validation Techniques in the Presence of Aleatory and Epistemic Input Uncertainties** I. Voyles, C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA	1600 hrs AIAA-2015-1375 **A Surrogate-based Adjustment Factor Approach to Multi-Fidelity Design Optimization** C. Fischer, R. Grandhi, Wright State University, Dayton, OH	1630 hrs AIAA-2015-1376 **Comparing Deterministic and Non-deterministic Optimization for Airfoil Shape Design** T. Kanno, W. Crossley, Purdue University, West Lafayette, IN	1700 hrs AIAA-2015-1377 **Decomposition-based Evolutionary Aerodynamic Robust Optimization with Multi-fidelity Point Collocation Non-intrusive Polynomial Chaos** P. Palar, T. Tsuchiya, University of Tokyo, Tokyo, Japan; G. Parks, University of Cambridge, Cambridge, United Kingdom

Wednesday, 7 January 2015		
287-PANEL-6 **1400 - 1600 hrs**	**The Digital System Model - The New Frontier in Aerospace & Defense Acquisition**	**Osceola Ballroom B**

Moderator: Edward Kraft, Technical Advisor, Aerospace Ground Testing, Air Force Test Center

Panelists:

Kristen Baldwin
Principal Deputy
Office of the Deputy Assistant Secretary of Defense for Systems Engineering

Jeffery Holland
Director of Research and Development and Chief Scientist
Director of the U.S. Army Engineer Research and Development Center
US Army Corp of Engineers

David Walker
Deputy Assistant Secretary of the Air Force for Science, Technology, and Engineering
Office of the Assistant Secretary of the Air Force for Acquisition

Wednesday, 7 January 2015						
288-PC-15	**Turbulent Combustion Models, their Foundations and Major Assumptions**					**Emerald 2**
Chaired by: C. LI, Air Force Office of Scientific Research						
1400 hrs Oral Presentation **Insights into Model Assumptions and Road to Model Validation for Turbulent Combustion** V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA	1430 hrs AIAA-2015-1378 **Advances in the Simulation of Turbulent Combustion** J. Oefelein, Sandia National Laboratories, Livermore, CA		1530 hrs AIAA-2015-1379 **Survey of Turbulent Combustion Models for Large-Eddy Simulations of Propulsive Flowfields** J. Foster, Corvid Technologies, Inc., Mooresville, NC; R. Miller, Clemson University, Clemson, SC		1630 hrs AIAA-2015-1380 **An analysis of the basic assumptions of turbulent combustion models with emphasis on high-speed flows** E. Gonzalez, Combustion Science and Engineering, Inc., Columbia, MD; S. Menon, R. Ranjan, Georgia Institute of Technology, Atlanta, GA; A. Kerstein, Self, Danville, CA	

Wednesday, 7 January 2015						
289-PC-16	**Laminar Flames**					**Emerald 7**
Chaired by: H. IM, King Abdullah University of Science and Technology and D. GLAZE, Sandia National Laboratories						
1400 hrs AIAA-2015-1381 **A Dynamic Fidelity Adaptive Modeling Framework for Combustion Systems Based on Local Estimation of Model Accuracy** Y. See, H. Wu, Q. Wang, M. Ihme, Stanford University, Stanford, CA	1430 hrs AIAA-2015-1382 **Multi-timescale and Correlated Dynamic Adaptive Chemistry and Transport Modeling of Flames in n-Heptane/Air Mixtures** W. Sun, Y. Ju, Princeton University, Princeton, NJ	1500 hrs AIAA-2015-1383 **Towards direct simulations of counterflow flames with consistent differential-algebraic boundary conditions** P. Kourdis, California Institute of Technology, Pasadena, CA; J. Bellan, K. Harstad, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1530 hrs AIAA-2015-1384 **Evaluation of Soot Models in Computing m-Xylene Jet Diffusion Flames** V. Katta, Innovative Scientific Solutions, Inc., Dayton, OH; W. Wang, M. Linevsky, S. Iyer, T. Litzinger, B. Santoro, Pennsylvania State University, University Park, PA; et al.	1600 hrs AIAA-2015-1385 **Modeling flame propagation and quenching in stratified mixtures** V. Katta, Innovative Scientific Solutions, Inc., Dayton, OH; S. Zeppieri, M. Colket, United Technologies Corporation, East Hartford, CT; W. Roquemore, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2015-1386 **Local Burning Rates and Heat Flux for Boundary Layer Diffusion Flames under Forced Flow** A. Singh, M. Gollner, University of Maryland, College Park, College Park, MD	1700 hrs AIAA-2015-1387 **Cool Flames Activated by Ozone Addition** C. Reuter, S. Won, Y. Ju, Princeton University, Princeton, NJ

Wednesday, 7 January 2015						
290-PDL-5	**Plasma & Laser Physics I**					**Emerald 5**
Chaired by: R. MILES, Princeton University and K. XU, University of Alabama in Huntsville						
1400 hrs AIAA-2015-1388 **Reducing the Breakdown Threshold in DC Microdischarges via Metal Nanoparticle Seeding** J. Sawyer, Z. Zhang, University of Tennessee, Knoxville, Knoxville, TN	1430 hrs AIAA-2015-1389 **Arc breakdown in high-pressure large gap sources using surface streamer based initiation** M. Pachuilo, F. Stefani, R. Bengtson, L. Raja, University of Texas, Austin, Austin, TX	1500 hrs AIAA-2015-1390 **Pre-breakdown processes in dielectric fluid in inhomogeneous pulsed electric fields** M. Shneider, Princeton University, Princeton, NJ	1530 hrs AIAA-2015-1391 **Active Particles Production by Pulsed Nanosecond Discharge in Ambient Air. Quenching of Electronically Excited States of Nitrogen by O2 Molecules and O(3P) Atoms** N. Popov, Moscow State University, Moscow, Russia			

Wednesday, 7 January 2015						
291-PDL-6	**Astronautical Plasma Dynamics**					**Emerald 8**
Chaired by: J. WANG, University of Southern California and H. USUI, Kobe University						
1400 hrs AIAA-2015-1392 **Drag Measurements in a Simulated Low-Earth Orbit Environment** C. Maldonado, A. Ketsdever, University of Colorado, Colorado Springs, Colorado Springs, CO	1430 hrs AIAA-2015-1393 **PIC Simulation on Plasma Flow Response to a Mesoscale Magnetic Dipole in Space** H. Usui, M. Umezawa, Y. Miyake, Kobe University, Kobe, Japan	1500 hrs AIAA-2015-1394 **Numerical Simulations of Spacecraft-Plasma Interactions on Lunar Surface** D. Han, J. Wang, University of Southern California, Los Angeles, CA	1530 hrs AIAA-2015-1395 **Electron Kinetic Characteristics in Plasma Plumes: Fully Kinetic Simulations** Y. Hu, J. Wang, University of Southern California, Los Angeles, CA	1600 hrs AIAA-2015-1396 **Dynamics of Spacecraft Plume/ Magnetosphere Interactions in Geostationary Earth Orbit** K. Stephani, University of Illinois, Urbana-Champaign, Urbana, IL; I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1630 hrs AIAA-2015-1397 **Plume Structure and Current-Voltage Characteristic Analysis for a Cathodic Plasma Contactor** Q. Xia, K. Xie, Beijing Institute of Technology, Beijing, China; N. Guo, Y. Jia, Lanzhou University, Lanzhou, China; X. Liu, Z. Wu, Beijing Institute of Technology, Beijing, China	

Wednesday, 7 January 2015						
292-SCS-7	**Spacecraft Antennas and Apertures**					**Osceola Ballroom 4**
Chaired by: W. BELVIN, NASA-Langley Research Center and J. MOORE, ManTech Nexolve Corporation						
1400 hrs AIAA-2015-1398 **Telescoping Solar Array Concept for Achieving High Packaging Efficiency** M. Mikulas, National Institute of Aerospace, Hampton, VA; R. Pappa, J. Warren, G. Rose, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2015-1399 **Experimental Study of Reflector Shape Control under Various Thermal Conditions** A. Inagaki, H. Sakamoto, Tokyo Institute of Technology, Tokyo, Japan; H. Tanaka, National Defense Academy, Kanagawa, Japan; K. Ishimura, Japan Aerospace Exploration Agency (JAXA), Kanagawa, Japan; M. Okuma, Tokyo Institute of Technology, Tokyo, Japan	1500 hrs AIAA-2015-1400 **Energy-Efficient Active Reflectors with Improved Mechanical Stability** S. Bradford, D. Hofmann, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; D. Kochmann, California Institute of Technology, Pasadena, CA	1530 hrs AIAA-2015-1401 **Optimal Placement of Actuators and Sensors for Gyroelastic Body from the Controllability and Observability Perspective** Q. Hu, Beijing Institute of Technology, Beijing, China; Z. Wang, Beihang University, Beijing, China; J. Zhang, Beijing Institute of Technology, Beijing, China; Y. Jia, Beihang University, Beijing, China; M. Liu, Z. Zhou, China Academy of Space Technology, Beijing, China	1600 hrs AIAA-2015-1402 **The Mechanical Design of a Mesh Ka-band Parabolic Deployable Antenna (KaPDA) for CubeSats** J. Sauder, M. Thomson, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1630 hrs AIAA-2015-1403 **Spin-Stabilized Membrane Antenna Structures** M. Delapierre, S. Pellegrino, California Institute of Technology, Pasadena, CA	1700 hrs AIAA-2015-1404 **Thermal Distortion Testing of a 4-meter Microwave Reflector** S. Bradford, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA

Wednesday, 7 January 2015						
293-SD-10	**Special Session: Adaptive Aeroelastic Wing Shaping Control I**					**Sun Ballroom D**
Chaired by: N. NGUYEN, NASA-Ames Research Center and S. ANDERS, NASA Langley Research Center						
1400 hrs AIAA-2015-1405 **Aeroelastic Analysis of Wind Tunnel Test Data of a Flexible Wing with a Variable Camber Continuous Trailing Edge Flap (VCCTEF)** N. Nguyen, NASA Ames Research Center, Moffett Field, CA; E. Ting, S. Lebofsky, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	1430 hrs AIAA-2015-1406 **The design, construction, and tests of a concept aeroelastic wind tunnel model of a high-lift variable camber continuous trailing edge flap (HL-VCCTEF) wing configuration** N. Precup, M. Mor, E. Livne, University of Washington, Seattle, Seattle, WA	1500 hrs AIAA-2015-1407 **Static Aeroelastic Modeling of a Sub-Scale Wind Tunnel Model with Novel Flap Concept** E. Ting, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; N. Nguyen, NASA Ames Research Center, Moffett Field, CA; S. Lebofsky, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	1530 hrs AIAA-2015-1408 **Multidisciplinary Drag Optimization of Reduced Stiffness Flexible Wing Aircraft With Variable Camber Continuous Trailing Edge Flap** S. Lebofsky, E. Ting, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1600 hrs AIAA-2015-1409 **Optimized Off-Design Performance of Flexible Wings with Continuous Trailing-Edge Flaps** D. Rodriguez, M. Aftosmis, M. Nemec, NASA Ames Research Center, Moffett Field, CA; G. Anderson, Stanford University, Stanford, CA		

Wednesday, 7 January 2015						
294-SD-11	**Special Session: Transformative Technologies for High-Speed/High-Efficiency Next-Gen Rotorcraft II**					**Tampa 2**
Chaired by: E. SMITH, Pennsylvania State University and A. DATTA, Science & Technology Corporation						
1400 hrs AIAA-2015-1411 **Aeromechanics of the Coaxial Compound Helicopter** C. Zhang, AVX Aircraft Company, Benbrook, TX; T. Quackenbush, Continuum Dynamics, Inc., Ewing, PA; H. Saberi, Advanced Rotorcraft Technology, Inc., Sunnyvale, CA; C. Sheng, University of Toledo, Toledo, OH; T. Gaffey, AVX Aircraft Company, Benbrook, TX	1430 hrs AIAA-2015-1412 **Transient Hub Loads and Blade Deformation of a Mach-Scale Coaxial Rotor in Hover** C. Cameron, J. Sirohi, D. Uehara, University of Texas, Austin, Austin, TX	1500 hrs AIAA-2015-1413 **Performance and Loads Prediction for a High Advance Ratio Coaxial Rotor** J. Schmaus, I. Chopra, University of Maryland, College Park, College Park, MD	1530 hrs AIAA-2015-1414 **Advanced Composite Wings for Whirl Flutter Augmentation: Wind Tunnel Model Design** J. Zhang, E. Smith, Pennsylvania State University, University Park, PA	1600 hrs AIAA-2015-1415 **Aeroelastic Optimization for High-Speed, High-Efficiency Tiltrotors with Wing Extensions and Winglets** S. Kambampati, J. Zhang, E. Smith, Pennsylvania State University, University Park, PA	1630 hrs AIAA-2015-1416 **Tube Compliance Effects on Fluidic Flexible Matrix Composite Devices for Rotorcraft Vibration Control** M. Krott, K. Miura, S. LaBarge, C. Rahn, E. Smith, Pennsylvania State University, University Park, PA; P. Romano, Bell Helicopter Textron, Inc., Hurst, TX	

Wednesday, 7 January 2015						
295-SD-12	**Flutter, LCO and Aeroelastic Instabilities**					**Tampa 3**
Chaired by: J. COOPER, University of Bristol and W. WELSH, Sikorsky Aircraft Corporation						
1400 hrs AIAA-2015-1417 **The Influence of Steady Loading Parameters on Low-Pressure Turbine Flutter** J. Waite, R. Kielb, Duke University, Durham, NC; S. Bittner, Leibniz University, Hannover, Germany	1430 hrs AIAA-2015-1418 **Store-Induced Limit Cycle Oscillations due to Nonlinear Wing-Store Attachment** M. Padmanabhan, Duke University, Durham, NC; C. Pasiliao, Air Force Research Laboratory, Eglin AFB, FL; E. Dowell, Duke University, Durham, NC	1500 hrs AIAA-2015-1419 **Whirl Flutter Analysis with Propeller Aerodynamic Derivatives Computed by Unsteady Vortex Lattice Method** Z. Wang, P. Chen, ZONA Technology, Inc., Scottsdale, AZ	1530 hrs AIAA-2015-1420 **Effect of Embedded Control Surface Actuators on Active Aeroelastic Control** R. Brown, K. Singh, Miami University, Oxford, OH; R. Kolonay, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2015-1421 **A Modification to the Enhanced Correction Factor Technique to Correlate With Experimental Data** R. Moreno, F. von Knoblauch, R. Narisetti, P. Taylor, Gulfstream Aerospace Corporation, Savannah, GA	1630 hrs AIAA-2015-1422 **In-Flight Aeroelastic Stability of the Thermal Protection System on the NASA HIAD, Part II: Nonlinear Theory and Extended Aerodynamics** B. Goldman, E. Dowell, Duke University, Durham, NC	1700 hrs AIAA-2015-1423 **Nonlinear airfoil torsional response induced by separated flows** F. Marques, D. Pereira, University of São Paulo, São Carlos, Brazil; R. Vasconcellos, São Paulo State University, São Joao da Boa Vista, Brazil

Wednesday, 7 January 2015						
296-SEN-2	**Novel Sensor Systems**					**Osceola Ballroom 1**
Chaired by: M. MAJJI, State University of New York at Buffalo						
1400 hrs AIAA-2015-1424 **Optical Flow Techniques for Wind-Velocity Sensing on a Small Unmanned Aircraft System** D. Pope, B. Argrow, D. Lawrence, University of Colorado, Boulder, Boulder, CO	1430 hrs AIAA-2015-1425 **A Low-Cost System for Wind Field Estimation Through Sensor Networks and Aircraft Design** R. Laurence, J. Elston, B. Argrow, University of Colorado, Boulder, Boulder, CO	1500 hrs AIAA-2015-1426 **Performance Evaluation of 3D Model-based Techniques for Autonomous Pose Initialization and Tracking** R. Opromolla, G. Fasano, G. Rufino, M. Grassi, University of Naples "Federico II", Naples, Italy	1530 hrs AIAA-2015-1427 **Wing Shape Sensing from Measured Strain** C. Pak, NASA Armstrong Flight Research Center, Edwards, CA			

Wednesday, 7 January 2015						
297-STR-14	**Design, Test and Analysis I**					**Tampa 1**
Chaired by: W. YU, Purdue University and B. WILLIS, Boeing Defense, Space & Security						
1400 hrs AIAA-2015-1428 **Thermally Driven Morphing with Hybrid Laminates and Metal Matrix Composites** E. Eckstein, A. Pirrera, P. Weaver, University of Bristol, Bristol, United Kingdom	1430 hrs AIAA-2015-1429 **Mechanical Properties and Fatigue Behavior of 2D and 3D Woven PMC Airframe Structures at Elevated Temperature** M. Wilkinson, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Ruggles-Wrenn, Air Force Institute of Technology, Wright-Patterson AFB, OH	1500 hrs AIAA-2015-1430 **Topology Optimization of Additively-Manufactured, Lattice-Reinforced Penetrative Warheads** H. Richards, D. Liu, Air Force Institute of Technology, Wright-Patterson AFB, OH	1530 hrs AIAA-2015-1431 **Significance of Geometric Nonlinearity in the Design of Thermally Loaded Structures** J. Deaton, R. Grandhi, Wright State University, Dayton, OH	1600 hrs AIAA-2015-1432 **Postbuckling Analysis of Composite Stiffened Panel under Shear Load** K. Umezawa, T. Aoki, University of Tokyo, Tokyo, Japan	1630 hrs AIAA-2015-1433 **Warping of Stiffened Composite Panels Due to Temperature Changes in the Curing Process** A. Przekop, NASA Langley Research Center, Hampton, VA	1700 hrs AIAA-2015-1434 **Design and Evaluation of a Test Device for Thermal-Acoustical-Mechanical Fatigue Experiments** M. Sedlack, A. Jasmin, P. Lavandera, A. Gordon, University of Central Florida, Orlando, FL; R. Penmetsa, Air Force Research Laboratory, Wright-Patterson AFB, OH

Wednesday, 7 January 2015						
298-STR-15	**Structural Stability**					**Tallahassee 3**
Chaired by: C. BISAGNI and J. HEALD, Canadian Space Agnecy						
1400 hrs AIAA-2015-1435 **Buckling Analysis of Axially Loaded Corrugated Cylindrical Shells** X. Ning, S. Pellegrino, California Institute of Technology, Pasadena, CA	1430 hrs AIAA-2015-1436 **Effect of Buckling Modes on the Fatigue Life and Damage Tolerance of Stiffened Structures** C. Davila, NASA Langley Research Center, Hampton, VA; C. Bisagni, University of California, San Diego, La Jolla, CA; C. Rose, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2015-1437 **A Comparison of FEM and Semi-Analytical Method in the Buckling and Vibration of Non-Prismatic Columns under Tip Force and Self-Weight** J. Cifuentes, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1530 hrs AIAA-2015-1438 **Buckling analysis and optimization of blade stiffened variable stiffness panels** B. Coburn, Z. Wu, P. Weaver, University of Bristol, Clifton, United Kingdom	1600 hrs AIAA-2015-1439 **Buckling and Postbuckling of Unitized, Stiffened Composite Panels** C. Kosztowny, A. Waas, University of Michigan, Ann Arbor, Ann Arbor, MI	1630 hrs AIAA-2015-1440 **Optimization of Damaged Composite Plates Under Buckling and Post buckling condition in Hygrothermal Environment employing an Inverse Hyperbolic Shear Deformation Theory** V. Sreehari, D. Maiti, Indian Institute of Technology Kharagpur, Kharagpur, India	

Wednesday, 7 January 2015						
299-TES-1	**Thermal and Fluid Behavior in Power Systems**					**Captiva 1**
Chaired by: R. AMANO, University of Wisconsin-Milwaukee						
1400 hrs AIAA-2015-1441 **On the Modeling of Thermal Comfort in Heavy Truck Passengers Cabins** A. Omran, E. Khalil, Cairo University, Cairo, Egypt	1430 hrs AIAA-2015-1442 **Study of Liquid Breakup Process in Solid Rocket Motor Nozzle** R. Amano, Y. Yen, M. Hamman, University of Wisconsin, Milwaukee, Glendale, WI	1500 hrs AIAA-2015-1443 **Energy Efficient Designs of Low Carbon Buildings** E. Khalil, Cairo University, Cairo, Egypt; W. Ajami, University of Technology MARA, Shah Allam, Malaysia	1530 hrs AIAA-2015-1444 **Flow and Heat Transfer in a Rotating and Non-Rotating Wedge-Shaped Cooling Passage with Ribs and Pin Fins** I. Pardeshi, T. Shih, Purdue University, West Lafayette, IN; K. Bryden, Ames Laboratory, Ames, IA; R. Ames, R. Dennis, National Energy Technology Laboratory, Morgantown, WV; S. Ding, Beihang University, Beijing, China	1600 hrs AIAA-2015-1445 **Modelling and Simulation on Ingress into the Rim Seal and Wheelspace of a Rotor-Stator Configuration** J. Liu, A. Weaver, T. Shih, Purdue University, West Lafayette, IN; C. Sangan, G. Lock, Bath University, Bath, United Kingdom	1630 hrs AIAA-2015-1446 **A Weave Design for Trailing-Edge Cooling** A. Weaver, J. Liu, T. Shih, Purdue University, West Lafayette, IN	

Wednesday, 7 January 2015						
300-TP-7	**Ablation and Surface Catalysis**					**Sun Ballroom B**
Chaired by: A. MARTIN, University of Kentucky and D. KUNTZ, Sandia National Laboratories						
1400 hrs AIAA-2015-1447 **Quantitative determination of species production from the pyrolysis of the Phenolic Impregnated Carbon Ablator (PICA)** H. Wong, J. Peck, J. Assif, Aerodyne Research, Inc., Billerica, MA; J. Lachaud, University of California, Santa Cruz, Moffett Field, CA; N. Mansour, NASA Ames Research Center, Moffett Field, CA	1430 hrs AIAA-2015-1448 **Conformal Phenolic Impregnated Carbon Ablator (C-PICA) Arcjet Testing, Ablation and Thermal Response** F. Milos, M. Gasch, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2015-1449 **Molecular simulations of surface ablation using reaction probabilities from molecular beam experiments and realistic microstructure** S. Poovathingal, T. Schwartzentruber, University of Minnesota, Minneapolis, Minneapolis, MN; V. Murray, T. Minton, Montana State University, Bozeman, MT	1530 hrs AIAA-2015-1450 **Microscale Simulations of Porous TPS Materials: Ablating Microstructures and Micro-tomography** E. Stern, I. Nompelis, T. Schwartzentruber, G. Candler, University of Minnesota, Minneapolis, Minneapolis, MN	1600 hrs AIAA-2015-1451 **In-Situ Measurement of Ablation Fronts of A Low Density Ablator With An Ablation Sensor** T. Sakai, H. Nakazawa, Y. Dantsuka, K. Watanabe, Nagoya University, Nagoya, Japan; K. Kitagawa, Aichi Institute of Technology, Toyota, Japan; K. Hirai, IHI Corporation, Tomioka, Japan; et al.	1630 hrs AIAA-2015-1452 **Numerical Simulation of Regular Surface Patterns on Sublimating Ablative Materials** L. Trevino, G. Candler, University of Minnesota, Minneapolis, Minneapolis, MN	1700 hrs AIAA-2015-1453 **Influence of Carbon Nitridation in a Nonequilibrium Finite-Rate Ablation Model** C. Alba, R. Greendyke, Air Force Institute of Technology, Wright-Patterson AFB, OH; J. Marschall, SRI International, Menlo Park, CA

Wednesday, 7 January 2015						
301-UMS-5	**Unmanned Systems: Technologies and Applications II**					**Osceola Ballroom 2**
Chaired by: R. PRAZENICA, Embry-Riddle Aeronautical University, Daytona Beach						
1400 hrs AIAA-2015-1454 **Experimental Design of a Flapping Wing Micro Air Vehicle through Biomimicry of Bumblebees** M. Thompson, J. Burnett, D. Ixtabalan, D. Tran, A. Batra, A. Rodriguez, Arizona State University, Tempe, AZ; et al.	1430 hrs AIAA-2015-1455 **Development and Testing of an Unmanned Aerial System with Micro-Fiber Composite Actuators** M. Chan, H. Moncayo, A. Perez Rocha, R. Prazenica, D. Kim, B. Azizi, Embry-Riddle Aeronautical University, Daytona Beach, FL	1500 hrs AIAA-2015-1456 **Optimizing Energy Efficiency of a Flapping Robotic Bird Through Application of Evolutionary Algorithms** B. Perseghetti, J. Gallagher, Wright State University, Dayton, OH; J. Goppert, S. Yantek, E. Matson, I. Hwang, Purdue University, West Lafayette, IN	1530 hrs AIAA-2015-1458 **Search and Rescue using Unmanned Aerial Vehicles** S. Bhandari, A. Bettadapura, O. Dadian, M. Gan, J. Dayton, California Polytechnic State University, Pomona, CA	1600 hrs AIAA-2015-1459 **CO_2 Plume Detection Using UAS** C. Brown, T. Mitchell, J. Jacob, Oklahoma State University, Stillwater, OK		

Wednesday, 7 January 2015						
302-WE-11	**Wind Turbine Aeroelasticity and Structural Dynamics**					**Emerald 4**
Chaired by: C. BOTTASSO, Technichse Universität München						
1400 hrs AIAA-2015-1460 **Aeroelastic Modeling of Wind Turbine Blades Using Harmonic Balance and γ-Re_θt Transition Model** J. Howison, K. Ekici, University of Tennessee, Knoxville, Knoxville, TN; J. Thomas, Duke University, Durham, NC	1430 hrs AIAA-2015-1461 **FAST Modular Framework for Wind Turbine Simulation: New Algorithms and Numerical Examples** M. Sprague, J. Jonkman, B. Jonkman, National Renewable Energy Laboratory, Golden, CO	1500 hrs AIAA-2015-1462 **Towards Multidisciplinary Wind Turbine Design using High-Fidelity Methods** M. Imiela, F. Wienke, German Aerospace Center (DLR), Braunschweig, Germany	1530 hrs AIAA-2015-1463 **Aeroelastic Time-Domain Simulation of SNL Smart Rotor Experiment** L. Bernhammer, R. De Breuker, G. van Kuik, Delft University of Technology, Delft, The Netherlands	1600 hrs AIAA-2015-1464 **Prediction and Alleviation of Flutter in Swept Wind Turbine Blades** S. Larwood, University of the Pacific, Stockton, CA	1630 hrs AIAA-2015-1465 **BeamDyn: A High-Fidelity Wind Turbine Blade Solver in the FAST Modular Framework** Q. Wang, National Renewable Energy Laboratory, Golden, CO; N. Johnson, Colorado School of Mines, Golden, CO; M. Sprague, J. Jonkman, National Renewable Energy Laboratory, Golden, CO	

Wednesday, 7 January 2015						
303-WE-12	**Wind Energy Atmospheric Physics and Inflow**					**Emerald 6**
Chaired by: S. SCHRECK, NREL and S. SCHMITZ, Pennsylvania State University						
1400 hrs AIAA-2015-1466 **The effect of stability on the intermittent nature of atmospheric winds** M. Sherry, University of Calgary, Calgary, Canada	1430 hrs AIAA-2015-1467 **Turbulent wind field characterization and re-generation based on pitot tube measurements mounted on a wind turbine** M. Pedersen, T. Larsen, G. Larsen, H. Madsen, Technical University of Denmark, Roskilde, Denmark	1500 hrs AIAA-2015-1468 **Turbulent Flow and Heat Transport over a Two-dimensional Steep Hill: Wind-tunnel Experiments** W. Zhang, University of Minnesota, Minneapolis, Minneapolis, MN; C. Markfort, F. Porte-Agel, Swiss Federal Institute of Technology, Lausanne, Switzerland	1530 hrs AIAA-2015-1469 **Real-Time Flow Prediction of Low-Level Atmospheric Turbulence** R. Kikuchi, T. Misaka, S. Obayashi, Tohoku University Institute of Fluid Science, Sendai, Japan	1600 hrs AIAA-2015-1470 **Comparing wall modeled LES and prescribed boundary layer approach in infinite wind farm simulations** H. Chivaee, R. Mikkelsen, Technical University of Denmark, Lyngby, Denmark	1630 hrs AIAA-2015-1471 **Simulation of wind turbine wakes on locally refined Cartesian grids** D. Angelidis, F. Sotiropoulos, University of Minnesota, Minneapolis, Minneapolis, MN	1700 hrs AIAA-2015-1472 **Development of CFD-based icing model for wind turbines: A case study of ice sensor** M. Pedersen, Vattenfall Vindkraft, Fredericia, Denmark; C. Yin, Aalborg University, Aalborg, Denmark; A. Billstein Andersson, Vattenfall Vindkraft, Fredericia, Denmark

Wednesday, 7 January 2015		
304-LEC-5 **1800 - 1900 hrs**	**Structures, Structural Dynamics, and Materials Lecture: Aerospace Structural Design and Safety: Do We Need Fewer Tests or More?**	**Osceola Ballroom B**

Raphael Haftka
Distinguished Professor
University of Florida

Thursday

Thursday, 8 January 2015		
305-PLNRY-4 **0800 - 0900 hrs**	**Diversity & Inclusion in the Aerospace Workforce**	**Osceola Ballroom CD**

Moderator: Sandra H. Magnus, Executive Director, American Institute of Aeronautics and Astronautics

Panelists:

Wesley Harris
Charles Stark Draper Professor of Aeronautics & Astronautics
Massachusetts Institute of Technology

Julio Navarro
Senior Technical Fellow
The Boeing Company

Alton Romig
Vice President
Advanced Development Programs, The Skunk Works
Lockheed Martin Aeronautics

Tom Shih
Professor and Head of Aeronautics and Astronautics
Purdue University

Yvette Weber
Director C-5 Program
United States Air Force

Thursday, 8 January 2015						
306-ABPSI-1	**Propulsion Integration and Controls**					**Emerald 2**
Chaired by: R. SCHARNHORST, Boeing Defense, Space & Security and R. NICHOLS, The University of Alabama at Birmingham						
0930 hrs AIAA-2015-1473 **Estimation of optimal flight altitude for an aircraft** A. Singh, S. Dhawan, SRM University, Chennai, India	1000 hrs AIAA-2015-1474 **Dynamic Friction Measurements on a Small Engine Test Bench** K. Horn, A. Rowton, M. Polanka, J. Ausserer, Air Force Institute of Technology, Wright-Patterson AFB, OH; P. Litke, Air Force Research Laboratory, Wright-Patterson AFB, OH; K. Grinstead, Innovative Scientific Solutions, Inc., Dayton, OH	1030 hrs AIAA-2015-1475 **Key Parameters Of Air Breathing Two-Stroke Combustion Engines For Integration Into Small Scale UAVs** O. Ariff, E. Salami, F. Romli, Putra University, Serdang, Malaysia	1100 hrs AIAA-2015-1476 **Validation of an Integrated Airframe and Turbofan Engine Simulation for Evaluation of Propulsion Control Modes** J. Litt, NASA Glenn Research Center, Cleveland, OH; Y. Liu, N&R Engineering, Inc., Parma Heights, OH; T. Sowers, Vantage Partners, LLC, Brook Park, OH; A. Owen, Self, North Royalton, OH; T. Guo, NASA Glenn Research Center, Cleveland, OH			

Thursday, 8 January 2015						
307-ACD-4 **0930 - 1230 hrs**	**Conceptual Aircraft Design Working Group (CADWG21) Panel: *How much fidelity in conceptual aircraft design?***					**Naples 3**
Chaired by: T. TAKAHASHI, Arizona State University and W. ANEMAAT, DARcorporation						
Panelists: **Jason Merret** Gulfstream Aerospace	**Colin Johnson** Desktop Aeronautics	**Jason Welstead** NASA/LaRC	**Shreekant Agrawal** Northrop Grumman Corporation	**Ed Alyanak** AFRL/RVQC	**Arthur Rizzi** KTH Royal Institute of Technology	**Juan Alonso** Stanford University

Thursday, 8 January 2015						
308-AFM-11	**Flight Test and System Identification**					**Captiva 1**
Chaired by: B. LEONHARDT, DB Aircraft, LLC and J. GRAUER, NASA Langley Research Center						
0930 hrs AIAA-2015-1477 **High Angle of Attack Model Identification with Compressibility Effects** J. Dias, Brazilian Air Force, São José dos Campos, Brazil	1000 hrs AIAA-2015-1478 **Fuel State Reconstruction for Maneuvering Aircraft** E. Ozger, Ingolstadt University of Applied Sciences, Ingolstadt, Germany	1030 hrs AIAA-2015-1479 **Quadrotor 6-DOF HIL Simulation and Verification Using a 6-axis Load Cell** T. Fields, G. King, University of Missouri, Kansas City, Kansas City, MO	1100 hrs AIAA-2015-1480 **System Identification and Handling Quality Analysis of a UAV from Flight Test Data** O. Simsek, Turkish Aerospace Industries, Inc., Ankara, Turkey; O. Tekinalp, Middle East Technical University, Ankara, Turkey	1130 hrs AIAA-2015-1481 **Flight test results of Observer/ Kalman Filter Identification of the Pegasus unmanned vehicle** T. Woodbury, J. Valasek, F. Arthurs, Texas A&M University, College Station, TX		

Thursday, 8 January 2015						
309-AMT-5	**Aerodynamic Diagnostics Tool for High Speed Flows**					**Tallahassee 1**
Chaired by: J. WAGNER, Sandia National Laboratories and S. ZAIDI, Agilent Technologies						
0930 hrs AIAA-2015-1482 **Gas-Phase Temperature Measurements at the Exhaust of a J85 Engine using Coherent Anti-Stokes Raman Scattering** A. Alexander, Aerospace Testing Alliance, Arnold AFB, TN; P. Hsu, Spectral Energies, LLC, Dayton, OH; J. Wehrmeyer, Aerospace Testing Alliance, Arnold AFB, TN; S. Roy, Spectral Energies, LLC, Dayton, OH; J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Kriesel, Opto-Knowledge Systems, Inc., Torrance, CA	1000 hrs AIAA-2015-1483 **Laser Doppler Velocimetry in Supersonic Round Jets** A. Karns, R. Powers, D. McLaughlin, Pennsylvania State University, University Park, PA	1030 hrs AIAA-2015-1484 **Krypton Tagging Velocimetry for Use in High-Speed Ground-Test Facilities** N. Parziale, Stevens Institute of Technology, Hoboken, NJ; M. Smith, Aerospace Testing Alliance, Silver Spring, MD; E. Marineau, Arnold Engineering Development Complex, Silver Spring, MD	1100 hrs AIAA-2015-1485 **Method for spectra estimation from high-speed experimental data at discrete points in time** A. Schreyer, L. Larchevêque, P. Dupont, National Center for Scientific Research (CNRS), Marseille, France	1130 hrs AIAA-2015-1486 **Application of a Focusing Schlieren Deflectometry Velocimeter in Supersonic Flow** J. Geerts, K. Yu, University of Maryland, College Park, College Park, MD		

Thursday, 8 January 2015						
310-APA-30	**Aerodynamic Design: Analysis, Methodologies & Optimization Techniques III**					**Naples 1**
Chaired by: A. VANDERWYST, Raytheon Missile Systems and K. DENISSEN, Sandia National Labs						
0930 hrs AIAA-2015-1487 **Optimization of MVG Position for Control of Shock Boundary Layer Interaction** C. Liu, Y. Yang, Y. Yan, University of Texas, Arlington, Arlington, TX	1000 hrs AIAA-2015-1488 **Using Mesh Adjoint for Shock Bump Deployment and Optimisation on Transonic Wings** F. Zhu, N. Qin, University of Sheffield, Sheffield, United Kingdom	1030 hrs AIAA-2015-1489 **Multi-Winglets: Multi-Objective Optimization of Aerodynamic Shapes** S. Reddy, G. Dulikravich, A. Abdoli, Florida International University, Miami, FL; H. Sobieczky, Vienna University of Technology, Vienna, Austria	1100 hrs AIAA-2015-1490 **Effect of surface morphing on the wake structure and performance of pitching-rotating plates** Y. Ren, H. Dong, University of Virginia, Charlottesville, Charlottesville, VA			

Thursday, 8 January 2015						
311-APA-31	**Propeller/Rotorcraft/Wind Turbine Aerodynamics II**					**Naples 2**
Chaired by: M. CALVERT, U.S. Army AMRDEC and J. MURRAY, Sandia National Laboratories						
0930 hrs AIAA-2015-1491 **Fully Implicit Discrete Adjoint Methods** M. Biava, M. Woodgate, G. Barakos, University of Liverpool, Liverpool, United Kingdom	1000 hrs AIAA-2015-1492 **Tip Vortex Dynamics of a Pitching Rotor Blade Tip Model** C. Wolf, C. Merz, K. Richter, M. Raffel, German Aerospace Center (DLR), Göttingen, Germany	1030 hrs AIAA-2015-1493 **An Experimental Study of the Effects of Winglets and Serrations on the Wake of a Wind Turbine** V. Klimchenko, A. Jones, University of Maryland, College Park, College Park, MD	1100 hrs AIAA-2015-1494 **Characterization of blade throw from a 2.3MW horizontal axis wind turbine upon failure** H. Chivaee, J. Sørensen, Technical University of Denmark, Lyngby, Denmark	1130 hrs AIAA-2015-1495 **A Damage Assessment for Wind Turbine Blades from Heavy Atmospheric Particles** G. Fiore, G. Camarinha Fujiwara, M. Selig, University of Illinois, Urbana-Champaign, Urbana, IL		

Thursday, 8 January 2015						
312-APA-32	**Applied CFD & Numerical Correlations with Experimental Data II**					**Destin 1**
Chaired by: E. FELTROP, The Cessna Aircraft Company and D. O'BRIEN, US Army RDECOM						
0930 hrs AIAA-2015-1496 **Detached Eddy Simulation for the F-16XL Aircraft Configuration** A. Elmiligui, K. Abdol-Hamid, NASA Langley Research Center, Hampton, VA; E. Parlette, ViGYAN, Inc., Hampton, VA	1000 hrs AIAA-2015-1497 **Numerical Study of Ditching Characteristics of a Transport Aircraft by Global Moving Mesh** Q. Qu, M. Hu, H. Guo, P. Liu, Beihang University, Beijing, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO	1030 hrs AIAA-2015-1498 **Effect of Tail Dihedral Angle on Lateral Directional Stability due to Sideslip Angles** N. Musa, S. Mansor, A. Ali, M. Che Man, University of Technology, Malaysia, Skudai, Malaysia	1100 hrs AIAA-2015-1499 **Numerical Simulation of the Flowfield around Airfoil with Spoiler using the Higher Order Spectral Difference Method** M. Alhawwary, F. Owis, M. Abdelrahman, Cairo University, Giza, Egypt	1130 hrs AIAA-2015-1500 **Integrated Aerodynamic Benefits of Distributed Propulsion** A. Wick, J. Hooker, Lockheed Martin Corporation, Marietta, GA; C. Zeune, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Thursday, 8 January 2015						
313-APA-33	**High-Angle-of-Attack & High-lift Aerodynamics**					**Sun Ballroom A**
Chaired by: A. SCLAFANI, Boeing Engineering Operations & Technology and J. AZEVEDO						
0930 hrs AIAA-2015-1501 **Time-Resolved Measurements of Cellular Separation on a Stalling Airfoil** K. Disotell, J. Gregory, Ohio State University, Columbus, OH	1000 hrs AIAA-2015-1502 **Geometrically-Exact Extension of Theodorsen's Frequency Response Model** H. Taha, University of California, Irvine, Irvine, CA; Z. Yan, M. Hajj, Virginia Polytechnic Institute and State University, Blacksburg, VA	1030 hrs AIAA-2015-1503 **Experimnetal Investigations of the Lift Frequency Response at High Angels of Attack** M. Zakaria, H. Taha, M. Hajj, Virginia Polytechnic Institute and State University, Blacksburg, VA				

Thursday, 8 January 2015						
314-APA-34	**Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-up Air Vehicles IV**					**Destin 2**
Chaired by: N. HARIHARAN, CREATE-AV and J. FORSYTHE						
0930 hrs AIAA-2015-1504 **Static and Dynamic CFD Analysis of a Generic Swept Wing UCAV** E. Lynch, A. Crowell, J. Lee, Naval Air Systems Command, Patuxent River, MD	1000 hrs AIAA-2015-1505 **Investigation of Aeroelastic Flow Control of a Fluttering Wing with HPCMP CREATE™-AV Kestrel** C. Fagley, J. Seidel, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1030 hrs AIAA-2015-1506 **A Flight Simulator for Agile Fighter Aircraft and Nonlinear Aerodynamics** H. Carlson, R. Verberg, Clear Science Corporation, Harford, NY	1100 hrs AIAA-2015-1507 **Ensuring a smooth transition from semi-structured surface boundary layer mesh to fully unstructured anisotropic surface mesh** R. Aubry, Naval Research Laboratory, Washington, DC	1130 hrs AIAA-2015-1508 **CREATE-AV DaVinci 3.0 and Capstone Integration** G. Brooks, Secure Mission Solutions, North Charleston, SC		

Thursday, 8 January 2015						
315-AS-6	**Space Applications**					**Osceola Ballroom 6**
Chaired by: G. AGNES, Jet Propulsion Laboratory and R. BARRETT-GONZALEZ, The University of Kansas						
0930 hrs AIAA-2015-1509 **A Morphing Radiator for High-Turndown Thermal Control of Crewed Space Exploration Vehicles** T. Cognata, Paragon Space Development Corporation, Houston, TX; D. Hartl, Texas A&M University, College Station, TX; R. Sheth, C. Dinsmore, NASA Johnson Space Center, Houston, TX	1000 hrs AIAA-2015-1510 **Analysis of Highly Coupled Thermal-Structural Responses in Morphing Radiative Bodies** C. Bertagne, D. Hartl, Texas A&M University, College Station, TX; T. Cognata, Paragon Space Development Corporation, Houston, TX	1030 hrs AIAA-2015-1511 **The Spacecraft SHM Experiment, Part 1: Development for Space Flight** D. Doyle, S. Lee, J. Stein, Air Force Research Laboratory, Kirtland AFB, NM; S. Kessler, Metis Design Corporation, Boston, MA	1100 hrs AIAA-2015-1512 **LQR Using Second Order Voctor Form for a Membrane with Bimorph Actuators** I. Ferhat, C. Sultan, Virginia Polytechnic Institute and State University, Blacksburg, VA			

Thursday, 8 January 2015		
316-DE-3 **0930 - 1230 hrs**	**Wildlife Conservation UAV Challenge (wcUAVc)**	**Sun Ballroom D**
Chaired by: L. SAAM, ATA Engineering, Inc. (HQ) and G. CREARY, NASA-Langley Research Center		
Moderator: Princess Aliyah Pandolfi, CEO - Kashmir World Foundation, wcUAVc Director Panelists: **Jean Koster**, Team AREND **Samay Sigamani**, Team CruiseAders **Toby Lankford**, Team Aerial Vista Challenge **Satyanarayanan Janakiraman**, Team SRM SCRO		

Thursday, 8 January 2015						
317-EDU-1	**Advancing Aerospace Education I**					**Emerald 6**
Chaired by: R. LEBEAU, Saint Louis University						
0930 hrs Oral Presentation **Empowering engineers through structured online learning of CAE** L. Bodnar, MSC Software Corporation, Newport Beach, CA	1000 hrs AIAA-2015-1513 **Undergraduate Research on Peculiarities of the Combustion of Ecologically Clean Paraffin Wax Fuels in Hybrid Propellant Rocket Engines** V. Naoumov, N. Al Masoud, P. Skomin, P. Deptula, Central Connecticut State University, New Britain, CT	1030 hrs AIAA-2015-1514 **A Massive Open Online Course in Aerodynamics** D. Darmofal, Massachusetts Institute of Technology, Cambridge, MA	1100 hrs AIAA-2015-1515 **A Collaborative Conceptual Aircraft Design Environment for the Design of Small-Scale UAVs in a Multi-University Setting** J. Becar, S. Gorrell, Brigham Young University, Provo, UT; B. Newill, Noesis Solutions, Carmel, IN	1130 hrs AIAA-2015-1516 **Forensic Engineering: Learning by Accident Teaching Investigation Skills to Graduate Students using Real-Life Accident Simulations** C. Rans, G. Saunders-Smits, M. Schuurman, Delft University of Technology, Delft, The Netherlands		

Thursday, 8 January 2015						
318-FD-40	**Swept and 3D Shock Boundary Layer Interactions**					**Daytona 1**
Chaired by: J. LITTLE, The University of Arizona and J. AUSTIN, University of Illinois at Urbana-Champaign						
0930 hrs AIAA-2015-1517 **Shock-Boundary Layer Interaction due to a Sharp Unswept Fin in a Mach 2 Flow** N. Arora, M. Ali, F. Alvi, Florida State University, Tallahassee, FL	1000 hrs AIAA-2015-1518 **Large Eddy Simulation of A Three-Dimensional Compression Ramp Shock-Turbulent Boundary Layer Interaction** D. Dawson, S. Lele, Stanford University, Stanford, CA	1030 hrs AIAA-2015-1519 **Boundary layer separation in a 3D shock train** R. Klomparens, M. Gamba, J. Driscoll, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2015-1520 **Study of Shock-shock interaction for a double wedge configuration using a particle approach** O. Tumuklu, D. Levin, Pennsylvania State University, University Park, PA; S. Gimelshein, University of Southern California, Los Angeles, CA; J. Austin, University of Illinois, Urbana-Champaign, Urbana, IL			

Thursday, 8 January 2015						
319-FD-41	**Turbulence**					**Tallahassee 3**
Chaired by: E. GUTMARK, University of Cincinnati						
0930 hrs AIAA-2015-1521 **Volumetric Three-Component Measurements of Air Jet Flows of Different Diffuser Designs** R. Wahidi, S. Olcmen, University of Alabama, Tuscaloosa, Tuscaloosa, AL; W. Lai, TSI, Inc., Shoreview, MN	1000 hrs AIAA-2015-1522 **Stereoscopic PIV measurements and numerical simulation of turbulent flow of liquid passing through rectangular apertures in a narrow annulus: influence of aperture shape on velocity field** Y. Perelstein, E. Gutmark, University of Cincinnati, Cincinnati, OH	1030 hrs AIAA-2015-1523 **Numerical Simulation of Pressure Recovery and Distortion in an Aircraft Engine Intake Serpentine Diffuser with Vortex Generator Vanes** B. Sasanapuri, ANSYS, Inc., Pune, India; K. Kurbatskii, ANSYS, Inc., Lebanon, NH; S. Kumar, ANSYS, Inc., Pune, India	1100 hrs AIAA-2015-1524 **DNS Study on Hairpin Vortex Structure in Turbulence** C. Liu, Y. Yan, H. Al-Dujaly, University of Texas, Arlington, Arlington, TX	1130 hrs AIAA-2015-1525 **Noise control of cavity flows for subsonic flows** A. das Gupta, S. Roy, University of Florida, Gainesville, Gainesville, FL		

Thursday, 8 January 2015						
320-FD-42	**Turbulence Modeling II**					**Sanibel 3**
Chaired by: R. RANJAN, Georgia Institute of Technology and Y. SEE, University of Michigan						
0930 hrs AIAA-2015-1526 **Hybrid two-level large-eddy simulation of turbulent flow in a channel, past a bump and around an inclined prolate spheroid** R. Ranjan, S. Menon, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2015-1527 **Turbulence Modeling for Realistic Computation of Internal Flow in Liquid Ejector Pumps** J. Masud, M. Imran, Air University, Islamabad, Pakistan					

Thursday, 8 January 2015						
321-FD-43	**Turbulent Flow Solutions for NACA 0012 and Other Test Cases from the Turbulence Model Resource Website: Residual and Grid Convergence I (Invited)**					**Sanibel 2**
Chaired by: K. FIDKOWSKI, University of Michigan and W. ANDERSON, SimCenter at University of Tennessee at Chattanooga						
0930 hrs AIAA-2015-1529 **High-Order Discontinuous Galerkin Mesh Resolved Turbulent Flow Simulations of a NACA 0012 Airfoil (Invited)** M. Brazell, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY	1000 hrs AIAA-2015-1530 **Application of a Higher-order Adaptive Method to RANS Test Cases (Invited)** Y. Hu, C. Wagner, S. Allmaras, M. Galbraith, D. Darmofal, Massachusetts Institute of Technology, Cambridge, MA	1030 hrs Oral Presentation **Benchmark Turbulent Flow Simulations with a RANS High-order CPR Formulation (Invited)** C. Zhou, Z. Wang, University of Kansas, Lawrence, Lawrence, KS	1100 hrs AIAA-2015-1531 **Finite-Element Solutions for Turbulent Flow over the NACA 0012 Airfoil (Invited)** W. Anderson, J. Newman, L. Wang, S. Kapadia, University of Tennessee, Chattanooga, Chattanooga, TN	1130 hrs AIAA-2015-1532 **High-Order Output-Based Adaptive Simulations of Turbulent Flow in Two Dimensions (Invited)** M. Ceze, K. Fidkowski, University of Michigan, Ann Arbor, Ann Arbor, MI	1200 hrs Oral Presentation **A comparative study of grid convergence and accuracy for structured, unstructured and adaptive grid discretizations in 2D (Invited)** D. Kamenetskiy, The Boeing Company, Seattle, WA	

Thursday, 8 January 2015						
322-FD-44	**Unsteady Flow III**					**Sun Ballroom 6**
Chaired by: Q. WANG, MIT and A. GROSS, New Mexico State University						
0930 hrs AIAA-2015-1533 **Development of a Navier-Stokes-Based Numerical method for Basic State Perturbation Analysis** S. Bhaumik, D. Gaitonde, M. Waindim, Ohio State University, Columbus, OH	1000 hrs AIAA-2015-1534 **Multiple Shooting Shadowing for Sensitivity Analysis of Chaotic Systems and Turbulent fluid flows** P. Blonigan, Q. Wang, Massachusetts Institute of Technology, Cambridge, MA	1030 hrs AIAA-2015-1535 **Afterbody Effects on Axisymmetric Base Flows** V. Gentile, F. Schrijer, B. van Oudheusden, F. Scarano, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2015-1536 **An Analysis of the Unsteady Wake Behind a Circular Cylinder using Lagrangian Coherent Structures** M. Rockwood, M. Green, Syracuse University, Syracuse, NY	1130 hrs AIAA-2015-1537 **Eulerian and Lagrangian Methods for Detecting Vortex Formation and Shedding** Y. Huang, M. Green, Syracuse University, Syracuse, NY		

Thursday, 8 January 2015						
323-GEPC-3	**NASA Transformational Tools and Technologies (T3) Project Recent Modeling Advances**					**Sun Ballroom C**
Chaired by: D. WILLIAMS, NASA Langley Research Center and M. ROGERS, NASA Ames Research Center						
0930 hrs Oral Presentation **NASA T3 Project and Modeling Vision** J. Heidmann, NASA Glenn Research Center, Cleveland, OH; D. Williams, NASA Langley Research Center, Hampton, VA; M. Rogers, NASA Ames Research Center, Moffett Field, CA	1000 hrs Oral Presentation **Test Cases for NASA's Revolutionary Computational Aerosciences Technical Challenge (Invited)** C. Rumsey, NASA Langley Research Center, Hampton, VA; J. DeBonis, NASA Glenn Research Center, Cleveland, OH; M. Malik, NASA Langley Research Center, Hampton, VA	1030 hrs Oral Presentation **Recent Developments in FUN3D: Entropy Stable DG-FEM** M. Carpenter, E. Nielsen, NASA Langley Research Center, Hampton, VA; M. Parsani, Oak Ridge Associated Universities, Oak Ridge, TN	1100 hrs Oral Presentation **NASA's Modelling and Simulation Tools for Liquid-Fueled Turbulent Combustion** N. Liu, C. Wey, NASA Glenn Research Center, Cleveland, OH	1130 hrs Oral Presentation **NASA's Aeroacoustic Tools and Methods for Analysis of Aircraft Noise** S. Rizzi, L. Lopes, C. Burley, NASA Langley Research Center, Hampton, VA	1200 hrs Oral Presentation **Advances in Methods for Solving Large Scale Design Problems Using Automatic Multidisciplinary Derivatives with NASA's OpenMDAO** J. Gray, NASA Glenn Research Center, Cleveland, OH	

Thursday, 8 January 2015						
324-GNC-30	**Advances in UAS Technologies II**					**Miami 1**
Chaired by: F. HOLZAPFEL, Technische Universität München and N. HOVAKIMYAN, University of Illinois at Urbana-Champaign						
0930 hrs AIAA-2015-1538 **Aerodynamic Parameter Identification and Uncertainty Quantification for Small Unmanned Aircraft** L. Hale, M. Patil, C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA	1000 hrs AIAA-2015-1539 **Open-Loop Quadrotor Flight Dynamics Identification in Frequency Domain via Closed-Loop Flight Testing** P. Niermeyer, T. Raffler, F. Holzapfel, Technical University of Munich, Munich, Germany	1030 hrs AIAA-2015-1540 **Herding a Flock of Birds Approaching an Airport Using an Unmanned Aerial Vehicle** S. Gade, University of Illinois, Urbana-Champaign, Urbana, IL; A. Paranjape, McGill University, Montréal, Canada; S. Chung, University of Illinois, Urbana-Champaign, Urbana, IL	1100 hrs AIAA-2015-1541 **Verified Planar Formation Control Algorithms by Composition of Primitives** L. Bobadilla, Florida International University, Miami, FL; T. Johnson, University of Texas, Arlington, Arlington, TX; A. LaViers, University of Virginia, Charlottesville, Charlottesville, VA			

Thursday, 8 January 2015						
325-GNC-31	**Loss of Control Mitigation and Recovery**					**Sun Ballroom 3**
Chaired by: F. ALMEIDA, Instituto de Aeronáutica e Espaço and P. SHANKAR, California State Univ						
0930 hrs AIAA-2015-1542 **Nonlinear Smooth Trackers with Control Rates Constraints for Aeronautical Vehicles Loss-Of-Control Autonomous Recovery** J. Dongmo, JetMech.Inc., Parkville, MD	1000 hrs AIAA-2015-1543 **Loss-Of-Control Autonomous Flight Recovery Regimes using Feedback Linearization and High Order Sliding Mode Control with Exponential Observers** J. Dongmo, JetMech.Inc., Parkville, MD	1030 hrs AIAA-2015-1544 **Preliminary Evaluation of the SAFE-Cue Warning Display for Loss of Control Mitigation** A. Lampton, D. Klyde, D. Lee, P. Schulze, Systems Technology, Inc., Hawthorne, CA; B. Cogan, NASA Armstrong Flight Research Center, Edwards, CA	1100 hrs AIAA-2015-1545 **Recovery of an Aircraft from the Loss of Control Using Open Final Time Dynamic Optimization and Receding Horizon Control** G. Garcia, S. Keshmiri, W. Huang, University of Kansas, Lawrence, Lawrence, KS	1130 hrs AIAA-2015-1546 **Piloted Simulator Evaluation of Maneuvering Envelope Information for Flight Crew Awareness** T. Lombaerts, German Aerospace Center (DLR), Oberpfaffenhofen, Germany; S. Schuet, D. Acosta, J. Kaneshige, NASA Ames Research Center, Moffett Field, CA; K. Shish, Millennium Engineering and Integration Company, Moffett Field, CA		

Thursday, 8 January 2015						
326-GNC-32	**Guidance, Navigation and Control Concepts in Air Traffic Control Systems II**					**Sun Ballroom 4**
Chaired by: A. CHAKRAVARTHY, Wichita State University and X. BAI						
0930 hrs AIAA-2015-1547 **Remote Detection of Turbulence via ADS-B** J. Krozel, Innovation Laboratory, Inc., Portland, OR; R. Sharman, National Center for Atmospheric Research, Boulder, CO	1000 hrs AIAA-2015-1548 **Detecting Convective Induced Turbulence via Total Lightning Sensing** J. Krozel, Innovation Laboratory, Inc., Portland, OR; W. Deierling, R. Sharman, J. Williams, National Center for Atmospheric Research, Boulder, CO					

Thursday, 8 January 2015						
327-GNC-33	**Mini/Micro Air Vehicle GNC I**					**Sun Ballroom 4**
Chaired by: M. OPPENHEIMER, AFRL/RBCA and S. THEODOULIS, French German Research Institute						
0930 hrs No Presentations		1030 hrs AIAA-2015-1549 **Experimental Measurements of Cycle Averaged Forces for a Flapping Wing Vehicle** M. Oppenheimer, Air Force Research Laboratory, Wright-Patterson AFB, OH; I. Weintraub, D. Sigthorsson, General Dynamics Information Technology, Dayton, OH; D. Doman, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2015-1550 **Effect of Wing Flexibility and Motor Dynamics on Split-Cycle Control of Flapping Wing Vehicles** S. Nogar, A. Serrani, A. Gogulapati, J. McNamara, Ohio State University, Columbus, OH	1130 hrs AIAA-2015-1551 **Roll Stability Regimes at Low Reynolds Numbers** M. Shields, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1200 hrs AIAA-2015-1552 **A Geometric Control Approach for the Longitudinal Flight Stability of Hovering Insects/FWMAVs** H. Taha, University of California, Irvine, Irvine, CA	

Thursday, 8 January 2015						
328-GNC-34	**Spacecraft Guidance, Navigation, and Control IV**					**Sun Ballroom 5**
Chaired by: D. ALAZARD, Institut Supérieur de l'Aéronautique et de l'Espace						
0930 hrs AIAA-2015-1553 **Distributed Consensus-Based Kalman Filter Estimation and Control of Formation Flying Spacecraft: Simulation and Validation** T. Vu, A. Rahmani, University of Miami, Coral Gables, FL	1000 hrs AIAA-2015-1554 **Evolutionary Optimization of Satellite Formation Topology Over a Region of Interest** D. Hinckley, D. Hitt, M. Eppstein, University of Vermont, Burlington, Burlington, VT	1030 hrs AIAA-2015-1555 **Nonlinear Control to Maneuver a Two-Craft Coulomb Formation at Libration Points** M. Gomroki, O. Tekinalp, Middle East Technical University, Ankara, Turkey	1100 hrs AIAA-2015-1556 **The Results of the AOCS Solutions and Technologies study for the Next Generation Gravity Mission** A. Bacchetta, M. Buonocore, S. Cesare, S. Dionisio, M. Parisch, Thales Group, Turin, Italy; E. Canuto, Technical University of Turin, Turin, Italy; et al.			

Thursday, 8 January 2015						
329-GT-5	**High Reynolds Number Aerodynamics and Testing (Invited)**					**Sanibel 1**
Chaired by: W. KILGORE, NASA Langley Research Center and J. QUEST, ETW GmbH						
0930 hrs AIAA-2015-1557 **Influences of Models on the Unsteady Pressure Characteristics of the NASA National Transonic Facility** G. Jones, NASA Langley Research Center, Hampton, VA; S. Balakrishna, ViGYAN, Inc., Hampton, VA; J. DeMoss, Analytical Services & Materials, Inc., Hampton, VA; S. Goodliff, Jacobs, Hampton, VA	1000 hrs AIAA-2015-1558 **Combination of Temperature Sensitive Paint and Carbon Nanotubes for Transition Detection** C. Klein, U. Henne, German Aerospace Center (DLR), Göttingen, Germany	1030 hrs AIAA-2015-1559 **Overview about the HINVA A320 High Lift Flight Reynolds Number Test Campaign** R. Rudnik, German Aerospace Center (DLR), Braunschweig, Germany	1100 hrs AIAA-2015-1560 **Tracking the Nacelle Vortex above Aircraft Wing in the ETW at Real Mach- and Reynolds Numbers by Means of PIV** R. Konrath, German Aerospace Center (DLR), Göttingen, Germany	1130 hrs Oral Presentation **Facility Improvement and Data Optimization (FIDO) Efforts at the NASA NTF** R. Paryz, E. Walker, NASA Langley Research Center, Hampton, VA	1200 hrs Oral Presentation **Testing of Laminar Wings at High Reynolds Numbers** W. Kühn, Airbus, Bremen, Germany	

Thursday, 8 January 2015						
330-GT-6	**Unique or Innovative Uses of Existing GTF and Support Systems**					**Miami 3**
Chaired by: V. CANACCI, Jacobs Technology						
0930 hrs AIAA-2015-1561 **Wind Tunnel Test On The Breakthrough Laminar Aircraft Demonstrator Europe In The DNW-LLF** I. Philipsen, J. Postma, K. Artois, DNW, Marknesse, The Netherlands	1000 hrs AIAA-2015-1562 **Errors in Off-axis Loading of Off-the-shelf 6-Component Force Transducers: A Cautionary Tale** S. Gunasekaran, A. Altman, University of Dayton, Dayton, OH; M. Ol, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2015-1563 **Development and Experimental Validation of a Dynamic Model for Wind-Tunnel Heat Exchangers** P. Sutcliffe, M. Rennie, E. Jumper, University of Notre Dame, Notre Dame, IN	1100 hrs AIAA-2015-1564 **An Experimental Four-Component Optical Fibre Balance** F. Pieterse, University of Johannesburg, Johannesburg, South Africa	1130 hrs AIAA-2015-1565 **Effects of Low Subsonic Wind Tunnel Model Hardware Surface Treatments on Drag** A. Holup, N. Templon, B. Buerge, Wichita State University, Wichita, KS		

Thursday, 8 January 2015						
331-GTE-7	**Gas Turbine Combustion III**					**Emerald 1**
Chaired by: J. SMITH, GE Aviation						
0930 hrs AIAA-2015-1566 **Experimental Studies and Modeling of Acoustic Instabilities in a Gas Turbine Model Combustor** Y. Chen, J. Driscoll, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2015-1567 **A Finite-Volume Time-Domain Solver for Estimation of Combustion Instabilities** A. Jemcov, University of Notre Dame, Notre Dame, IN; E. Gonzalez, Combustion Science & Engineering, Inc., Columbia, MD	1030 hrs AIAA-2015-1568 **Numerical Investigation of Flame Shape Control by Dielectric Barrier Discharge Actuators** C. Wang, H. Tsao, Yuan Ze University, Chung, Taiwan	1100 hrs AIAA-2015-1569 **Effects of Physical Modeling on Combustion Instability Predictions in a Single-Element Lean Direct Injection Gas Turbine Combustor** C. Huang, R. Gejji, W. Anderson, Purdue University, West Lafayette, IN	1130 hrs AIAA-2015-1570 **Turbulent Premixed Flame Ignition and Stabilization Using a Detonation Wave** W. Haw, P. King, Air Force Institute of Technology, Wright-Patterson AFB, OH; B. Rankin, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Thursday, 8 January 2015						
332-IS-10	**Big Data & Analytics in Aerospace**					**Osceola Ballroom 3**
Chaired by: A. SRIVASTAVA, NASA Ames Research Center and N. OZA, NASA-Ames						
0930 hrs Oral Presentation **Visual Analytics at Boeing** D. Kasik, The Boeing Company, Seattle, WA	1000 hrs AIAA-2015-1571 **Multimodality in a Metroplex Environment: A case study in the San Francisco Bay Area** A. Marzuoli, E. Feron, Georgia Institute of Technology, Atlanta, GA; M. Hansen, A. Bayen, University of California, Berkeley, Berkeley, CA; E. Boidot, Georgia Institute of Technology, Atlanta, GA	1030 hrs Oral Presentation **Data Mining for Aviation Safety** N. Oza, NASA Ames Research Center, Moffett Field, CA	1100 hrs Oral Presentation **Role of Big Data, Data Analytics, and Networked Air Traffic Management** P. Kopardekar, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2015-1572 **A Neural Network Approach to Airport Management** O. Milbredt, E. Grunewald, German Aerospace Center (DLR), Braunschweig, Germany	1200 hrs AIAA-2015-1573 **A Jump-Linear Model based Sensitivity Study for Optimal Air Traffic Flow Management under Weather Uncertainty** Y. Zhou, J. Xie, Y. Wan, University of North Texas, Denton, TX	

Thursday, 8 January 2015						
333-IS-11	**Augmenting Adaptive Algorithms for Aircraft Control II**					**Osceola Ballroom 1**
Chaired by: N. NGUYEN, NASA-Ames Research Center						
0930 hrs AIAA-2015-1574 **Development of an Adaptive-optimal Multi-Objective Optimization Algorithm** A. Abdollahi, G. Chowdhary, Oklahoma State University, Stillwater, OK	1000 hrs AIAA-2015-1575 **Experimental Results for Adaptive, Optimal Control of a 2-DOF Helicopter** G. Atmeh, K. Subbarao, University of Texas, Arlington, Arlington, TX					

Thursday, 8 January 2015						
334-MAT-12	**Fatigue & Fracture III**					**Sarasota 1**
Chaired by: G. SEIDEL, Virginia Polytechnic Institute and State Universit and S. WANTHAL, The Boeing Company						
0930 hrs AIAA-2015-1576 **In Situ Study of Strain Energy Density at Notch Roots Using Digital Image Correlation** C. Holycross, M. Shen, Ohio State University, Columbus, OH; O. Scott-Emuakpor, T. George, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2015-1577 **A Novel Method for the Manipulation of Damage and In-Situ Repair of Composite T-Joints** J. Cullinan, M. Wisnom, I. Bond, University of Bristol, Bristol, United Kingdom	1030 hrs AIAA-2015-1578 **Cohesive Laws and Progressive Damage Analysis of Composite Bonded Joints, a Combined Numerical/Experimental Approach** D. Girolamo, National Institute of Aerospace, Hampton, VA; C. Davila, F. Leone, S. Lin, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2015-1579 **A Phantom Paired Element Based Discrete Crack Network (DCN) Toolkit for Residual Strength Prediction of Laminated Composites** E. Fang, X. Cui, T. Zhang, X. Liu, J. Lua, Global Engineering and Materials, Inc., Princeton, NJ	1130 hrs AIAA-2015-1580 **A Microstructurally-Informed, Continuum-Level Life Prediction Model for Thermo-Acousto-Mechanically Fatigued Ti-6242S and IN617** A. Gordon, A. Owji, T. Bouchenot, University of Central Florida, Orlando, FL; R. Penmetsa, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Thursday, 8 January 2015						
335-MAT-13	**Materials Testing & Characterization II**					**Sarasota 2**
Chaired by: D. JAWORSKE, NASA Glenn Research Center and R. NAIK, Pratt & Whitney						
0930 hrs AIAA-2015-1581 **Ablation, Thermal, and Morphological Properties of SiC Fibers Reinforced Ceramic Matrix Composites** T. Grantham, G. Tanner, R. Molina, N. Duong, J. Koo, University of Texas, Austin, Austin, TX	1000 hrs AIAA-2015-1582 **Strain Sensor Comparison for Improving Experimental Measurement of Hysteresis Energy** O. Scott-Emuakpor, Air Force Research Laboratory, Wright-Patterson AFB, OH; B. Langley, Universal Technology Corporation, Dayton, OH; C. Holycross, T. George, B. Runyon, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2015-1583 **Revisiting Mixed Mode Fracture in Laminated Composites Using Edge Delamination Strength Testing** S. Sharma, P. Smith, Hexcel Corporation, Dublin, CA	1100 hrs AIAA-2015-1584 **Design of Small-scale Ablative Testing Apparatus with Sample Position and Velocity Control** L. Gutierrez, J. Reyes, S. Scott, A. Sada, J. Koo, University of Texas, Austin, Austin, TX			

Thursday, 8 January 2015						
336-MDO-8	**MDO: AeroStructure Design II**					**Sarasota 3**
Chaired by: L. MAININI, Massachusetts Institute of Technology and J. MARTINS, University of Michigan						
0930 hrs AIAA-2015-1585 **Adaptive Sub-Space Approximations in Trust-Regions for Large Scale MDO problems** J. Ollar, Altair Engineering, Inc., Leamington Spa, United Kingdom; V. Toropov, Queen Mary University of London, London, United Kingdom; R. Jones, Altair Engineering, Inc., Leamington Spa, United Kingdom	1000 hrs AIAA-2015-1586 **Multi-Objective Experimental Optimization with Multiple Simultaneous Sampling for Flapping Wings** A. Chaudhuri, R. Haftka, K. Chang, J. Van Hall, P. Ifju, University of Florida, Gainesville, Gainesville, FL	1030 hrs AIAA-2015-1587 **Open-Source Conceptual Sizing Models for the Hyperloop Passenger Pod** J. Chin, J. Gray, NASA Glenn Research Center, Cleveland, OH				

Thursday, 8 January 2015						
337-MST-12	**Modeling of Vehicle Dynamics II**					**Sun Ballroom 1**
Chaired by: D. GINGRAS, Bihrle Applied Research Inc.						
0930 hrs AIAA-2015-1588 **Modeling and Control Design for a New Spacecraft Concept for Measuring Particles and Fields with Unprecedented Resolution and Accuracy** Y. Mao, D. Auslander, D. Pankow, University of California, Berkeley, Berkeley, CA; K. Vega, Indiana University, Bloomington, IN; F. Mozer, P. Turin, University of California, Berkeley, Berkeley, CA	1000 hrs AIAA-2015-1589 **Design and Evaluation of a Semi-Empirical Piece-wise Exponential Atmospheric Density Model for CubeSat Applications** S. Kedare, S. Ulrich, Carleton University, Ottawa, Canada	1030 hrs AIAA-2015-1590 **Design and Validation of a New Algorithm for the Online Computation of the Earth's Magnetic Field Model** F. Gulmammadov, Scientific and Technological Research Council of Turkey (TÜBITAK), Ankara, Turkey	1100 hrs AIAA-2015-1591 **Modeling of the Longitudinal Dynamics of a Hang Glider** Y. Ochi, National Defense Academy, Yokosuka, Japan	1130 hrs AIAA-2015-1592 **Dynamic Response Simulation of Helicopter in Variable Wind Field** T. Liu, Y. Dai, G. Hong, Beihang University, Beijing, China		

Thursday, 8 January 2015						
338-MST-13	**Model and Simulation Verification and Validation**					**Sun Ballroom 2**
Chaired by: B. JACKSON, NASA-Langley Research Center						
0930 hrs AIAA-2015-1593 **Verification and Validation Spanning Models to Code** J. Abraham, MathWorks, Natick, MA	1000 hrs AIAA-2015-1594 **Full Flight-Envelope Simulation and Piloted Fidelity Assessment of a Business Jet Using a Model Stitching Architecture** E. Tobias, San Jose State University, Moffett Field, CA; M. Tischler, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA; T. Berger, University Affiliated Research Center, Moffett Field, CA; S. Hagerott, Cessna Aircraft Company, Wichita, KS	1030 hrs AIAA-2015-1595 **Tuning of Airplane Flight Dynamic Model Using Flight Testing** A. Kamal, A. Aly, A. Elshabka, Military Technical College, Cairo, Egypt	1100 hrs AIAA-2015-1596 **Modeling and Simulation of Propeller Propulsion Model Using Wind Tunnel** A. Kamal, A. Aly, A. Elshabka, Military Technical College, Cairo, Egypt			

Thursday, 8 January 2015						
339-NDA-7	**Uncertainty Quantification and Management II**					**Osceola Ballroom 5**
Chaired by: J. WITTEVEEN, Center for Mathematics and Computer Science (CWI) and V. ROMERO, Sandia National Laboratories						
0930 hrs AIAA-2015-1597 **Towards Characterizing the Variability in the Loading Demands of an Unmanned Aerial Vehicle** S. Sankararaman, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; K. Goebel, NASA Ames Research Center, Moffett Field, CA	1000 hrs AIAA-2015-1598 **Uncertainty Quantification of Composite Structures with Defects using Multilevel Monte Carlo Simulations** R. Butler, T. Dodwell, University of Bath, Bath, United Kingdom; R. Hafrka, N. Kim, University of Florida, Gainesville, Gainesville, FL; T. Kim, S. Kynaston, University of Bath, Bath, United Kingdom; et al.	1030 hrs AIAA-2015-1599 **Designing Simulation Platforms For Uncertainty—an Example from an Aerospace Supplier** A. Forslund, C. Levandowski, R. Söderberg, Chalmers University of Technology, Göteborg, Sweden; J. Lööf, GKN Aerospace Engine Systems, Trollhättan, Sweden; S. Knuts, Massachusetts Institute of Technology, Cambridge, MA; O. Isaksson, GKN Aerospace Engine Systems, Trollhättan, Sweden; et al.	1100 hrs AIAA-2015-1600 **Investigating Model Uncertainty in the Nonlinear Aeroelastic Response of Thin Panels** R. Perez, Universal Technology Corporation, Dayton, OH; B. Smarslok, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. McNamara, Ohio State University, Columbus, OH		

Thursday, 8 January 2015		
340-PANEL-7 **0930 - 1130 hrs**	**Aerospace Vehicles Technology Trends**	**Osceola Ballroom B**

Moderator: Alton Romig, Vice President, Advanced Development Programs, The Skunk Works, Lockheed Martin Aeronautics

Panelists:

Frank L. Culbertson, Jr.
Executive Vice President and General Manager, Advanced Programs Group
Orbital Sciences Corporation

Eric Schrock
Deputy - Technology and Product Innovation
Lockheed Martin Aeronautics

John Tracy
Chief Technology Officer and Senior Vice President,
Engineering, Operations, and Technology
The Boeing Company

Steve Weiner
Chief Engineer
Sikorsky Innovations

Thursday, 8 January 2015						
341-PC-17	**Detonations, Explosions, and Supersonic Combustion I**					**Emerald 3**
Chaired by: C. BROPHY, Naval Postgraduate School and E. LYNCH, Aerojet Rocketdyne						
0930 hrs AIAA-2015-1601 **Plasma-Assisted PDE and Deflagration-to-Detonation Transition** A. Starikovskiy, Princeton University, Princeton, NJ	1000 hrs AIAA-2015-1602 **Physics of Heat-Release in Rotating Detonation Engines** D. Schwer, K. Kailasanath, Naval Research Laboratory, Washington, DC	1030 hrs AIAA-2015-1603 **Experimental Characterization of High-Frequency Heat Flux in a Rotating Detonation Engine** S. Theuerkauf, F. Schauer, R. Anthony, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH	1100 hrs AIAA-2015-1604 **Imaging of OH* Chemiluminescence in an Optically Accessible Nonpremixed Rotating Detonation Engine** B. Rankin, Innovative Scientific Solutions, Inc., Dayton, OH; D. Richardson, A. Caswell, Air Force Research Laboratory, Wright-Patterson AFB, OH; A. Naples, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH			

Thursday, 8 January 2015						
342-PC-18	**Rocket and Air-Breathing Combustion I**					**Emerald 7**
Chaired by: M. COIL, Orbital Technologies Corporation and T. NGUYEN, Aerojet Rocketdyne						
0930 hrs AIAA-2015-1605 **Study of Liquid Breakup Processes in Solid Rocket Motors** R. Amano, Y. Yen, University of Wisconsin, Milwaukee, Glendale, WI; T. Miller, A. Ebnit, M. Lightfoot, V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA	1000 hrs AIAA-2015-1606 **Eigenvalue Analysis for the Prediction of Initial Growth Rates of Thermoacoustic Instability in Rocket Motors** M. Schulze, T. Sattelmayer, Technical University of Munich, Munich, Germany	1030 hrs AIAA-2015-1607 **The Response of Cryogenic H2/O2 Coaxial Jet Flames to Acoustic Disturbances** D. Forliti, Sierra Lobo, Inc., Edwards AFB, CA; A. Badakhshan, ERC, Inc., Edwards AFB, CA; J. Wegener, University of California, Los Angeles, Los Angeles, CA; I. Leyva, D. Talley, Air Force Research Laboratory, Edwards AFB, CA	1100 hrs AIAA-2015-1608 **Comparison of a Structured-LES and an Unstructured-DES Code for Predicting Combustion Instabilities in a Longitudinal Mode Rocket Combustor** M. Harvazinski, D. Talley, V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA	1130 hrs AIAA-2015-1609 **Investigation of Instability Mechanisms in a Laboratory Scale GH2/GO2 Combustor** L. White, A. Dasari, M. Gamba, University of Michigan, Ann Arbor, Ann Arbor, MI	1200 hrs AIAA-2015-1610 **Boundary conditions treatment for supercritical flows with tabulated thermochemistry** G. Ribert, X. Petit, P. Domingo, N. Vallée, National Center for Scientific Research (CNRS), Saint-Étienne-du-Rouvray, France	

Thursday, 8 January 2015						
343-PDL-7	**Plasma & Laser Propulsion**					**Emerald 5**
Chaired by: G. WILLIAMS, Ohio Aerospace Institute and R. LITCHFORD, NASA						
0930 hrs AIAA-2015-1611 **W-Band Free-Space Dielectric Material Property Measurement Techniques for Beamed Energy Applications** M. Hilario, University of Southern California, Los Angeles, CA; B. Hoff, Air Force Research Laboratory, Kirtland AFB, NM; M. Young, Air Force Research Laboratory, Edwards AFB, CA	1000 hrs AIAA-2015-1612 **Analyses of Ignition Processes of an Applied-Field Magnetoplasmadynamic Thruster** M. Kong, H. Tang, W. Yang, Y. Xu, B. Wang, Beihang University, Beijing, China	1030 hrs AIAA-2015-1613 **Thrust Measurement of Radio Frequency Inductively Coupled Plasma Thruster** T. Kato, Y. Iwasaki, T. Fujino, University of Tsukuba, Tsukuba, Japan; I. Funaki, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1100 hrs AIAA-2015-1614 **Numerical and Experimental Investigation of Nanosecond-Pulsed Plasma Activated $C_2H_4/O_2/Ar$ Mixtures in a Low Temperature Flow Reactor** S. Yang, S. Nagaraja, V. Yang, W. Sun, Georgia Institute of Technology, Atlanta, GA; J. Lefkowitz, Y. Ju, Princeton University, Princeton, NJ	1130 hrs AIAA-2015-1615 **A Detailed Comparison of Thermal and Nanosecond Plasma Assisted Ignition of Hydrogen-Air Mixtures** S. Yang, S. Nagaraja, W. Sun, V. Yang, Georgia Institute of Technology, Atlanta, GA		

Thursday, 8 January 2015						
344-PDL-8	**Computational Methods**					**Emerald 8**
Chaired by: S. ROY, University of Florida						
0930 hrs AIAA-2015-1616 **Discontinuous Galerkin Method for Solving Magnetohydrodynamic Equations** A. das Gupta, S. Roy, University of Florida, Gainesville, Gainesville, FL	1000 hrs AIAA-2015-1617 **Master Equation Modeling of Nanosecond Pulse Discharge in Nitrogen in a Pin-to-Pin Geometry** Z. Eckert, I. Adamovich, Ohio State University, Columbus, OH	1030 hrs AIAA-2015-1618 **Influence of the Artificial Permittivity on Particle-In-Cell Simulation Method** M. Li, H. Tang, J. Ren, Beihang University, Beijing, China	1100 hrs AIAA-2015-1619 **Numerical Investigations of Cathode Surface Streamer Discharges for High-Pressure Large Gap Arc Breakdown** A. Sharma, L. Raja, University of Texas, Austin, Austin, TX			

Thursday, 8 January 2015						
345-SATS-2	**Small Satellites - Missions**					**Captiva 2**
Chaired by: A. SANTANGELO and J. STRAUB, University of North Dakota						
0930 hrs AIAA-2015-1620 **Flight of FRNCS-P and QuickSAT/ Xen on the SHARC CubeSat Mission** A. Santangelo, sci_Zone, Rio Rancho, NM	1000 hrs AIAA-2015-1621 **Three-Dimensional Numerical Study of Linear Plug Micronozzles** J. Pearl, W. Louisos, D. Hitt, University of Vermont, Burlington, Burlington, VT	1030 hrs Oral Presentation **Employing Disruptive Business Practices In Space: Closing The Business Case For Commercial Remote Earth and Space Weather Sensing Using Micro-Satellite Constellations** W. Hosack, 406 Space Systems, Bozeman, MT	1100 hrs AIAA-2015-1623 **A Review of Impending Small Satellite Formation Flying Missions** S. Bandyopadhyay, G. Subramanian, R. Foust, D. Morgan, S. Chung, University of Illinois, Urbana-Champaign, Urbana, IL; F. Hadaegh, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1130 hrs AIAA-2015-1624 **In Search of Standards for the Operation of Small Satellites** J. Straub, University of North Dakota, Grand Forks, Grand Forks, ND		

Thursday, 8 January 2015						
346-SCS-8	**Inflatable Space Structures**					**Osceola Ballroom 4**
Chaired by: H. FANG and J. HINKLE, ILC Dover						
0930 hrs AIAA-2015-1625 **Creep Burst Testing of a Woven Inflatable Module** M. Selig, G. Valle, G. James, NASA Johnson Space Center, Houston, TX; O. Oliveras, Jacobs, Houston, TX; T. Jones, W. Doggett, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2015-1626 **Analysis of Accelerometer Data from a Woven Inflatable Creep Burst Test** G. James, NASA Johnson Space Center, Houston, TX	1030 hrs AIAA-2015-1627 **Functional and Qualification Testing of the InflateSail Technology Demonstrator** A. Viquerat, M. Schenk, V. Lappas, University of Surrey, Guildford, United Kingdom; B. Sanders, CGG Safety and Systems, Klundert, The Netherlands	1100 hrs AIAA-2015-1628 **Analysis and Damage Sensitivity of Design Pathfinder for Inflatable Systems** J. Fulcher, S. Smith, University of Kentucky, Lexington, Lexington, KY; J. Baker, University of Kentucky, Paducah, Paducah, KY			

Thursday, 8 January 2015						
347-SD-14	**Supersonic/Hypersonic Systems II**					**Tampa 2**
Chaired by: N. FALKIEWICZ, MIT Lincoln Laboratory and K. GRIFFIN, Southwest Research Institute						
0930 hrs AIAA-2015-1629 **Effects of Strain Hardening on Fluid-Thermal-Structural Interactions** J. LaFontaine, A. Gogulapati, B. Miller, J. McNamara, Ohio State University, Columbus, OH	1000 hrs AIAA-2015-1630 **Panel Response Prediction Through Reduced Order Models with Application to Hypersonic Aircraft** M. Mignolet, Arizona State University, Tempe, AZ; A. Culler, Sierra Lobo, Inc., Dayton, OH; J. McNamara, Ohio State University, Columbus, OH; A. Matney, Arizona State University, Tempe, AZ; S. Spottswood, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2015-1631 **Fluid-Thermal-Structural Interaction Effects in Preliminary Design of High Speed Vehicles** Z. Witeof, Leidos Corporation, Eglin AFB, FL; C. Pasiliao, Air Force Research Laboratory, Eglin AFB, FL	1100 hrs AIAA-2015-1632 **Investigation into Parallel Time Marching of Fluid-Thermal-Structural Interactions** M. LeVett, Z. Liang, B. Miller, J. McNamara, Ohio State University, Columbus, OH	1130 hrs AIAA-2015-1633 **Aeroservoelastic Response of A Typical Lifting Type Reentry Vehicle Under Closed Loop Control** A. Joshi, P. Mujumdar, Indian Institute of Technology Bombay, Mumbai, India; G. Chary, Vikram Sarabhai Space Centre, Thiruvananthapuram, India		

Thursday, 8 January 2015						
348-SD-15	**Active and Passive Damping Systems**					**Tampa 3**
Chaired by: S. RAGHAVAN, University of Central Florida and S. LIGUORE, Boeing Engineering Operations & Technology						
0930 hrs AIAA-2015-1634 **A Hybrid Magnetostrictive Propellant Management Device for Active Slosh Damping in Spacecraft** B. Sivasubramanian, L. Paul, S. Krishnappa, S. Gangadharan, D. Kim, Embry-Riddle Aeronautical University, Daytona Beach, FL	1000 hrs AIAA-2015-1635 **Passive Damping of Fuel Slosh using a Suspended Pendulum** L. Paul, B. Sivasubramanian, J. Pinto, S. Gangadharan, Embry-Riddle Aeronautical University, Daytona Beach, FL	1030 hrs AIAA-2015-1636 **Energy Dissipation in a Riveted Lap Joint of Aircraft Structure under In-plane Tensile and Shear Loading** J. Nishimuro, S. Suzuki, Waseda University, Tokyo, Japan; S. Machida, T. Okada, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1100 hrs AIAA-2015-1637 **Investigation of Analytical Modeling for Structural Damping Properties in Riveted Lap Joints** S. Machida, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1130 hrs AIAA-2015-1638 **Suppression of Aeroelastic Instability Due to Freeplay Nonlinearity by a Nonlinear Energy Sink** H. Chen, Zhejiang University, Hangzhou, China; Y. Lee, New Mexico State University, Las Cruces, NM		

Thursday, 8 January 2015						
349-SE-1	**Systems Engineering I**					**Miami 2**
Chaired by: J. EILER, Stellar Solutions, Inc. and D. DRESS, NASA Langley Research Center						
0930 hrs AIAA-2015-1639 **Extending Model Based Systems Engineering for Complex Systems** M. French, Rolls-Royce Group plc, Indianapolis, IN	1000 hrs AIAA-2015-1640 **A concept of forecasting origin-destination air passenger demand between global city pairs using future socio-economic scenarios** I. Terekhov, V. Gollnick, German Aerospace Center (DLR), Hamburg, Germany	1030 hrs AIAA-2015-1641 **Replacing Capabilities within a System-of-Systems: An Architectural Study on how to Simplify the National Airspace System** M. Levert, Federal Aviation Administration, Washington, DC; T. Ender, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2015-1642 **Future Passenger Air Traffic Modelling: Trend Analysis of the Passenger Air Travel Demand Network** R. Ghosh, I. Terekhov, German Aerospace Center (DLR), Hamburg, Germany	1130 hrs AIAA-2015-1643 **Threat Plane Method for Developing Operational Rules of an Autonomous Anti-Air Defense System on a Warship against Multiple Attacking Missiles** S. Lee, J. Ahn, Korea Advanced Institute of Science and Technology, Daejeon, South Korea		

Thursday, 8 January 2015						
350-SOF-1	**Software Challenges in Aerospace Workshop I**					**Osceola Ballroom 2**
Chaired by: K. FEIGH, Georgia Institute of Technology; M. DAVIES, NASA-Ames; J. MURPHY, NASA Ames Research Center and S. BLANCHETTE, Software Engineering Institute						
0930 hrs AIAA-2015-1644 **Slayer of Giants** S. Blanchette, Carnegie Mellon University, Pittsburgh, PA	1000 hrs AIAA-2015-1645 **Using Formal Requirements and Model-Checking for Verification and Validation of an Unmanned Rotorcraft** C. Torens, F. Adolf, German Aerospace Center (DLR), Braunschweig, Germany	1030 hrs AIAA-2015-1646 **Seeking Meaningful Measures For COTS-Intensive System Development** L. Esker, M. Diep, F. Herman, Fraunhofer, College Park, MD	1100 hrs AIAA-2015-1647 **Message Latency Characterization of a Distributed Live, Virtual, Constructive Simulation Environment** J. Murphy, NASA Ames Research Center, Moffett Field, CA; S. Jovic, N. Otto, SAIC, Moffett Field, CA	1130 hrs AIAA-2015-1648 **RUMS - Realtime Visualization and Evaluation of Live, Virtual, Constructive Simulation Data** G. Soler, S. Jovic, SAIC, Moffett Field, CA; J. Murphy, NASA Ames Research Center, Moffett Field, CA		

Thursday, 8 January 2015						
351-SRE-2	**ISRU for Mars and Beyond**					**Daytona 2**
Chaired by: J. KLEINHENZ, NASA Glenn Research Center						
0930 hrs AIAA-2015-1649 **Quantification of plume-soil interaction and excavation due to the Mars Science Laboratory Sky Crane Descent Phase** J. Vizcaino, Qualis Corporation, Huntsville, AL; M. Mehta, NASA Marshall Space Flight Center, Huntsville, AL	1000 hrs AIAA-2015-1650 **Capability and Technology Performance Goals for the Next Step in Affordable Human Exploration of Space** D. Linne, NASA Glenn Research Center, Cleveland, OH; G. Sanders, NASA Johnson Space Center, Houston, TX; K. Taminger, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2015-1651 **Integrated Systems Logistics in CIS-Lunar Space for 8th Space Resource Utilization Conference** D. McAlister, Air Force Institute of Technology, Wright-Patterson AFB, OH	1100 hrs AIAA-2015-1652 **In-Space Propulsion, Logistics Reduction, and Evaluation of Steam Reformer Kinetics: Problems and Prospects** D. Jaworske, B. Palaszewski, M. Kulis, S. Gokoglu, NASA Glenn Research Center, Cleveland, OH	1130 hrs AIAA-2015-1653 **Feasibility of high speed atmospheric flight on Venus** A. Ingenito, A. Agresta, University of Rome "La Sapienza", Rome, Italy; R. Andriani, Technical University of Milan, Milan, Italy; F. Gamma, University of Rome "La Sapienza", Rome, Italy	1200 hrs AIAA-2015-1654 **Solar System Exploration Augmented by In-Situ Resource Utilization: Human Mercury and Saturn Exploration** B. Palaszewski, NASA Glenn Research Center, Cleveland, OH	

Thursday, 8 January 2015						
352-TES-2	**Clean and Alternative Fuels**					**Tallahassee 2**
Chaired by: N. SYRED, Cardiff University						
0930 hrs AIAA-2015-1655 **Preliminary Results from a High Pressure Optical gas Turbine Combustor Model with 3D Viewing Capability** N. Syred, S. Morris, P. Bowen, A. Valera-Medina, R. Marsh, Cardiff University, Cardiff, United Kingdom						

Thursday, 8 January 2015						
353-TP-8	**DSMC and Non-Continuum Flows**					**Sun Ballroom B**
Chaired by: D. GOLDSTEIN, University of Texas and J. BURT, Universal Technology Corporation						
0930 hrs AIAA-2015-1656 **Coupled Rotational-Vibrational Excitation in Shock Waves using Trajectory-based Direct Simulation Monte Carlo** M. Grover, P. Valentini, T. Schwartzentruber, University of Minnesota, Minneapolis, Minneapolis, MN	1000 hrs AIAA-2015-1657 **Effect of Injector Position on the Mixing Performance in Micro/Nanomixers** M. Darbandi, M. Sabouri, Sharif University of Technology, Tehran, Iran; G. Schneider, University of Waterloo, Waterloo, Canada	1030 hrs AIAA-2015-1659 **Computation of Rarefied Hypersonic Flows Using a Modified Form of the Conventional Burnett Equations** W. Zhou, W. Chen, Zhejiang University, Hangzhou, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO	1100 hrs AIAA-2015-1660 **Near Continuum Gas Flows** C. Cai, New Mexico State University, Las Cruces, NM			

Thursday, 8 January 2015						
354-WE-13	**Wind Energy Innovative Concepts**					**Emerald 4**
Chaired by: H. HU, Iowa State University and E. LOTH, University of Virginia						
0930 hrs AIAA-2015-1661 **Downwind Pre-Aligned Rotor for a 13.2 MW Wind Turbine** E. Loth, University of Virginia, Charlottesville, Charlottesville, VA; B. Ichter, Stanford University, Stanford, CA; A. Steele, Texas A&M University, College Station, TX; M. Selig, University of Illinois, Urbana-Champaign, Urban, IL; P. Moriarty, National Renewable Energy Laboratory, Golden, CO	1000 hrs AIAA-2015-1662 **Airfoil with morphing trailing edge for load reduction in wind turbines** T. Wolff, J. Seume, Leibniz University, Hannover, Germany	1030 hrs AIAA-2015-1663 **A Comparative Study on the Aeromechanic Performances of a Twin-Rotor Wind Turbine and a Single-Rotor Wind Turbine** H. Hu, Z. Wang, A. Ozbay, W. Tian, A. Sharma, Iowa State University, Ames, IA	1100 hrs AIAA-2015-1664 **Experiments on Fairing Design for a Wind Turbine Tower** K. O'Connor, E. Loth, University of Virginia, Charlottesville, Charlottesville, VA; M. Selig, University of Illinois, Urbana-Champaign, Urbana, IL	1130 hrs AIAA-2015-1665 **Numerical Investigation of Aerodynamic Performance and Loads of a Novel Dual Rotor Wind Turbine** A. Rosenberg, B. Moghadassian, A. Sharma, H. Hu, Iowa State University, Ames, IA		

Thursday, 8 January 2015		
355-LUNCH-4 **1200 - 1400 hrs**	**Recognition Luncheon: Celebrating Achievements in Aerospace Design/Structures and Literary Excellence**	**Osceola Ballroom CD**

Commercial Spaceflight: What Has Changed?
Christopher J. Ferguson
Director, Crew and Mission Systems, Commercial Crew Program
Boeing Space Exploration

Thursday, 8 January 2015						
356-ABPSI-2	**Inlets and Nozzles**					**Emerald 2**
Chaired by: A. DELOT, ONERA and S. HIRT, NASA Glenn Research Center						
1400 hrs AIAA-2015-1666 **The Design and Performance Evaluation of Hypersonic Inlets for Scramjet Applications** F. Ferguson, M. Dhanasar, T. Lawrence, North Carolina A&T State University, Greensboro, NC; I. Blankson, NASA Glenn Research Center, Cleveland, OH	1430 hrs AIAA-2015-1667 **Benefits of Boundary Layer Ingestion Propulsion** K. Sabo, M. Drela, Massachusetts Institute of Technology, Cambridge, MA	1500 hrs AIAA-2015-1668 **Pressure Based Comparison of Different Gas Turbine Ground Vortex Flows** J. Barata, P. Manquinho, A. Silva, University of Beira Interior, Covilha, Portugal	1530 hrs AIAA-2015-1669 **Intake and Airframe Characterization through Composite CFD** J. Masud, O. Khan, S. Hassan, Air University, Islamabad, Pakistan	1600 hrs AIAA-2015-1670 **Effect of Geometry on Exit Temperature from Serpentine Exhaust Nozzles** D. Crowe, C. Martin, Air Force Institute of Technology, Wright-Patterson AFB, OH	1630 hrs AIAA-2015-1671 **Performance Evaluation of Airframe-Integrated Aerospike Propulsion Systems in Off-Design Flight Conditions** H. Takahashi, T. Tomita, S. Tomioka, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan	

Thursday, 8 January 2015						
357-ACD-5	**Propulsion Integration for Aircraft Design**					**Emerald 8**
Chaired by: E. DIGIROLAMO, Lockheed Martin Aeronautics						
1400 hrs AIAA-2015-1672 **Integrated Propeller-Wing Design Exploration for Distributed Propulsion Concepts** N. Borer, M. Moore, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2015-1673 **Simplified Aerodynamics Models to Predict the Effects of Upstream Propellers on Wing Lift** M. Patterson, M. Daskilewicz, B. German, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2015-1674 **Flight Path and Wing Optimization of Lithium-Air Battery Powered Passenger Aircraft** J. Vegh, J. Alonso, Stanford University, Stanford, CA; T. Orra, C. Ilario da Silva, Embraer, São José dos Campos, Brazil	1530 hrs AIAA-2015-1675 **Study of Electric Aircraft Recharged by Beamed Microwave Power** Y. Ozawa, N. Tanaka, IHI Corporation, Tomioka, Japan; H. Hakojima, Fuji-Imvac, Yokohama, Japan	1600 hrs AIAA-2015-1676 **Modeling of Electric Motor Driven Propellers for Conceptual Aircraft Design** R. McDonald, California Polytechnic State University, San Luis Obispo, CA	1630 hrs AIAA-2015-1677 **Multi-Disciplinary Impact of Engine Parameters Upon Transport Aircraft Climb Fuel Consumption** T. Takahashi, C. Gedeon, Arizona State University, Tempe, AZ	1700 hrs AIAA-2015-1678 **Numerical Research on Aerodynamic Efficiency of a VTOL GFS UAV** Y. Zhang, L. Xu, H. Chen, Tsinghua University, Beijing, China

Thursday, 8 January 2015						
358-ACD-6	**Aircraft Design Methodology**					**Osceola Ballroom 3**
Chaired by: C. BIL, RMIT University						
1400 hrs AIAA-2015-1679 **Semi-Empirical Prediction of Aircraft Low-Speed Aerodynamic Characteristics** E. Olson, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2015-1680 **A Practical Method for Uncertainty Analysis in the Aircraft Conceptual Design Phase** S. Van Haver, R. Vos, Delft University of Technology, Delft, The Netherlands	1500 hrs AIAA-2015-1681 **Alternative Energy Aircraft Range Equations and Resulting Aircraft Design Technology Extrapolation** D. Allison, A. Myklebust, Gestalt Technical Institute, Blacksburg, VA	1530 hrs AIAA-2015-1682 **Integrating Subsystem Sizing into the More Electric Aircraft Conceptual Design Phase** T. Dendinger, E. Inclan, K. Handschuh, C. Ingram, I. Chakraborty, E. Garcia, Georgia Institute of Technology, Atlanta, GA; et al.	1600 hrs AIAA-2015-1683 **Uncertainty Quantification for the Actuation Power Requirements of a Hybrid Wing Body Configuration with Electrically Actuated Flight Control Surfaces** D. Garmendia, I. Chakraborty, D. Mavris, Georgia Institute of Technology, Atlanta, GA		

Thursday, 8 January 2015						
359-AFM-12	**MAV, UAV and Aeroservoelastic Vehicles**					**Captiva 1**
Chaired by: K. CUNNINGHAM, NASA Langley Research Center						
1400 hrs AIAA-2015-1684 **The Gust Resistant MAV - Aerodynamic Measurements, Performance Analysis, and Flight Tests** A. Zyluk, K. Sibilski, Air Force Institute of Technology, Warsaw, Poland	1430 hrs AIAA-2015-1685 **Experimental Development of a Rotorcraft UAV Downwash Model for Real-Time Disturbance Localization and Avoidance** D. Yeo, E. Shrestha, D. Paley, University of Maryland, College Park, College Park, MD; E. Atkins, University of Michigan, Ann Arbor, Ann Arbor, MI	1500 hrs AIAA-2015-1686 **Modal Matching for LPV Model Reduction of Aeroservoelastic Vehicles** J. Theis, Hamburg University of Technology, Hamburg, Germany; B. Takarics, H. Pfifer, G. Balas, University of Minnesota, Minneapolis, Minneapolis, MN; H. Werner, Hamburg University of Technology, Hamburg, Germany	1530 hrs AIAA-2015-1687 **Longitudinal and Directional Control Modeling for a Small Powered Parafoil Aerial Vehicle** V. Devalla, O. Prakash, University of Petroleum and Energy Studies, Dehradun, India	1600 hrs AIAA-2015-1688 **Comparative Study of Wing's Motion Patterns on Various Types of Insects on Resemblant Flight Stages** F. Neves, J. Barata, P. Manquinho, University of Beira Interior, Covilha, Portugal	1630 hrs AIAA-2015-1689 **A Bio-inspired UAV Leg-Foot Mechanism for Landing, Grasping and Perching Tasks** P. Xie, O. Ma, New Mexico State University, Las Cruces, NM; Z. Zhao, Beihang University, Beijing, China; L. Zhang, New Mexico State University, Las Cruces, NM	

Thursday, 8 January 2015		
360-AFM-13 **1400 - 1700 hrs**	**Seven Axioms of Good Engineering (Invited Session)**	**Captiva 2**

Chaired by: M. OGBURN, NASA Langley Research Center and P. WILLIAMS-HAYES, NASA Armstrong Flight Research Center

This special session will include invited speakers who will review and participate in discussions related to the material presented in a popular case study-based course ("The Seven Axioms of Good Engineering") that is offered at NASA.

Panelists:

Anthony Luscher
Associate Professor, Department of Mechanical and Aerospace Engineering
Ohio State University
Case Study Learning and the Seven Axioms of Good Engineering

Jeb S. Orr
Senior Member of the Technical Staff
Dynamic Systems and Control
Charles Stark Draper Laboratory, Inc.
A Critical Analysis of the X-15 Flight 3-65 Accident: Aircraft Systems, Human Factors, and Flight Control

Ralph R. Basilio
Project Manager
Orbiting Carbon Observatory-2 (OCO2) Project
Jet Propulsion Laboratory
Truly Better the Second Time Around: The Application of OCO Lessons on OCO-2

Matt Kohut
KNP Communications

Roger Forsgren
APPEL Director
NASA Headquarters

Ed Hoffman
Chief Knowledge Officer
NASA Headquarters

Thursday, 8 January 2015						
361-AMT-6/GT-7	**Background-Oriented Schlieren: Recent Advancements and Applications in Ground Test Facilities**					**Sun Ballroom C**
Chaired by: B. BATHEL, NASA Langley Research Center and M. CLEM, NASA Glenn Research Center						
1400 hrs Oral Presentation **Schlieren and Shadowgraphy Developments at NASA Ames Research Center (Invited)** J. Heineck, E. Schairer, NASA Ames Research Center, Moffett Field, CA; L. Kushner, AeroSpace Computing, Inc., Mountain View, CA; T. Garbeff, NASA Ames Research Center, Moffett Field, CA	1430 hrs Oral Presentation **Background-Oriented Schlieren Applications in NASA Glenn Research Center's Ground Test Facilities (Invited)** M. Clem, M. Woike, NASA Glenn Research Center, Cleveland, OH	1500 hrs AIAA-2015-1690 **Tomographic Background Oriented Schlieren Applications for Turbomachinery (Invited)** U. Hartmann, R. Adamczuk, J. Seume, Leibniz University, Hannover, Germany	1530 hrs AIAA-2015-1691 **Development of Background-Oriented Schlieren for NASA Langley Research Center Ground Test Facilities (Invited)** B. Bathel, S. Borg, E. Walker, NASA Langley Research Center, Hampton, VA; T. Mizukaki, Tokai University, Hiratsuka, Japan	1600 hrs Oral Presentation **Application of Conebeam Tomography to Background-Oriented Schlieren in a Large-Scale Transonic Wind Tunnel (Invited)** K. Scott, J. Wehrmeyer, Aerospace Testing Alliance, Arnold AFB, TN	1630 hrs Oral Presentation **Development of 3D Background Oriented Schlieren Imaging with a Plenoptic Camera (Invited)** B. Thurow, A. Bichal, Auburn University, Auburn, AL	1700 hrs AIAA-2015-1692 **Background-Oriented Schlieren for Large-Scale and High-Speed Aerodynamic Phenomena (Invited)** T. Mizukaki, Tokai University, Hiratsuka, Japan; B. Bathel, S. Borg, P. Danehy, NASA Langley Research Center, Hampton, VA; S. Murman, NASA Ames Research Center, Moffett Field, CA; T. Matsumura, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan; et al.

Thursday, 8 January 2015						
362-AMT-7	**Spectroscopy and Schlieren**					**Tallahassee 1**
Chaired by: A. CUTLER, The George Washington University and T. ROSSMANN, Lafayette College						
1400 hrs AIAA-2015-1693 **The Number Density of Ground State Atomic Oxygen Measurement by High Sensitive Laser Absorption Spectroscopy using Forbidden Line OI 630nm** R. Morita, Shizuoka University, Hamamatsu, Japan	1430 hrs AIAA-2015-1694 **Development of Combined Dual-Pump Vibrational and Pure-Rotational Coherent Anti-Stokes Raman Scattering (DPVCARS and PRCARS) Systems and their Application to Laminar Counter-flow Flames** A. Satija, S. Yuan, R. Lucht, Purdue University, West Lafayette, IN	1500 hrs AIAA-2015-1695 **Two-color Polarization Spectroscopy Technique for Probing Collisionally Induced Resonances of Nitric Oxide** A. Bhuiyan, A. Satija, S. Naik, R. Lucht, Purdue University, West Lafayette, IN	1530 hrs AIAA-2015-1696 **Pressure Monitoring Using Hybrid fs/ps Rotational CARS** S. Kearney, Sandia National Laboratories, Albuquerque, NM; P. Danehy, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2015-1697 **Visualization of a Sweeping Jet by Laser Speckle Retro-reflective Background Oriented Schlieren** L. Kushner, Aerospace Computing, Inc., Mountain View, CA; J. Heineck, B. Storms, R. Childs, NASA Ames Research Center, Moffett Field, CA	1630 hrs AIAA-2015-1698 **Institutional Schlieren: A Production-Level Wind Tunnel Test Measurement** T. Garbeff, J. Heineck, T. McDevitt, L. Kushner, NASA Ames Research Center, Moffett Field, CA	

Thursday, 8 January 2015						
363-APA-35	**Hypersonic Aerodynamics**					**Destin 1**
Chaired by: M. CONWAY, The Aerospace Corporation and D.FINLEY, Lockheed Martin Aeronautics						
1400 hrs AIAA-2015-1699 **Experimental Investigations of Aerodynamic Heating induced by Single and Double Side-jet on a Blunted Cone** M. Taguchi, K. Mori, Nagoya University, Nagoya, Japan; K. Kitamura, Yokohama National University, Yokohama, Japan; Y. Nakamura, Chubu University, Kasugai, Japan	1430 hrs AIAA-2015-1700 **Integration of Optimized Leading Edge Geometries Onto Waverider Configurations** P. Rodi, Lockheed Martin Corporation, Houston, TX	1500 hrs AIAA-2015-1701 **Numerical Simulation of Radiating Re-Entry Flows around Orbital Space Vehicle: Comparison with Observed Data** S. Surzhikov, Russian Academy of Sciences, Moscow, Russia	1530 hrs AIAA-2015-1702 **Sensitivity Analysis of a HIFiRE-6 Design Variant Using Minimum-Resource Statistical Designs** R. Graves, S. Sherer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2015-1703 **Aerodynamic Response Quantification of Complex Hypersonic Configurations using Variable Fidelity Surrogate Modeling** J. Tancred, M. Rumpfkeil, University of Dayton, Dayton, OH	1630 hrs AIAA-2015-1704 **Shape Optimization of Axisymmetric Bodies in Hypersonic Flow for Reducing Drag and Heat Transfer** C. Seager, R. Agarwal, Washington University in St. Louis, St. Louis, MO	

Thursday, 8 January 2015						
364-APA-36	**Flow Control Applications & Demonstrations (Active & Passive) III**					**Naples 1**
Chaired by: J. FARNSWORTH, University of Colorado Boulder and G. ZHA, University of Miami						
1400 hrs AIAA-2015-1705 **Numerical and Experimental Wind Tunnel and Flight Testing of Active Flow Control for Modified NACA 643-618 Airfoil** J. Dianics, D. Ohno, S. Fuggmann, J. Lay, D. Heim, H. Fasel, University of Arizona, Tucson, Tucson, AZ	1430 hrs AIAA-2015-1706 **Topology of a Trailing Vortex Flow Field with Steady Circulation Control Blowing** A. Edstrand, L. Cattafesta, Florida State University, Tallahassee, FL	1500 hrs AIAA-2015-1707 **Study on the Vortex Wake of an Airfoil Equipped with Flexible Trailing Edge Fringe** Z. Yang, Z. He, Wright State University, Dayton, OH; F. Chen, Shanghai Jiao Tong University, Shanghai, China	1530 hrs AIAA-2015-1708 **Effect of Piezoelectric Actuated Winglets on the Tip Vortices** T. Guha, R. Kumar, Florida State University, Tallahassee, FL	1600 hrs AIAA-2015-1709 **Numerical Simulation of Transonic Circulation Control** M. Forster, R. Steijl, University of Liverpool, Liverpool, United Kingdom	1630 hrs AIAA-2015-1710 **Flow Characteristics along an Active Jets Equipped Contour Bump in a Supersonic Freestream and Its Potential to be Applied on Transonic Aircraft for Drag Reduction: An Experimental Study** K. Lo, H. Zare-Behtash, K. Kontis, University of Glasgow, Glasgow, United Kingdom	

Thursday, 8 January 2015						
365-APA-37	**Special Session: Simulation of Rotor in Hover - Rotorcraft DG II**					**Naples 2**
Chaired by: N. HARIHARAN, CREATE-AV and T. EGOLF, Sikorsky Aircraft Corporation						
1400 hrs AIAA-2015-1711 **Comparison of CFD Hover Predictions on the S-76 Rotor** J. Abras, Naval Air Systems Command, Patuxent River, MD; N. Hariharan, CREATE AV Team, Lorton, VA	1430 hrs AIAA-2015-1712 **Hover Performance Predictions for the S-76 Main Rotor Blade** A. Jimenez Garcia, G. Barakos, University of Liverpool, Liverpool, United Kingdom	1500 hrs AIAA-2015-1713 **Evaluation of Rotor Hover Performance With Differing Blade Tip Shapes Using Carefree Hybrid Methodologies** T. Ngaya, K. Jacobson, M. Smith, Georgia Institute of Technology, Atlanta, GA; D. Wachspress, G. Whitehouse, Continuum Dynamics, Inc., Ewing, NJ	1530 hrs AIAA-2015-1714 **High Order Evaluation of S-76 in Hover** L. Sankar, Georgia Institute of Technology, Atlanta, GA; N. Hariharan, CREATE AV Team, Lorton, VA	1600 hrs AIAA-2015-1715 **S-76 Rotor Hover Predictions Using Advanced Turbulence Models** C. Sheng, J. Wang, Q. Zhao, University of Toledo, Toledo, OH	1630 hrs AIAA-2015-1716 **Assessment of Planform Effects on Rotor Hover Performance** L. Sankar, Georgia Institute of Technology, Atlanta, GA; R. Marpu, CD-adapco, Orlando, FL; N. Hariharan, Naval Air Warfare Center, Patuxent River, MD; T. Egolf, Sikorsky Aircraft Corporation, Bridgeport, CT	

Thursday, 8 January 2015						
366-APA-38	**Special Session: Aerodynamic Design Optimization of Benchmark Cases II**					**Destin 2**
Chaired by: J. MARTINS, University of Michigan and S. LEDOUX, Boeing Engineering Operations & Technology						
1400 hrs AIAA-2015-1717 **A Study Based on the AIAA Aerodynamic Design Optimization Discussion Group Test Cases** S. LeDoux, D. Young, S. Fugal, J. Elliott, D. Kamenetskiy, R. Melvin, The Boeing Company, Seattle, WA; et al.	1430 hrs AIAA-2015-1718 **Aerodynamic Shape Optimization of the Common Research Model Wing-Body-Tail Configuration** S. Chen, Z. Lyu, G. Kenway, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1500 hrs AIAA-2015-1719 **Aerodynamic Shape Optimization Benchmarks with Error Control and Automatic Parameterization** G. Anderson, Stanford University, Stanford, CA; M. Nemec, M. Aftosmis, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2015-1720 **Direct Search Airfoil Optimization Using Far-Field Drag Decomposition Results** M. Gariepy, J. Trepanier, E. Petro, B. Malouin, C. Audet, S. LeDigabel, École Polytechnique de Montréal, Montréal, Canada; et al.	1600 hrs AIAA-2015-1721 **Evolutionary Optimization of Benchmark Aerodynamic Cases using Physics-based Surrogate Models** E. Iuliano, Italian Aerospace Research Center (CIRA), Capua, Italy	1630 hrs AIAA-2015-1722 **Drag minimization of an isolated airfoil in transonic inviscid flow by means of genetic algorithms** F. Fusi, G. Quaranta, A. Guardone, Technical University of Milan, Milan, Italy; P. Congedo, French National Institute for Research in Computer Science and Control (INRIA), Bordeaux, France	

Thursday, 8 January 2015						
367-AS-7	**Smart and Multifunctional Materials Applications**					**Osceola Ballroom 6**
Chaired by: R. JHA, Mississippi State University and R. YOUNG, NASA-Langley Research Center						
1400 hrs AIAA-2015-1723 **Solid-State Ornithopter: A Feasibility Study** R. Bounthisane, E. Gumapas, F. Hauris, O. Bilgen, Old Dominion University, Norfolk, VA	1430 hrs AIAA-2015-1724 **Computational Micromechanics Analysis of Damage Induced Piezoresistivity in Carbon Nanotube-Polymer Nanocomposites Under Cyclic Loading Conditions** A. Chaurasia, X. Ren, G. Seidel, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2015-1725 **Investigation of Aligned Conductive Polymer Nanocomposites for Actuation of Bistable Laminates** J. Lee, Massachusetts Institute of Technology, Cambridge, MA; C. Brampton, C. Bowen, University of Bath, Bath, United Kingdom; B. Wardle, Massachusetts Institute of Technology, Cambridge, MA; H. Kim, University of Bath, Bath, United Kingdom	1530 hrs AIAA-2015-1726 **Wavelet Spectral Finite Element Based User-Defined Element in ABAQUS for Modeling Delamination in Composite Beams** A. Khalili, D. Samaratunga, R. Jha, Mississippi State University, Starkville, MS; G. Srinivasan, Indian Institute of Science, Bangalore, India	1600 hrs AIAA-2015-1727 **Wavelet spectral finite element modeling for wave propagation in adhesively bonded composite joints** D. Samaratunga, R. Jha, Mississippi State University, Starkville, MS; G. Srinivasan, Indian Institute of Science, Bangalore, India	1630 hrs AIAA-2015-1728 **Smart washers to measure bolt loads using magnetostrictive Galfenol** G. Raghunath, B. Barkley, A. Flatau, University of Maryland, College Park, College Park, MD	1700 hrs AIAA-2015-1729 **Structural Analysis of a Smart Fin Embedded with Single Crystal Piezoelectric Actuators** I. Roh, S. Shin, Seoul National University, Seoul, South Korea

Thursday, 8 January 2015						
368-FD-45/PDL-9	**DBD Plasma Actuators**					**Sun Ballroom A**
Chaired by: D. ASHPIS, NASA Glenn Research Center and L. ENLOE						
1400 hrs AIAA-2015-1730 **Effect of a thin-wire exposed electrode on plasma structure and aerodynamic performance in a DBD plasma actuator** R. Mangina, L. Enloe, M. Bliely, R. Cook, U.S. Air Force Academy, Colorado Springs, CO	1430 hrs AIAA-2015-1731 **An Out-of-Plane Velocity Component in Dielectric Barrier Discharge Actuator Flow** J. Kiser, K. Breuer, Brown University, Providence, RI	1500 hrs AIAA-2015-1732 **Examination of a Plasma Actuator Model Applied to DBD Actuators for Small Aircraft Applications** J. Laten, R. LeBeau, Saint Louis University, St. Louis, MO	1530 hrs AIAA-2015-1733 **Numerical Study of Three-dimensional Effects of Plasma Structure on Flow Field around DBD Plasma Actuator** H. Nishida, Tokyo University of Agriculture and Technology, Koganei, Japan; T. Nonomura, T. Abe, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan			

Thursday, 8 January 2015						
369-FD-46	**Hypersonic Boundary Layer Transition II**					**Sanibel 3**
Chaired by: T. JULIANO, University of Notre Dame and T. WADHAMS, CUBRC						
1400 hrs AIAA-2015-1734 **Boundary Layer Instabilities Generated by Freestream Laser Perturbations** A. Chou, NASA Langley Research Center, Hampton, VA; S. Schneider, Purdue University, West Lafayette, IN	1430 hrs AIAA-2015-1735 **Boundary-Layer Transition Experiments in the Boeing/AFOSR Mach 6 Quiet Tunnel** G. McKiernan, B. Chynoweth, S. Schneider, Purdue University, West Lafayette, IN	1500 hrs AIAA-2015-1736 **HIFiRE-1 Boundary-Layer Transition: Ground Test Results and Stability Analysis** T. Juliano, R. Kimmel, Air Force Research Laboratory, Wright-Patterson AFB, OH; S. Willems, A. Guelhan, German Aerospace Center (DLR), Cologne, Germany; R. Wagnild, Sandia National Laboratories, Albuquerque, NM	1530 hrs AIAA-2015-1737 **Investigation of Mach 10 Boundary Layer Stability of Sharp Cones at Angle-of-Attack, Part 1: Experiments** E. Marineau, G. Moraru, D. Lewis, J. Norris, J. Lafferty, Arnold Engineering Development Complex, Silver Spring, MD; H. Johnson, GoHypersonic, Inc., Minneapolis, MN	1600 hrs AIAA-2015-1738 **Transition Experiments on Blunt Bodies with Distributed Roughness in Hypersonic Free Flight in Carbon Dioxide** M. Wilder, NASA Ames Research Center, Moffett Field, CA; D. Reda, Self, Moffett Field, CA; D. Prabhu, ERC, Inc., Moffett Field, CA		

Thursday, 8 January 2015						
370-FD-47	**Overset/Deforming/Moving Meshes**					**Daytona 2**
Chaired by: K. DURAISAMY, Stanford University and D. MAVRIPLIS, University of Wyoming						
1400 hrs AIAA-2015-1739 **An Overset Mesh Approach for 3D Mixed Element High Order Discretizations** M. Brazell, D. Mavriplis, J. Sitaraman, University of Wyoming, Laramie, Laramie, WY	1430 hrs AIAA-2015-1740 **Adjoint-based Adaptation for the Correction Procedure via Reconstruction Method on Hybrid Meshes** L. Shi, Z. Wang, University of Kansas, Lawrence, Lawrence, KS	1500 hrs AIAA-2015-1741 **Mesh deformation and shock capturing techniques for high-order simulation of unsteady compressible flows on dynamic meshes** A. Sheshadri, J. Crabill, Stanford University, Stanford, CA	1530 hrs AIAA-2015-1742 **A Simple, Efficient, High-Order Accurate Sliding-mesh Interface Approach to FR/CPR Method on Coupled Rotating and Stationary Domains** B. Zhang, C. Liang, George Washington University, Washington, DC	1600 hrs AIAA-2015-1743 **High-Order Moving Overlapping Grid Methodology for Aerospace Applications** B. Merrill, Y. Peet, Arizona State University, Tempe, AZ		

Thursday, 8 January 2015						
371-FD-48	**Turbulent Flow Solutions for NACA 0012 and Other Test Cases from the Turbulence Model Resource Website: Residual and Grid Convergence II (Invited)**					**Sanibel 2**
Chaired by: B. DISKIN, National Institute of Aerospace and F. PALACIOS, Stanford University						
1400 hrs AIAA-2015-1744 **Performance of a Newton-Krylov-Schur Algorithm for the Numerical Solution of the Steady Reynolds-Averaged Navier-Stokes Equations (Invited)** D. Brown, H. Buckley, M. Osusky, D. Zingg, University of Toronto, Toronto, Canada	1430 hrs AIAA-2015-1745 **RANS simulations on TMR test cases and M6 wing with the Onera elsA flow solver (Invited)** V. Gleize, A. Dumont, J. Mayeur, D. Destarac, ONERA, Châtillon, France	1500 hrs AIAA-2015-1746 **Grid Convergence for Turbulent Flows (Invited)** B. Diskin, National Institute of Aerospace, Hampton, VA; J. Thomas, C. Rumsey, NASA Langley Research Center, Hampton, VA; A. Schwoeppe, German Aerospace Center (DLR), Braunschweig, Germany	1530 hrs AIAA-2015-1747 **Improved Convergence and Robustness of USM3D Solutions on Mixed Element Grids (Invited)** M. Pandya, NASA Langley Research Center, Hampton, VA; B. Diskin, National Institute of Aerospace, Hampton, VA; J. Thomas, N. Frink, NASA Langley Research Center, Hampton, VA			

Thursday, 8 January 2015						
372-FD-49	**Wing Aerodynamics II**					**Daytona 1**
Chaired by: K. TAIRA, Florida State University and M. OL, US Air Force Reseach Laboratory						
1400 hrs AIAA-2015-1748 **A Semi-Empirical Approach to Modeling Lift Production** P. Mancini, F. Manar, A. Jones, University of Maryland, College Park, College Park, MD	1430 hrs AIAA-2015-1749 **Reduced-Order Two- and Three-Dimensional Vortex Modeling of Unsteady Separated Flows** J. Eldredge, D. Darakananda, University of California, Los Angeles, Los Angeles, CA	1500 hrs AIAA-2015-1750 **The Lift Problem in Flapping Forward Flight at Low Reynolds Numbers** T. Liu, Western Michigan University, Kalamazoo, MI; S. Wang, X. Zhang, G. He, Chinese Academy of Sciences, Beijing, China	1530 hrs AIAA-2015-1751 **Flow around an Oscillating Tandem-Wing Power Generator** I. Fenercioglu, B. Zaloglu, Istanbul Technical University, Istanbul, Turkey; M. Ashraf, J. Young, J. Lai, University of New South Wales, Canberra, Australia; M. Platzer, AeroHydro Research & Technology Associates, Pebble Beach, CA	1600 hrs AIAA-2015-1752 **Fluid-Structure Interactions for Flexible and Rigid Tandem-Wings at Low Reynolds Numbers** R. Jones, D. Cleaver, I. Gursul, University of Bath, Bath, United Kingdom	1630 hrs AIAA-2015-1753 **Trends in Early Vortex Formation on a Wall-to-wall Plate in Pure Plunge** S. Gunasekaran, A. Altman, University of Dayton, Dayton, OH; K. Granlund, Air Force Research Laboratory, Wright-Patterson AFB, OH	

Thursday, 8 January 2015						
373-GNC-35	**Novel Algorithms in Aircraft GNC**					**Sun Ballroom 3**
Chaired by: R. COWLAGI, Worcester Polytechnic Inst and F. HUGON, Gulfstream Aerospace Corporation						
1400 hrs AIAA-2015-1754 **Research on SINS/CNS Gaussian Particle Filter Integrated Navigation Algorithm for Hypersonic Vehicle** Y. Yu, J. Xu, Z. Xiong, B. Liu, Nanjing University of Aeronautics and Astronautics, Nanjing, China	1430 hrs AIAA-2015-1755 **Adaptive Output Feedback Based on Closed-Loop Reference Models for Hypersonic Vehicles** D. Wiese, A. Annaswamy, Massachusetts Institute of Technology, Cambridge, MA; J. Muse, M. Bolender, Air Force Research Laboratory, Wright-Patterson AFB, OH; E. Lavretsky, The Boeing Company, Huntington Beach, CA	1500 hrs AIAA-2015-1756 **A Selective Self-Locking Actuator and Control Allocation Approach for Thermal Load Minimization** D. Doman, M. Oppenheimer, W. Rone, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2015-1757 **SHERPA: a safe exploration algorithm for Reinforcement Learning controllers** T. Mannucci, E. Van Kampen, C. de Visser, Q. Chu, Delft University of Technology, Delft, The Netherlands	1600 hrs AIAA-2015-1758 **Flight Control Using Physical Dynamic Inversion** F. Zhang, F. Holzapfel, Technical University of Munich, Munich, Germany	1630 hrs AIAA-2015-1759 **Distance Fields Over Grid method for Aircraft Envelope Determination** R. Helsen, E. Van Kampen, C. de Visser, Q. Chu, Delft University of Technology, Delft, The Netherlands	1700 hrs AIAA-2015-1760 **Fundamental Control System Design Issues for Scramjet-Powered Hypersonic Vehicles** J. Echols, K. Puttannaiah, K. Mondal, A. Rodriguez, Arizona State University, Tempe, AZ

Thursday, 8 January 2015						
374-GNC-36	**Robust Control of Uncertain Flight Systems**					**Miami 1**
Chaired by: P. LU, Delft University of Technology and J. SPEYER, UCLA						
1400 hrs AIAA-2015-1761 **Trajectory Optimization under Uncertainty based on Polynomial Chaos Expansion** F. Xiong, Beijing Institute of Technology, Beijing, China; Y. Xiong, Bank of America, Charlotte, NC; B. Xue, Nvidia Corporation, Santa Clara, CA	1430 hrs AIAA-2015-1762 **Robustness and Tuning of Incremental Backstepping Approach** P. Lu, E. Van Kampen, Q. Chu, Delft University of Technology, Delft, The Netherlands	1500 hrs AIAA-2015-1763 **Output Feedback Adaptive Control for Uncertain Systems with Unmodeled Dynamics and Input Uncertainty** R. Chandramohan, Gulfstream Aerospace Corporation, Savannah, GA; A. Calise, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2015-1764 **Controller Synthesis for Periodic, Linear-Distributed Parameter Systems: A Channel Flow Application** S. Kang, J. Speyer, J. Kim, University of California, Los Angeles, Los Angeles, CA	1600 hrs AIAA-2015-1765 **Cyclic Control for Multiple Satellite Cluster Flight Using Fixed Magnitude Thrust** H. Zhang, P. Gurfil, Technion–Israel Institute of Technology, Haifa, Israel		

Thursday, 8 January 2015						
375-GNC-37	**Mini/Micro Air Vehicle GNC II**					**Sun Ballroom 6**
Chaired by: S. CHUNG, University of Illinois at Urbana-Champaign and K. KOCHERSBERGER, Virginia Polytechnic Institute and State University						
1400 hrs AIAA-2015-1766 **Fast Actuator Fault Detection and Reconfiguration for Multicopters** M. Frangenberg, J. Stephan, W. Fichter, University of Stuttgart, Stuttgart, Germany	1430 hrs AIAA-2015-1767 **Robust Tracking Control of a Quadrotor in the Presence of Uncertainty and Non-vanishing Disturbance** C. Ton, National Research Council, Shalimar, FL	1500 hrs AIAA-2015-1768 **Robust Design of Transition Flight Control System with Input Constraint** R. Hatori, K. Uchiyama, Nihon University, Funabashi, Japan	1530 hrs AIAA-2015-1769 **Onboard Flow Sensing for Downwash Detection and Avoidance with a Small Quadrotor Helicopter** D. Yeo, N. Sydney, D. Paley, University of Maryland, College Park, College Park, MD; D. Sofge, Naval Research Laboratory, Washington, DC	1600 hrs AIAA-2015-1770 **Coordinated Standoff Flights for Multiple UAVs via Second-Order Sliding Modes** T. Yamasaki, National Defense Academy, Yokosuka, Japan; S. Balakrishnan, Missouri University of Science and Technology, Rolla, MO; H. Takano, I. Yamaguchi, National Defense Academy, Yokosuka, Japan		

Thursday, 8 January 2015						
376-GNC-38	**Space Exploration and Transportation GNC**					**Sun Ballroom 4**
Chaired by: U. SHANKAR, The Johns Hopkins University Applied Physics Laboratory and T. VAN ZWIETEN, NASA						
1400 hrs AIAA-2015-1771 **Optimal Aerocapture Guidance** P. Lu, Iowa State University, Ames, IA; C. Cerimele, M. Tigges, D. Matz, NASA Johnson Space Center, Houston, TX	1430 hrs AIAA-2015-1772 **IMU-DM Integrated Navigation and Terminal Reentry Guidance for Accurate Guided Reentry Flight** S. Matsumoto, Y. Kondoh, T. Imada, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan; S. Kobayashi, N. Motoyama, Mitsubishi Group, Tsukuba, Japan	1500 hrs AIAA-2015-1773 **Analysis of Geometric Effects on Tightly-Integrated INS/Vision for Lunar Descent Navigation** Y. Park, H. Jeon, C. Park, Seoul National University, Seoul, South Korea	1530 hrs AIAA-2015-1774 **Variable Memory Recurrent Neural Networks For Launch Vehicle Attitude Control** R. Sclafani, P. Shankar, California State University, Long Beach, CA	1600 hrs AIAA-2015-1775 **In-Flight Suppression of a Destabilized F/A-18 Structural Mode Using the Space Launch System Adaptive Augmenting Control System** J. Wall, NASA Marshall Space Flight Center, Huntsville, AL; C. Miller, C. Hanson, NASA Armstrong Flight Research Center, Edwards, CA; T. Van Zwieten, J. Orr, E. Gilligan, NASA Marshall Space Flight Center, Huntsville, AL	1630 hrs AIAA-2015-1776 **Launch Vehicle Manual Steering with Adaptive Augmenting Control: In-Flight Evaluations of Adverse Interactions Using a Piloted Aircraft** C. Hanson, C. Miller, NASA Armstrong Flight Research Center, Edwards, CA; T. Van Zwieten, E. Gilligan, NASA Marshall Space Flight Center, Huntsville, AL; J. Orr, Draper Laboratory, Huntsville, AL; J. Wall, Dynamic Concepts, Inc., Huntsville, AL	1700 hrs AIAA-2015-1777 **Analysis of Orbit-Attitude Coupling of Spacecraft Near Small Solar System Bodies** G. Misra, A. Sanyal, New Mexico State University, Las Cruces, NM

Thursday, 8 January 2015						
377-GNC-39	**Spacecraft Guidance, Navigation, and Control V**					**Sun Ballroom 5**
Chaired by: S. KOWALTSCHEK, European Space Agency						
1400 hrs AIAA-2015-1778 **Two-input two-output port model for mechanical systems** D. Alazard, University of Toulouse, Toulouse, France; J. Perez, C. Cumer, T. Loquen, ONERA, Toulouse, France	1430 hrs AIAA-2015-1779 **Simulation and Analysis of Satellite Dynamics with Flexible Wire Antennas and Nutation Damper** Y. Hitachi, T. Kamiya, Y. Kusakawa, NEC Corporation, Fuchu, Japan; S. Sakai, A. Matsuoka, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1500 hrs AIAA-2015-1780 **Spacecraft Adaptive Attitude Control with Application to Space Station Free-Flyer Robotic Capture** J. Shi, S. Ulrich, Carleton University, Ottawa, Canada; A. Allen, MDA, Brampton, Canada	1530 hrs AIAA-2015-1781 **Solar Pressure Variable Structure Model Reference Adaptive Spacecraft Attitude Control in Elliptic Orbits** K. Lee, Kwandong University, Gangneung, Korea (the Republic of); S. Singh, University of Nevada, Las Vegas, Las Vegas, NV	1600 hrs AIAA-2015-1782 **Satellite Attitude Control System Using Three-Dimensional Reaction Wheel** H. Watanabe, Nihon University, Funabashi, Japan; K. Masuda, Toyota Motor Corporation, Nagoya, Japan; K. Uchiyama, Nihon University, Funabashi, Japan	1630 hrs AIAA-2015-1783 **Attitude Tracking Control of a Spacecraft by Two Reaction Wheels** H. Gui, S. Xu, Beihang University, Beijing, China	

Thursday, 8 January 2015						
378-GT-8	**Hypersonic Test Capabilities II (Invited)**					**Sanibel 1**
Chaired by: J. LAFFERTY, AEDC and K. BERGER, NASA-Langley Research Center						
1400 hrs AIAA-2015-1784 **Hypersonic Test Capabilities at AEDC's Aerodynamic and Propulsion Test Unit** G. Garrard, Aerospace Testing Alliance, Arnold AFB, TN	1430 hrs Oral Presentation **Recent Upgrades to the NASA Langley 8-Foot High Temperature Tunnel** S. Harvin, J. Curro, A. Fuchs, G. Mekkes, NASA Langley Research Center, Hampton, VA	1500 hrs Oral Presentation **Hypersonic Aero Propulsion Clean Air Testbed (HAPCAT): Development and Activation Status** E. Tucker, W. Burfitt, Arnold Engineering Development Complex, Arnold AFB, TN	1530 hrs AIAA-2015-1785 **Design and Characterization of the Michigan Hypersonic Expansion Tube Facility (MHExT)** Y. Abul-Huda, M. Gamba, University of Michigan, Ann Arbor, Ann Arbor, MI	1600 hrs AIAA-2015-1786 **Effects of Shock-Tube Cleanliness on Slender-Body Hypersonic Instability and Transition Studies at High-Enthalpy** N. Parziale, Stevens Institute of Technology, Hoboken, NJ; J. Jewell, Air Force Research Laboratory, Wright-Patterson AFB, OH; I. Leyva, Air Force Research Laboratory, Edwards AFB, CA; J. Shepherd, H. Hornung, California Institute of Technology, Pasadena, CA	1630 hrs AIAA-2015-1787 **Methods for Identifying Key Features in Schlieren Images from Hypersonic Boundary-Layer Instability Experiments** N. Shumway, S. Laurence, University of Maryland, College Park, College Park, MD	

Thursday, 8 January 2015						
379-GT-9	**International Symposium on Strain-Gage Balances (Invited)**					**Miami 3**
Chaired by: R. RHEW, NASA-Langley Research Center and K. LYNN, NASA Langley Research Center						
1400 hrs AIAA-2015-1788 **Design, Manufacturing, & Commissioning of a new NLR Half Model Balance for ETW** M. Wright, European Transonic Windtunnel, Cologne, Germany	1430 hrs AIAA-2015-1789 **Flexural Fillet Geometry Optimization for Design of Force Transducers used in Aerodynamic Testing** K. Lynn, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2015-1790 **Rotating Shaft Balances for CRORs** T. Fetet, ONERA, Meudon, France	1530 hrs Oral Presentation **Development of an In-Situ Load System for Internal WT Balances Including Prediction Intervals** S. Commo, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2015-1791 **On the Application of Analogue Signal Integrated Circuits in a Refurbished Side Wall Balance** P. Bidgood, Council for Scientific and Industrial Research, Pretoria, South Africa	1630 hrs AIAA-2015-1792 **Variable Acceleration Force Calibration System (VACS)** T. Johnson, Institute for Defense Analyses, Alexandria, VA	

Thursday, 8 January 2015						
380-IS-12	**Enhancing Safety using Systems Health Management**					**Osceola Ballroom 1**
Chaired by: J. FIGUEROA, NASA Stennis Space Center						
1400 hrs AIAA-2015-1793 **In-Flight Testing of a Bio-Inspired Approach for Assessment of an UAV Outside Bounds of Nominal Design** I. Moguel, H. Moncayo, A. Perez Rocha, Embry-Riddle Aeronautical University, Daytona Beach, FL; M. Perhinschi, West Virginia University, Morgantown, WV	1430 hrs AIAA-2015-1794 **Application of Model-based Prognostics Framework to Pneumatic Valves on Cryogenic Testbed** C. Kulkarni, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; M. Daigle, NASA Ames Research Center, Moffett Field, CA; G. Gorospe, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; K. Goebel, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2015-1795 **Developing a Fault Management Guidebook for NASA's Deep Space Robotic Missions** L. Fesq, R. Weitl, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1530 hrs AIAA-2015-1796 **Verification of Functional Fault Models and the Use of Resource Efficient Verification Tools** R. Bis, N&R Engineering, Inc., Cleveland, OH; W. Maul, Vantage Partners, LLC, Brook Park, OH	1600 hrs AIAA-2015-1797 **Application of an AIS to the problem of through life health management of remotely piloted aircraft** J. Pelham, I. Fan, I. Jennions, Cranfield University, Cranfield, United Kingdom; J. McFeat, BAE Systems, London, United Kingdom	1630 hrs AIAA-2015-1798 **An Off-Runway Emergency Landing Aid for a Small Aircraft Experiencing Loss of Thrust** P. Di Donato, National Civil Aviation Agency, São José dos Campos, Brazil; E. Atkins, University of Michigan, Ann Arbor, Ann Arbor, MI	

Thursday, 8 January 2015						
381-MDO-9	**MDO: General Applications**					**Sarasota 3**
Chaired by: S. CHOI and G. KENNEDY, Georgia Institute of Technology						
1400 hrs AIAA-2015-1799 **Large-scale Multi-material Topology Optimization for Additive Manufacturing** G. Kennedy, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2015-1800 **Multi-Objective Aeroacoustic Shape Optimization by Variable-Fidelity Models and Response Surface Surrogates** L. Leifsson, S. Koziel, Reykjavik University, Reykjavik, Iceland; S. Hosder, Missouri University of Science and Technology, Rolla, MO	1500 hrs AIAA-2015-1801 **Adjoint - based Aeroacoustic Design Optimization for Blade Vortex Interaction Noise** E. Fabiano, D. Mavriplis, J. Sitaraman, University of Wyoming, Laramie, Laramie, WY	1530 hrs AIAA-2015-1802 **Multi-Objective WindFarm Optimization Simultaneously Optimizing COE and Land Footprint of Wind Farms under Different Land Plot Availability** W. Tong, Syracuse University, Syracuse, NY; S. Chowdhury, A. Messac, Mississippi State University, Mississippi State, MS			

Thursday, 8 January 2015						
382-MST-14	**Unmanned Aerial Systems**					**Sun Ballroom 1**
Chaired by: J. SHIN, The Aerospace Corporation						
1400 hrs AIAA-2015-1803 **System Identification, HIL and Flight Testing of an Adaptive Controller on a Small Scale Unmanned Aircraft** P. Kumar, J. Steck, Wichita State University, Wichita, KS	1430 hrs AIAA-2015-1804 **Dynamic Modeling and Analysis of a Single Tilt-Wing Unmanned Aerial Vehicle** J. Jeong, S. Yoon, S. Kim, J. Suk, Chungnam National University, Daejeon, South Korea	1500 hrs AIAA-2015-1806 **Kinematic Modeling of Bat Wing Motion Using Articular Surface Geometry** M. Bender, A. Kurdila, R. Mueller, Virginia Polytechnic Institute and State University, Blacksburg, VA	1530 hrs AIAA-2015-1807 **Effects of Winglets on Small Unmanned Aerial Systems** C. Williams, J. Weaver, L. Fritz, A. Blevins, University of Kansas, Lawrence, Lawrence, KS			

Thursday, 8 January 2015						
383-MST-15	**Special Topics in Modeling and Simulation**					**Sun Ballroom 2**
Chaired by: B. JACKSON, NASA-Langley Research Center						
1400 hrs AIAA-2015-1808 **Requirements and Design Challenges in Rotorcraft Flight Simulations for Research Applications** F. Viertler, M. Hajek, Technical University of Munich, Munich, Germany	1430 hrs AIAA-2015-1809 **A Symplectic Technique for Model Reduction of Wave Equations** L. Peng, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1500 hrs AIAA-2015-1810 **Further Development of Verification Check-cases for Six-Degree-of-Freedom Flight Vehicle Simulations** B. Jackson, M. Madden, NASA Langley Research Center, Hampton, VA; R. Shelton, NASA Johnson Space Center, Houston, TX; M. Castro, D. Noble, NASA Armstrong Flight Research Center, Edwards, CA; C. Zimmerman, NASA Marshall Space Flight Center, Huntsville, AL	1530 hrs AIAA-2015-1811 **Design Data Management in Model-Based Design** S. Mahapatra, P. Gotika, MathWorks, Natick, MA	1600 hrs AIAA-2015-1812 **Design Variant Management in Model-Based Design** S. Mahapatra, P. Gotika, MathWorks, Natick, MA		

Thursday, 8 January 2015						
384-NDA-8	**Non-Deterministic Methods**					**Osceola Ballroom 5**
Chaired by: C. ROY, Virginia Tech and W. YAMAZAKI, Nagaoka University of Technology						
1400 hrs AIAA-2015-1813 **Model and Data Uncertainty Effects on Reliability Estimation** S. Nannapaneni, S. Mahadevan, Vanderbilt University, Nashville, TN	1430 hrs AIAA-2015-1814 **Hypervolume-based Multi-Objective Expected Improvement for Three-Objective Functions** J. Valenzuela-del Río, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2015-1815 **Aerodynamic Uncertainty Quantification of Supersonic Biplane Airfoil via Polynomial Chaos Approach** Y. Suga, W. Yamazaki, Nagaoka University of Technology, Nagaoka, Japan	1530 hrs AIAA-2015-1816 **Sequential Reliability Estimation Correction (SREC) with Univariate Revolving Integration (URI)** H. Bae, Wright State University, Dayton, OH	1600 hrs AIAA-2015-1817 **Multi-Source Surrogate Modeling with Bayesian Hierarchical Regression** S. Ghosh, R. Jacobs, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1630 hrs AIAA-2015-1818 **Sensitivity Analysis Methods for Systems with Epistemic Uncertainties** L. Hale, M. Patil, C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA	1700 hrs AIAA-2015-1819 **Uncertainty Quantification of State Boundaries in Thin Beam Buckling Experiments** G. Bartram, R. Perez, R. Wiebe, B. Smarslok, Air Force Research Laboratory, Wright-Patterson AFB, OH

Thursday, 8 January 2015						
385-OPS-1	**Space Operations**					**Emerald 1**
Chaired by: L. BRYANT, Jet Propulsion Laboratory						
1400 hrs AIAA-2015-1820 **A Commercial Transportation System For Robotic Lunar Exploration** M. Tucker, D. Dolan, Moon Base Builders, Inc., Portland, OR	1430 hrs AIAA-2015-1822 **Compact 4D Envelopes For Integrated Air-and-Space Traffic Management** T. Colvin, J. Alonso, Stanford University, Stanford, CA					

Thursday, 8 January 2015		
386-PANEL-8 **1400 - 1600 hrs**	**NASA Research Plans for Assured Autonomy for Aviation Transformation**	**Osceola Ballroom B**

Moderator: Sanjay Garg, Chief, Intelligent Control and Autonomy Branch, NASA Glenn Research Center

Panelists:

John Cavolowsky
Program Director, Airspace Operations and Safety Program
Aeronautics Research Mission Directorate
NASA

Jay Dryer
Program Director, Advanced Air Vehicles Program
Aeronautics Research Mission Directorate
NASA

Robert Pearce
Director - Strategy, Architecture and Analysis
Aeronautics Research Mission Directorate
NASA

Doug Rohn
Program Director, Transformative Aeronautics Concepts Program
Aeronautics Research Mission Directorate
NASA

Ed Waggoner
Program Director, Integrated Aviation Systems Program
Aeronautics Research Mission Directorate
NASA

Thursday, 8 January 2015						
387-PC-19	**Detonations, Explosions, and Supersonic Combustion II**					**Emerald 3**
Chaired by: J. AUSTIN, University of Illinois at Urbana-Champaign and E. BARBOUR, The Aerospace Corpation						
1400 hrs AIAA-2015-1823 **Development of a High Fidelity RDE Simulation Capability** P. Cocks, A. Holley, C. Greene, M. Haas, United Technologies Corporation, East Hartford, CT	1430 hrs Oral Presentation **Three-dimensional behavior in oscillation mechanism of shock-induced combustion around a blunt projectile** Y. Sakuragi, A. Matsuo, Keio University, Yokohama, Japan	1500 hrs AIAA-2015-1824 **Numerical Investigation of Shock-Induced Combustion with Unsteady Oscillation around Hypervelocity Conical Projectile** K. Maeda, A. Matsuo, Keio university, Yokohama, Japan				

Thursday, 8 January 2015						
388-PC-20	**Rocket and Air-Breathing Combustion II**					**Emerald 7**
Chaired by: T. OMBRELLO, Air Force Research Laboratory						
1400 hrs AIAA-2015-1825 **Effects of Injector Geometry on Co-Flowing Planar Jet Mixings under Supercritical Pressures** D. Muto, N. Tsuboi, Kyushu Institute of Technology, Kitakyushu, Japan; H. Terashima, University of Tokyo, Bunkyo, Japan	1430 hrs AIAA-2015-1826 **Prediction of Combustion Instability with Detailed Chemical Kinetics** S. Sardeshmukh, S. Heister, W. Anderson, Purdue University, West Lafayette, IN	1500 hrs AIAA-2015-1827 **A Three-Dimensional Analysis of Swirl Injector Flow Dynamics at Supercritical Conditions** X. Wang, Georgia Institute of Technology, Atlanta, GA; H. Huo, General Electric Company, Niskayuna, NY; Y. Wang, L. Zhang, V. Yang, Georgia Institute of Technology, Atlanta, GA				

Thursday, 8 January 2015						
389-PDL-11	**Plasma & Laser Physics II**					**Emerald 4**
Chaired by: H. LOWRY, Aerospace Testing Alliance (ATA)						
1400 hrs AIAA-2015-1828 **Laser Induced Fluorescence Measurements of Xenon Ion Velocity Distributions near Ceramic Surfaces** S. Walsh, A. Yalin, Colorado State University, Fort Collins, CO	1430 hrs AIAA-2015-1829 **Thomson Scattering Measurements of Electron Density and Electron Temperature in a Nanosecond Pulse Surface Discharge** A. Roettgen, I. Shkurenkov, W. Lempert, I. Adamovich, Ohio State University, Columbus, OH	1500 hrs AIAA-2015-1830 **Measurement of the Vibrational Distribution Function of Chemically Produced Carbon Monoxide for the Development of a Chemical Carbon Monoxide Laser** K. Frederickson, J. Rich, W. Lempert, I. Adamovich, Ohio State University, Columbus, OH	1530 hrs AIAA-2015-1831 **Laser Ignition of Methane-Air Mixtures with a Rapid Compression Machine** C. Dumitrache, M. Baumgardner, A. Marchese, A. Yalin, Colorado State University, Fort Collins, CO	1600 hrs AIAA-2015-1832 **Application of the Modified Drift-Diffusion Theory to Study of the Two-Dimensional Structure of the Penning Discharge** S. Surzhikov, Russian Academy of Sciences, Moscow, Russia		

Thursday, 8 January 2015						
390-SATS-3	**Small Satellites - Fusion**					**Naples 3**
Chaired by: J. STRAUB, University of North Dakota						
1400 hrs AIAA-2015-1833 **Aerodynamics analyse and attitude control design of ZJUCube for QB50 project** T. Meng, D. Hu, B. Yang, Z. Jin, Zhejiang University, Hangzhou, China	1430 hrs AIAA-2015-1834 **Feasibility of Small Unmanned Spacecraft Launches via Low Acceleration Railguns Comprising Helical Tracks** A. Hassan, University of Virginia, Charlottesville, Charlottesville, VA	1500 hrs AIAA-2015-1835 **OpenOrbiter Mechanical Design: a New Approach to the Design of a 1-U CubeSat** B. Kading, University of North Dakota, Grand Forks, Grand Forks, ND	1530 hrs Small Satellites - Fusion This panel will provide a forum to discuss all aspects of small spacecraft development, missions and operations. It will commence with brief introductions of and presentations by the panelists, followed by several moderator questions and the opportunity for audience members to ask their own questions. Moderator: Jeremy Straub - University of North Dakota Panelists: **Jake Szatkowski**, United Launch Alliance; **John W. Conklin**, University of Florida; **Andrew Santangelo**, sci_Zone, Inc.; **Scott Palo**, University of Colorado			

Thursday, 8 January 2015						
391-SCS-9	**Test and Qualification of Spacecraft Structures**					**Osceola Ballroom 4**
Chaired by: G. DAVIS, Jet Propulsion Laboratory and S. PELLEGRINO, California Institute of Technology						
1400 hrs AIAA-2015-1836 **MOIRE Primary Diffractive Optical Element Structure Deployment Testing** D. Waller, L. Campbell, J. Domber, D. Putnam, R. Thompson, Ball Aerospace & Technologies Corporation, Boulder, CO	1430 hrs AIAA-2015-1837 **The Design and Test of the GOSSAMER-1 Boom Deployment Mechanisms Engineering Model** M. Straubel, German Aerospace Center (DLR), Braunschweig, Germany; P. Seefeldt, P. Spietz, German Aerospace Center (DLR), Bremen, Germany; C. Huehne, German Aerospace Center (DLR), Braunschweig, Germany	1500 hrs AIAA-2015-1838 **Testing the Deployment Repeatability of a Precision Deployable Boom Prototype for the Proposed SWOT KaRIn Instrument** G. Agnes, J. Waldman, L. Peterson, R. Hughes, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA				

Thursday, 8 January 2015						
392-SD-16	**Special Session: Adaptive Aeroelastic Wing Shaping Control II**					**Sun Ballroom D**
Chaired by: N. NGUYEN, NASA-Ames Research Center and J. URNES, Boeing Engineering Operations & Technology						
1400 hrs AIAA-2015-1839 **Aerodynamic Load Analysis of a Variable Camber Continuous Trailing Edge Flap System on a Flexible Wing Aircraft** E. Ting, T. Dao, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1430 hrs AIAA-2015-1840 **Aeroelasticity of Axially Loaded Aerodynamic Structures for Truss-Braced Wing Aircraft** N. Nguyen, NASA Ames Research Center, Moffett Field, CA; E. Ting, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	1500 hrs AIAA-2015-1841 **Comparison of Unsteady Aerodynamics Approximations for Time-Domain Representation of Frequency-Independent Aeroelastic State-Space Models** E. Tal, Delft University of Technology, Delft, The Netherlands; N. Nguyen, NASA Ames Research Center, Moffett Field, CA; E. Ting, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	1530 hrs AIAA-2015-1842 **Active Control for Elastic Wing Structure Dynamic Modes** J. Urnes, J. Dykman, H. Truong, The Boeing Company, St. Louis, MO	1600 hrs AIAA-2015-1843 **A Multi-Objective Flight Control Approach for Performance Adaptive Aeroelastic Wing** N. Nguyen, NASA Ames Research Center, Moffett Field, CA; E. Tal,	1630 hrs AIAA-2015-1844 **LMI-based Multiobjective Optimization and Control of Flexible Aircraft Using VCCTEF** S. Swei, NASA Ames Research Center, Moffett Field, CA; G. Zhu, Michigan State University, East Lansing, MI; N. Nguyen, NASA Ames Research Center, Moffett Field, CA	

Thursday, 8 January 2015						
393-SD-17	**Gust and Turbulence Loads**					**Tampa 1**
Chaired by: P. TAYLOR, Gulfstream Aerospace Corporation and H. KIM, Boeing Defense, Space & Security						
1400 hrs AIAA-2015-1845 **Flight Loads and Atmospheric Turbulence Analysis From a Fleet of ASM/Lead Aircraft** A. Menon, L. Kliment, K. Rokhsaz, Wichita State University, Wichita, KS; J. Nelson, B. Terning, U.S. Forest Service, Boise, ID	1430 hrs AIAA-2015-1846 **Nonlinear Folding Wing-Tips for Gust Loads Alleviation** V. Hodigere Siddaramaiah, D. Calderon, J. Cooper, University of Bristol, Bristol, United Kingdom; T. Wilson, Airbus, Bristol, United Kingdom	1500 hrs AIAA-2015-1847 **Efficient Prediction and Uncertainty Propagation of Correlated Loads** I. Tartaruga, P. Sartor, J. Cooper, University of Bristol, Bristol, United Kingdom; S. Coggon, Airbus, Bristol, United Kingdom; Y. Lemmens, Siemens, Leuven, Belgium	1530 hrs AIAA-2015-1849 **Dynamic Response of Elastic Aircrafts with Consideration of Two-dimensional Discrete Gust Excitation** Y. Cheng, Beihang University, Beijing, China			

Thursday, 8 January 2015						
394-SD-18	**Active Aeroelastic Control**					**Tampa 2**
Chaired by: I. CHOPRA, University of Maryland and A. PALAZOTTO, AFIT						
1400 hrs AIAA-2015-1850 **Variable Stiffness Technique for Turbomachinery using Shape Memory Alloys** R. Wischt, N. Garafolo, University of Akron, Akron, OH	1430 hrs AIAA-2015-1851 **Aeroelastic System Control by a Multiple Spoiler Actuation and MRAC Scheme** M. Cassaro, M. Battipede, Technical University of Turin, Turin, Italy; P. Marzocca, G. Ahmadi, Clarkson University, Potsdam, NY	1500 hrs AIAA-2015-1852 **Experimental investigation of an autonomous flap for load alleviation** L. Bernhammer, S. Navalkar, J. Sodja, R. De Breuker, Delft University of Technology, Delft, The Netherlands; M. Karpel, Technion-Israel Institute of Technology, Haifa, Israel	1530 hrs AIAA-2015-1853 **Design Improvements of Smart Active Trailing-edge Flap for Rotating Test** J. Kang, W. Eun, J. Lim, U. Visconti, S. Shin, Seoul National University, Seoul, South Korea	1600 hrs AIAA-2015-1854 **Active Control on Helicopter Blades with a L-Shaped Gurney Flap** V. Motta, G. Quaranta, Technical University of Milan, Milan, Italy	1630 hrs AIAA-2015-1855 **A Modified Receptance Method for Active Control of a Nonlinear Aeroelastic System** C. Zhen, D. Li, J. Xiang, Beihang University, Beijing, China	

Thursday, 8 January 2015						
395-SD-19	**Test and Evaluation and System Identification**					**Tampa 3**
Chaired by: B. WILLIS, Boeing Defense, Space & Security and A. GREWAL, National Research Council Canada						
1400 hrs AIAA-2015-1856 **Experimental Evaluation of Wind Turbine Rotor Tower Structural Dynamic Interaction** T. Arsenault, P. Marzocca, Clarkson University, Potsdam, NY; G. Coppotelli, University of Rome, Rome, Italy; A. Achuthan, Clarkson University, Potsdam, NY; C. Grappasonni, University of Brussels, Brussels, Belgium	1430 hrs AIAA-2015-1857 **Design and Testing of an Active Aeroelastic Test Bench (AATB) for Unsteady Aerodynamic and Aeroelastic Experiments** J. Ertveldt, J. Schoukens, R. Pintelon, S. Vanlanduit, B. De Pauw, A. Rezayat, Vrije Universiteit Brussel, Brussels, Belgium	1500 hrs AIAA-2015-1858 **Preparatory Analyses and Tests of W-WING Whirl Flutter Demonstrator** J. Cecrdle, J. Malecek, O. Vich, P. Malinek, Aeronautical Research and Test Institute (VZLU), Prague, Czech Republic	1530 hrs AIAA-2015-1859 **Correlation and Updating of an Unmanned Aerial Vehicle Finite Element Model** S. Mezzapesa, M. Arras, G. Coppotelli, University of Rome "La Sapienza", Rome, Italy; J. Miller, D. Valyou, P. Marzocca, Clarkson University, Potsdam, NY	1600 hrs AIAA-2015-1860 **Design and Analysis of a Wind Tunnel Test Model System for Rolling Maneuver Load Alleviation of Flying Wings** H. Yin, Z. Wu, C. Yang, Beihang University, Beijing, China	1630 hrs AIAA-2015-1861 **Fin-actuator System Modeling and Experimental Validating for Aeroelastic Research** R. Zhang, Z. Wu, C. Yang, Beihang University, Beijing, China	

Thursday, 8 January 2015						
396-SE-2	**Systems Engineering II**					**Miami 2**
Chaired by: M. BAILEY, Defense Acquisition University and D. DRESS, NASA Langley Research Center						
1400 hrs AIAA-2015-1862 **Adapting the Systems Engineering Paradigm to Revitalize Program Control/Program Integration Processes into USAF Complex Systems Acquisition Programs** R. Flores, Embry-Riddle Aeronautical University, Daytona Beach, FL	1430 hrs AIAA-2015-1863 **Decision Analysis Applied to Small Satellite Risk Management** K. Gamble, E. Lightsey, University of Texas, Austin, Austin, TX	1500 hrs AIAA-2015-1864 **Seeking an Open Framework for Systems Engineering in Aeronautics and Astronautics** V. Johnson, R. Voros, Textron Aviation, Wichita, KS	1530 hrs AIAA-2015-1865 **Report on the Science of Systems Engineering Workshop** P. Collopy, University of Alabama, Huntsville, Huntsville, AL			

Thursday, 8 January 2015						
397-SOF-2	**Software Challenges in Aerospace Workshop II**					**Osceola Ballroom 2**
Chaired by: S. BLANCHETTE, Software Engineering Institute; M. DAVIES, NASA-Ames; K. FEIGH, Georgia Institute of Technology and J. MURPHY, NASA Ames Research Center						
1400 hrs AIAA-2015-1866 **Verification of Real-Time Systems using Statistical Model Checking** J. Hansen, L. Wrage, Carnegie Mellon University, Pittsburgh, PA	1430 hrs AIAA-2015-1867 **Dependability of Software of Unknown Pedigree** S. Cook, MITRE Corporation, McLean, VA; A. Buttner, E. Lester, MITRE Corporation, Bedford, MA	1500 hrs AIAA-2015-1868 **Trusting Outsourced Components In Flight Critical Systems** F. Howar, T. Kahsai, NASA Ames Research Center, Moffett Field, CA; A. Gurfinkel, Carnegie Mellon University, Pittsburgh, PA; C. Tinelli, University of Iowa, Iowa City, Iowa City, IA	1530 hrs AIAA-2015-1869 **Maintenance Phase Considerations for Onboard Flight Software Development** K. Gundy-Burlet, NASA Ames Research Center, Moffett Field, CA	1600 hrs AIAA-2015-1870 **Wrap-Up Discussion** S. Blanchette, Carnegie Mellon University, Pittsburgh, PA; J. Murphy, M. Davies, NASA Ames Research Center, Moffett Field, CA		

Thursday, 8 January 2015						
398-STR-17	**Design, Test and Analysis II**					**Sarasota 1**
Chaired by: G. MABSON, Boeing Engineering Operations & Technology and B. BEDNARCYK, NASA Glenn Research Center						
1400 hrs AIAA-2015-1871 **Development of the PRSEUS Multi-Bay Pressure Box for a Hybrid Wing Body Vehicle** D. Jegley, NASA Langley Research Center, Hampton, VA; A. Velicki, The Boeing Company, Huntington Beach, CA	1430 hrs AIAA-2015-1872 **On the Study of PRSEUS - Structural Integrity and Wing Design for General Aviation Aircraft** S. Behl, R. Joshi, T. Surti, K. Ali, D. Kim, A. Tamijani, Embry-Riddle Aeronautical University, Daytona Beach, FL; et al.	1500 hrs AIAA-2015-1873 **Preliminary Weight Savings Estimate for a Commercial Transport Wing Using Rod-stiffened Stitched Composite Technology** A. Lovejoy, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2015-1874 **Damage Tolerant Novel Laminated Structures** M. Falugi, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2015-1875 **Peridynamic Modeling of Defects in Composites** Y. Hu, E. Madenci, University of Arizona, Tucson, Tucson, AZ; N. Phan, Naval Surface Warfare Center, Patuxent, MD		

Thursday, 8 January 2015						
399-STR-18	**Special Session: USAF Benchmarking of Composite Damage Prediction Methods**					**Tallahassee 3**
Chaired by: S. CLAY, Air Force Reseach Laboratory and S. ENGELSTAD, Lockheed Martin Aeronautics						
1400 hrs AIAA-2015-1876 **Assessment of Composite Damage Growth Tools for Aircraft Structure - Part I** S. Engelstad, J. Action, Lockheed Martin Corporation, Marietta, GA; S. Clay, R. Holzwarth, Air Force Research Laboratory, Wright-Patterson AFB, OH; R. Dalgarno, D. Robbins, AutoDesk, Inc., Laramie, WY	1430 hrs AIAA-2015-1877 **Assessment of Reduced Order Homogenization for Damage Tolerant Design Principles (DTDP) of Advanced Composite Aircraft Structures** A. Shojaei, Multiscale Design System, LLC, New York, NY; J. Fish, Columbia University, New York, NY	1500 hrs AIAA-2015-1878 **Static Validation of Composite Open Hole Analysis Technique for Standard and nonstandard Laminate -Part 1** F. Abdi, C. Godines, AlphaSTAR Corporation, Long Beach, CA; L. Minnetyan, Clarkson University, Potsdam, NY	1530 hrs AIAA-2015-1879 **Application of Reduced Order Multiscale Homogenization to 'Assess and Quantify the Benefits of Applying Damage Tolerant Design Principles to Advanced Composite Aircraft Structures'** M. Bogdanor, R. Crouch, C. Oskay, Vanderbilt University, Nashville, TN	1600 hrs AIAA-2015-1880 **Tensile and Compression Strength Prediction in Laminated Composites by Using Discrete Damage Modeling** E. Iarve, K. Hoos, M. Braginsky, E. Zhou, University of Dayton, Dayton, OH; D. Mollenhauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2015-1881 **Multiscale Static Analysis of Notched and Unnotched Laminates Using the Generalized Method of Cells** L. Hansen, A. Waas, B. Stier, University of Michigan, Ann Arbor, Ann Arbor, MI; P. Naghipour, S. Arnold, B. Bednarcyk, NASA Glenn Research Center, Cleveland, OH; et al.	

Thursday, 8 January 2015						
400-STR-19	**Special Session: Structural Joints & Repair I**					**Sarasota 2**
Chaired by: S. TERMAATH, University of Tennessee and D. NORWOOD, Lockheed Martin Aeronautics						
1400 hrs AIAA-2015-1882 **Flaw and Damage Tolerance of Redundant Adhesively Bonded Joints for Sandwich Structures** E. Lundgren, D. Patel, V. Goyal, C. Phan, The Aerospace Corporation, El Segundo, CA	1430 hrs AIAA-2015-1883 **Adhesively Bonded Joint Modeling Approaches using Linear Finite Element Analysis** A. Lyford, T. Stoumbos, Orbital Sciences Corporation, Dulles, VA; R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2015-1884 **Thermo-mechanical Stresses in Single-Lap Composite Adhesive Joints** S. Kumar, Masdar Institute of Science and Technology, Abu Dhabi, United Arab Emirates	1530 hrs AIAA-2015-1885 **Modeling of Geometrically Graded Multi-material Single-Lap Joints** A. de Tejada Alvarez, S. Kumar, Masdar Institute of Science and Technology, Abu Dhabi, United Arab Emirates	1600 hrs AIAA-2015-1886 **A Variational Approach for Stress Analysis of Single-lap bonded Joints under Mechanical and Thermal Loads** S. Kumar, S. Tampi, G. Pal, Masdar Institute of Science and Technology, Abu Dhabi, United Arab Emirates		

Thursday, 8 January 2015						
401-TES-3	**Energy Efficiency and Waste Reduction**					**Tallahassee 2**
Chaired by: A. CHOUDHURI, University of Texas at El Paso						
1400 hrs AIAA-2015-1887 **Role of Benzene on Thermal Stage Performance in a Claus Process** S. Ibrahim, University of Maryland, College Park, College Park, MD; A. Al Shoaibi, Petroleum Institute, Abu Dhabi, United Arab Emirates; A. Gupta, University of Maryland, College Park, College Park, MD	1430 hrs AIAA-2015-1888 **Analysis of Lift Force, Drag Force, Side Force, Pitching Moment, Yawing Moment, and Rolling Moment** R. Amano, Y. Yen, B. Sinkovec, University of Wisconsin, Milwaukee, Glendale, WI	1500 hrs AIAA-2015-1889 **Thermal Management in Energy Efficient Air Conditioned Buildings** A. Fahim, Housing and Building National Research Center, Cairo, Egypt; E. Khalil, Cairo University, Cairo, Egypt	1530 hrs AIAA-2015-1890 **Use of Algebraic-Stress Model for determination of near-wall Reynolds-Stresses in turbulent flow over a flat plate** R. Amano, S. Beyhaghi, University of Wisconsin, Milwaukee, Glendale, WI	1600 hrs AIAA-2015-1891 **Mathematical Modeling of Air Flow and Comfort in Places of Worship** E. Khalil, Cairo University, Cairo, Egypt		

Thursday, 8 January 2015						
402-TP-9	**NASA Entry Systems Modeling Project**					**Sun Ballroom B**
Chaired by: M. WRIGHT, NASA Ames Research Center						
1400 hrs AIAA-2015-1892 **An Overview of Technology Investments in the NASA Entry Systems Modeling Project** M. Wright, NASA Ames Research Center, Moffett Field, CA; M. Hughes, NASA Langley Research Center, Hampton, VA; M. Barnhardt, NASA Ames Research Center, Moffett Field, CA; A. Calomino, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2015-1893 **Development of the US3D Code for Advanced Compressible and Reacting Flow Simulations** G. Candler, H. Johnson, I. Nompelis, V. Gidzak, P. Subbareddy, University of Minnesota, Minneapolis, Minneapolis, MN; M. Barnhardt, ERC, Inc., Moffett Field, CA	1500 hrs AIAA-2015-1894 **Radiative Heating for MSL Entry: Verification of Simulations from Ground Test to Flight Data** B. Cruden, A. Brandis, T. White, ERC, Inc., Moffett Field, CA; D. Bose, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2015-1895 **Probabilistic Design Demonstration of a Flexible Thermal Protection System for a Hypersonic Inflatable Aerodynamic Decelerator** S. Tobin, Northrop Grumman Corporation, Herndon, VA; J. Dec, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2015-1896 **Electron-Impact Excitation Cross Sections for Modeling Non-Equilibrium Gas** W. Huo, Y. Liu, NASA Ames Research Center, Moffett Field, CA; M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL; A. Wray, D. Carbon, NASA Ames Research Center, Moffett Field, CA	1630 hrs AIAA-2015-1897 **Measurements and Analysis of Mars Entry, Decent, and Landing Aerothermodynamics at Flight-Duplicated Enthalpies in LENS-XX Expansion Tunnel** M. MacLean, A. Dufrene, Z. Carr, R. Parker, M. Holden, CUBRC, Buffalo, NY	

Friday, 9 January 2015		
403-PLNRY-5 0800 - 0900 hrs	Friday Morning Keynote	Osceola Ballroom CD

George Whitesides
CEO
Virgin Galactic and The Spaceship Company

Friday, 9 January 2015						
404-ACD-7	Transport Aircraft Design					Osceola Ballroom 3
Chaired by: M. DRAKE, Boeing Commercial Airplanes						
0930 hrs AIAA-2015-1898 **Transport Category Wing Weight Estimation Using A Optimizing Beam-Element Structural Formulation** T. Takahashi, T. Lemonds, Arizona State University, Tempe, AZ	1000 hrs AIAA-2015-1899 **Knowledge-Based Engineering Approach to the Finite Element Analysis of the Oval Fuselage Concept** S. De Smedt, R. Vos, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2015-1900 **The Right Single-Aisle for the Future Market** T. Lammering, T. Schneider, Liebherr Aerospace, Lindenberg, Germany; E. Stumpf, RWTH Aachen University, Aachen, Germany	1100 hrs AIAA-2015-1901 **Conceptual Design of a Mach 0.95 Cruise N+1 Commercial Transport** C. Langley, R. Burt, N. Patel, I. Martinez, A. Leon, T. Takahashi, Arizona State University, Tempe, AZ	1130 hrs AIAA-2015-1902 **Variable Camber Impact on Aircraft Mission Planning** F. Peter, K. Risse, F. Schueltke, E. Stumpf, RWTH Aachen University, Aachen, Germany	1200 hrs Oral Presentation **KU Jayhawk Economic Turboprop Transport, Winner AIAA Undergraduate Team Design Competition** B. Basgall, University of Kansas, Lawrance, KS	

Friday, 9 January 2015						
405-ACD-8	Aircraft Design Case Studies					Osceola Ballroom 4
Chaired by: G. CROUSE, Sierra Nevada Corporation						
0930 hrs AIAA-2015-1903 **Design and Flight Test Study of a VTOL UAV** Z. Öznalbant, M. Kavsaoglu, Anadolu University, Eskisehir, Turkey	1000 hrs AIAA-2015-1904 **C-17 Conversion System for Fire Fighting Operations** C. Bil, RMIT University, Melbourne, Australia	1030 hrs AIAA-2015-1905 **Design of a Severe Storm Research UAS** A. Avery, J. Jacob, Oklahoma State University, Stillwater, OK	1100 hrs AIAA-2015-1906 **Conceptual Study and Prototype Design of a Subsonic Transport UAV with VTOL Capabilities** K. Turkoglu, S. Najafi, San Jose State University, San Jose, CA	1130 hrs AIAA-2015-1907 **Assessment of Potential Benefit of Formation Flight at Preliminary Aircraft Design Level** Y. Liu, K. Risse, K. Franz, E. Stumpf, RWTH Aachen University, Aachen, Germany		

Friday, 9 January 2015						
406-AFM-15	Launch Vehicle, Missile, and Projectile Flight Mechanics II					Captiva 2
Chaired by: F. FRESCONI, US Army Research Lab						
0930 hrs AIAA-2015-1908 **Calculating Expectation of Casualty for Hypersonic Reusable Launch Vehicles** J. Lechniak, C. Chinske, R. Carr, T. Jorris, U.S. Air Force, Edwards AFB, CA	1000 hrs AIAA-2015-1909 **Uncertainty Engagement Analysis of Exoatmospheric Interceptor Based on Reachable Set Model** C. Hua, L. Chen, Y. Zhang, G. Tang, National University of Defense Technology, Changsha, China	1030 hrs AIAA-2015-1910 **Capturing the Global Feasible Design Space for Launch Vehicle Ascent Trajectories** M. Steffens, D. Mavris, S. Edwards, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2015-1911 **Guidance and Control of a Man Portable Precision Munition Concept** F. Fresconi, Army Research Laboratory, Aberdeen Proving Ground, MD; J. Rogers, Georgia Institute of Technology, Atlanta, GA			

Friday, 9 January 2015						
407-AMT-8	**Aerodynamic Diagnostics Tool for Supersonic and Hypersonic Flows**					**Tallahassee 1**
Chaired by: K. LOWE, Virginia Tech and G. JOHNSTON, Texas A&M University						
0930 hrs AIAA-2015-1912 **Measurements of Ablation-Products Transport in a Mach 5 Turbulent Boundary Layer using Naphthalene PLIF** C. Combs, N. Clemens, University of Texas, Austin, Austin, TX	1000 hrs AIAA-2015-1913 **Model Deformation Measurements of Sonic Boom Models in the NASA Ames 9- by 7- Ft Supersonic Wind Tunnel** E. Schairer, NASA Ames Research Center, Moffett Field, CA; L. Kushner, Aerospace Computing, Inc., Mountain View, CA; T. Garbeff, J. Heineck, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2015-1914 **Direct Measurements of Skin Friction at AEDC Hypervelocity Wind Tunnel 9** R. Meritt, J. Schetz, Virginia Polytechnic Institute and State University, Blacksburg, VA; E. Marineau, D. Lewis, Arnold Engineering Development Complex, Silver Spring, MD	1100 hrs AIAA-2015-1915 **Development of Particle Image Velocimetry in a Mach 2.7 Wind Tunnel at AEDC White Oak** J. Brooks, A. Gupta, University of Maryland, College Park, College Park, MD; M. Smith, E. Marineau, Arnold Engineering Development Complex, Silver Spring, MD			

Friday, 9 January 2015						
408-AMT-9	**Aerodynamic Surface Measurements**					**Tallahassee 2**
Chaired by: T. IOPPOLO, Southern Methodist University and M. SHEPLAK, University of Florida						
0930 hrs AIAA-2015-1916 **Error Source Studies of Direct Measurement Skin Friction Sensors** R. Meritt, J. Donbar, Air Force Research Laboratory, Wright-Patterson AFB, OH; N. Molinaro, J. Schetz, Virginia Polytechnic Institute and State University, Blacksburg, VA	1000 hrs AIAA-2015-1917 **Characterization of an Optical Moiré Wall Shear Stress Sensor for Harsh Environments** D. Mills, University of Florida, Gainesville, Gainesville, FL; T. Chen, Interdisciplinary Consulting Corporation, Gainesville, FL; M. Sheplak, University of Florida, Gainesville, Gainesville, FL	1030 hrs AIAA-2015-1918 **Investigation of a Photonic Wall Pressure and Shear Stress Sensor** A. Zamanian, T. Ioppolo, Southern Methodist University, Dallas, TX	1100 hrs AIAA-2015-1919 **Measuring Shear Stress with a Microfluidic Sensor to improve Aerodynamic Efficiency** C. Hughes, American Nanofluidics, Altamonte Springs, FL; D. Dutta, Y. Bashirzadeh, K. Ahmed, S. Qian, Old Dominion University, Norfolk, VA	1130 hrs AIAA-2015-1920 **Accuracy and Survivability of Distributed Fiber Optic Temperature Sensors** N. Abdul Rahim, M. Davis, L. Routhier, J. Chevalier, J. Bos, S. Kreger, Luna Innovations, Inc., Blacksburg, VA; et al.	1200 hrs AIAA-2015-1921 **Bio-Inspired Air Data Sensing Probe for High Angles of Attack and Sideslip** S. Farokhi, R. Taghavi, S. Keshmiri, University of Kansas, Lawrence, Lawrence, KS	1230 hrs AIAA-2015-1922 **High Temperature, High Frequency Fiber Optic Strain Measurement System** M. Davis, J. Pedrazzani, R. Hull, M. Castellucci, Luna Innovations, Inc., Blacksburg, VA

Friday, 9 January 2015						
409-APA-39	**Weapons Aerodynamics: Missile/Projectile/Guided-Munitions, Carriage & Store Separation**					**Naples 1**
Chaired by: K. DENISSEN, Sandia National Labs and B. MCGRATH, JHU/Applied Physics Laboratory						
0930 hrs AIAA-2015-1923 **Effects of Turbulence Model on Prediction of Hot-Gas Lateral Jet Interaction in a Supersonic Crossflow** J. DeSpirito, Army Research Laboratory, Aberdeen Proving Ground, MD	1000 hrs AIAA-2015-1924 **The Effect of Canard Interactions on Aerodynamic Performance of a Fin-Stabilized Projectile** S. Silton, F. Fresconi, Army Research Laboratory, Aberdeen Proving Ground, MD	1030 hrs AIAA-2015-1925 **CFD Database for the Development of a Non-Linear Model for Rolling Moment** A. Nelson, G. McGowan, Corvid Technologies, Inc., Mooresville, NC; F. Moore, Aeroprediction, Inc., King George, VA	1100 hrs AIAA-2015-1926 **Statistical Analysis of Jettison Ejection Scenarios** P. Reisenthel, D. Lesieutre, O. Quijano, Nielsen Engineering & Research, Inc., Santa Clara, CA	1130 hrs AIAA-2015-1927 **Influences of the gap between all-movable rudders and the missile body on flow fields** D. Li, J. Zhang, X. Guo, Northwestern Polytechnical University, Xi'an, China		

Friday, 9 January 2015						
410-APA-40	**Applied CFD & Numerical Correlations with Experimental Data III**					**Destin 2**
Chaired by: J. DEBONIS, NASA Glenn Research Center and K. VANDEN, USAF						
0930 hrs AIAA-2015-1928 **Evaluation of Five Turbulence Models for Accurate Numerical Simulation of 2D Slot Nozzle Ejector** C. Graham, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1000 hrs AIAA-2015-1929 **Application of a New One-Equation Turbulence Model Based on k-ω Closure to Flow in S-Ducts** H. Xu, T. Wray, C. Fiola, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1030 hrs AIAA-2015-1930 **Simulation of Atmospheric-Entry Capsules in the Subsonic Regime** S. Murman, R. Childs, J. Garcia, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2015-1931 **Aerodynamics of Finite Cylinders in Quasi-Steady Flow** D. Prosser, M. Smith, Georgia Institute of Technology, Atlanta, GA			

Friday, 9 January 2015						
411-APA-41	**Low speed, Low Reynolds Number & VSTOL/STOL Aerodynamics**					**Naples 3**
Chaired by: M. OL, US Air Force Reseach Laboratory and P. VIJGEN, Boeing Commercial Airplanes						
0930 hrs AIAA-2015-1932 **Enhancing Lift on a Flat Plate using Vortex Pairs generated by Synthetic Jet** X. Xia, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1000 hrs AIAA-2015-1933 **Open-Loop Flow Control At Low Reynolds Numbers Using Periodic Airfoil Morphing** G. Jones, M. Debiasi, Y. Bouremel, National University of Singapore, Singapore, Singapore; M. Santer, G. Papadakis, Imperial College London, London, United Kingdom	1030 hrs AIAA-2015-1934 **Aerodynamics of Low Reynolds Number Axial Compressor Sections** A. Maffioli, C. Hall, S. Melvin, University of Cambridge, Cambridge, United Kingdom	1100 hrs AIAA-2015-1935 **Numerical Investigations of Ducted Fan Hover Performance for FIW Applications** C. Sheng, Q. Zhao, University of Toledo, Toledo, OH; N. Bi, Naval Surface Warfare Center, Bethesda, MD	1130 hrs AIAA-2015-1936 **Analysis of the flow field around the wing section of a FanWing aircraft under various flow conditions** B. Saracoglu, G. Paniagua, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1200 hrs AIAA-2015-1937 **Outwash Measurements of a Dual Impinging Jet Scale Model** L. Myers, D. McLaughlin, Pennsylvania State University, University Park, PA	1230 hrs AIAA-2015-1938 **Numerical Simulation of Twin Impinging jets in Tandem through a Crossflow** D. Vieira, J. Barata, F. Neves, A. Silva, University of Beira Interior, Covilha, Portugal

Friday, 9 January 2015						
412-APA-42	**Transonic & Supersonic Aerodynamics**					**Naples 2**
Chaired by: C. ROSEMA, US Army AMRDEC and E. FELTROP, The Cessna Aircraft Company						
0930 hrs AIAA-2015-1939 **Reynolds-Averaged Navier-Stokes Simulations of Shock Buffet on Half Wing-Body Configuration** F. Sartor, S. Timme, University of Liverpool, Liverpool, United Kingdom	1000 hrs AIAA-2015-1940 **Numerical Prediction of Planar Shock Wave Interaction with a Cylindrical Body** V. Bhagwandin, Army Research Laboratory, Aberdeen Proving Ground, MD	1030 hrs AIAA-2015-1941 **Investigations of Underexpanded Moist Air Sonic Jets from Axisymmetric Convergent Nozzles** R. Mine, D. Ono, Y. Miyazato, University of Kitakyushu, Kitakyushu, Japan	1100 hrs AIAA-2015-1942 **A Numerical Study of High Mach and Low Reynolds Number Flow Around Airfoils** K. Wang, Z. Zhou, X. Xu, W. Gan, Northwestern Polytechnical University, Xi'an, China			

Friday, 9 January 2015						
413-APA-43	**Special Session: Aerodynamic Design Optimization of Benchmark Cases III**					**Destin 1**
Chaired by: D. ZINGG, University of Toronto and J. VASSBERG, Boeing Engineering Operations & Technology						
0930 hrs AIAA-2015-1943 **Transonic Airfoils and Wings Design Using Inverse and Direct Methods** M. Zhang, A. Rizzi, Royal Institute of Technology (KTH), Stockholm, Sweden; R. Nangia, Nangia Aero Research Associates, Bristol, United Kingdom	1000 hrs AIAA-2015-1944 **Application of OPTIMENGA_AERO to Constrained Aerodynamic Design** B. Epstein, Academic College of Tel Aviv-Jaffa, Tel Aviv, Israel; S. Peigin, OPTIMENGA-777, Moscow, Russia	1030 hrs AIAA-2015-1945 **Comparison of Inexact- and Quasi-Newton Algorithms for Aerodynamic Shape Optimization** A. Dener, Rensselaer Polytechnic Institute, Troy, NY; G. Kenway, University of Michigan, Ann Arbor, Ann Arbor, MI; J. Hicken, Rensselaer Polytechnic Institute, Troy, NY; J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2015-1946 **Large-scale aircraft design using SU2** F. Palacios, T. Economon, J. Alonso, Stanford University, Stanford, CA	1130 hrs AIAA-2015-1947 **Control Point-Based Aerodynamic Shape Optimization Applied to AIAA ADODG Test Cases** D. Poole, C. Allen, T. Rendall, University of Bristol, Bristol, United Kingdom	1200 hrs AIAA-2015-1948 **Adjoint-Based Aerodynamic Optimization of Benchmark Problems** S. Nadarajah, McGill University, Montréal, Canada	

Friday, 9 January 2015						
414-CMS-1	**High Performance and Embedded Computing Technologies for Aerospace**					**Osceola Ballroom 2**
Chaired by: C. LI, Air Force Office of Scientific Research						
0930 hrs AIAA-2015-1949 **High-Performance Optimizations of the Unstructured Open-Source SU2 Suite** T. Economon, S. Copeland, F. Palacios, J. Alonso, Stanford University, Stanford, CA; G. Bansal, Intel Corporation, Hillsboro, OR	1000 hrs AIAA-2015-1950 **COTS Multicore Processors in Avionics Systems: Challenges and Solutions** D. de Niz, B. Andersson, L. Wrage, Carnegie Mellon University, Pittsburgh, PA	1030 hrs AIAA-2015-1951 **MPI/Open-MP Hybridization of Higher Order WENO Scheme for the Incompressible Navier-Stokes Equations** M. Selvam, K. Hoffmann, Wichita State University, Wichita, KS	1100 hrs AIAA-2015-1952 **Multidisciplinary Simulation Acceleration using Multiple Shared-Memory Graphical Processing Units** J. Kemal, R. Davis, J. Owens, University of California, Davis, Davis, CA			

Friday, 9 January 2015						
415-FD-50	**CFD Solution Adaptation & Optimization**					**Miami 2**
Chaired by: M. NEAVES, Corvid Technologies and D. YOUNG, Raytheon Missile Systems						
0930 hrs AIAA-2015-1953 **Time-averaged steady vs. unsteady adjoint: a comparison for cases with mild unsteadiness** J. Hueckelheim, S. Xu, M. Gugala, J. Müller, Queen Mary University of London, London, United Kingdom	1000 hrs AIAA-2015-1954 **Optimization with LES -- algorithms for dealing with sampling error of turbulence statistics** C. Talnikar, P. Blonigan, Massachusetts Institute of Technology, Cambridge, MA; J. Bodart, University of Toulouse, Toulouse, France; Q. Wang, Massachusetts Institute of Technology, Cambridge, MA	1030 hrs AIAA-2015-1956 **A Hybrid Petrov-Galerkin Method for Optimal Output Prediction** S. Kast, J. Dahm, K. Fidkowski, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2015-1957 **A Computational Approach to Slosh Damping with Floating Magnetoactive Micro-baffles** V. Santhanam, M. Ricklick, D. Kim, S. Gangadharan, Embry-Riddle Aeronautical University, Daytona Beach, FL	1130 hrs AIAA-2015-1958 **A Multi-Mesh CFD Technique for Adaptive Mesh Solutions** C. Jackson, C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA	1200 hrs AIAA-2015-1959 **Analysis of a Turbine Flow Meter Calibration Curve using CFD** C. Tegtmeier, P. Anusonti-Inthra, University of Tennessee, Tullahoma, Tullahoma, TN; J. Winchester, Arnold Engineering Development Complex, Tullahoma, TN	

Friday, 9 January 2015						
416-FD-51/PDL-12	**Plasma Actuators and Flow Control**					**Sun Ballroom A**
Chaired by: J. LITTLE, The University of Arizona and I. ADAMOVICH, Ohio University						
0930 hrs AIAA-2015-1960 **The Effects of Laser Plasma Discharge on a Separating Boundary Layer** A. Bright, Tufts University, Medford, MA; N. Tichenor, PM&AM Research, Tucson, AZ; R. Wlezien, Iowa State University, Ames, IA	1000 hrs AIAA-2015-1961 **Supersonic Cavity Control Using Plasma Actuators** N. Webb, M. Samimy, Ohio State University, Columbus, OH	1030 hrs AIAA-2015-1962 **On the boundary and separated flow using pulsed nanosecond DBD plasma actuators** Z. Zhao, J. Li, J. Zheng, B. Khoo, Y. Cui, National University of Singapore, Singapore, Singapore	1100 hrs AIAA-2015-1963 **Dynamics of charge transfer and energy coupling in surface discharges on μsec to msec time scales** S. Leonov, I. Adamovich, V. Petrishchev, Ohio State University, Columbus, OH	1130 hrs AIAA-2015-1964 **Experimental Study of a Magnetohydrodynamic Plasma Actuator in Quiescent Atmospheric Air** Y. Choi, M. Gray, J. Sirohi, L. Raja, University of Texas, Austin, Austin, TX		

Friday, 9 January 2015						
417-FD-52	**Separated Flows**					**Sanibel 2**
Chaired by: H. FASEL and W. LIOU, Western Michigan University						
0930 hrs AIAA-2015-1965 **Effect of Free-Stream Turbulence on the Structure and Dynamics of Laminar Separation Bubbles** S. Hosseinverdi, H. Fasel, University of Arizona, Tucson, Tucson, AZ	1000 hrs AIAA-2015-1966 **Implicit LES of turbulent, separated flow: wall-mounted hump configuration** S. Sekhar, N. Mansour, NASA Ames Research Center, Moffett Field, CA; D. Higuera Caubilla, Institut Supérieur de l'Aéronautique et de l'Espace, Toulouse, France	1030 hrs AIAA-2015-1967 **Flow Features of the Near Wake of a Flat Plate With Turbulent Separating Boundary Layers** M. Rai, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2015-1968 **Prediction of Separation with a Third-Order-Moment Model** M. Olsen, NASA Ames Research Center, Moffett Field, CA			

Friday, 9 January 2015						
418-FD-53	**Shear Layers**					**Tallahassee 3**
Chaired by: T. MCLAUGHLIN, US Air Force Academy and J. SEIDEL, USAF Academy						
0930 hrs AIAA-2015-1969 **Streamwise vortices in plane mixing layers originating from laminar or turbulent initial conditions** S. Hug, W. McMullan, S. Garrett, University of Leicester, Leicester, United Kingdom	1000 hrs AIAA-2015-1970 **Application of the Lattice Boltzmann Method to Shear Layer Flows** B. Duda, E. Fares, Exa GmbH, Stuttgart, Germany; R. Kotapati, Exa Corporation, Burlington, MA	1030 hrs AIAA-2015-1971 **DNS Study on the Evolution of Vortical Packets and Their Interactions in Boundary Layer** Y. Yan, C. Liu, University of Texas, Arlington, Arlington, TX	1100 hrs AIAA-2015-1972 **Spectral Scaling in a Supersonic Reattaching Shear Layer** T. Leger, J. Poggie, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2015-1973 **Reynolds Number Effects on Airfoils in Reverse Flow** A. Lind, L. Smith, University of Maryland, College Park, College Park, MD; J. Milluzzo, U.S. Naval Academy, Annapolis, MD; A. Jones, University of Maryland, College Park, College Park, MD		

Friday, 9 January 2015						
419-FD-54	**Shock Boundary Layer Interaction**					**Daytona 2**
Chaired by: N. BISEK, Air Force Reseach Laboratory and M. MCQUILLING, Saint Louis University						
0930 hrs AIAA-2015-1974 **Transition Effect on Shock Wave / Boundary Layer Interaction at M=1.47** P. Polivanov, A. Sidorenko, A. Maslov, Russian Academy of Sciences, Novosibirsk, Russia	1000 hrs AIAA-2015-1975 **Transition location effects on normal shock wave--boundary layer interactions** T. Davidson, H. Babinsky, University of Cambridge, Cambridge, United Kingdom	1030 hrs AIAA-2015-1976 **Sidewall Interaction of a Supersonic Flow over a Compression Ramp** N. Bisek, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2015-1977 **Unsteadiness in Shock Wave Boundary Layer Interactions across Multiple Interaction Configurations** J. Threadgill, P. Bruce, Imperial College London, London, United Kingdom			

Friday, 9 January 2015						
420-FD-55	**Turbulence Modeling III**					**Sanibel 3**
Chaired by: G. HUANG, Wright State University and Y. SEE, University of Michigan						
0930 hrs AIAA-2015-1978 **Investigation of hybrid RANS-LES methods to understand their predictive capabilities in flows with separation** N. Jain, J. Baeder, University of Maryland, College Park, College Park, MD	1000 hrs AIAA-2015-1979 **Cut-Cell Method Based Large-Eddy Simulation of a Tip-Leakage Vortex of an Axial Fan** A. Pogorelov, M. Meinke, W. Schroeder, RWTH Aachen University, Aachen, Germany; R. Kessler, German Aerospace Center (DLR), Göttingen, Germany	1030 hrs AIAA-2015-1980 **High order LES for Supersonic Backward-facing Step Flow with Turbulent Inflow** S. Chern, G. Lobser, M. Schoonmaker, E. Heyde, United Launch Alliance, Denver, CO; C. Liu, University of Texas, Arlington, Arlington, TX	1100 hrs AIAA-2015-1981 **Recent improvements in the formulation of mode III of ZDES (Zonal Detached Eddy Simulation) for WMLES use at $Re_\theta > 10^4$** N. Renard, S. Deck, ONERA, Meudon, France	1130 hrs AIAA-2015-1982 **Potential of the elliptic blending Reynolds stress model for use in hybrid RANS-LES methods** R. Roy, M. Stoellinger, University of Wyoming, Laramie, Laramie, WY		

Friday, 9 January 2015						
421-FD-56	**Turbulent Boundary Layers**					**Daytona 1**
Chaired by: J. POGGIE, USAF AFRL/RBAC						
0930 hrs AIAA-2015-1983 **Compressible Turbulent Boundary Layer Simulations: Resolution Effects and Turbulence Modeling** J. Poggie, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2015-1985 **An Approximate Turbulent Pressure Fluctuation Frequency Spectra for a Finite Supersonic Plate** L. DeChant, J. Smith, Sandia National Laboratories, Albuquerque, NM	1030 hrs AIAA-2015-1986 **Investigation of Numerical Schemes for Direct Numerical Simulations of Supersonic Boundary Layers** C. Morris, NASA Marshall Space Flight Center, Huntsville, AL	1100 hrs AIAA-2015-1987 **Implicit large-eddy simulations of zero-pressure gradient, turbulent boundary layer** S. Sekhar, N. Mansour, NASA Ames Research Center, Moffett Field, CA			

Friday, 9 January 2015		
422-FD-58 **0930 - 1300 hrs**	**Transition Open Forum**	**Sun Ballroom C**
Chaired by: H. REED, Texas A&M University		

Friday, 9 January 2015						
423-GNC-40	**Intelligent Systems in GNC**					**Miami 1**
Chaired by: M. BALAS, Embry-Riddle Aeronautical University and J. CONNOLLY, NASA Glenn Research Center						
0930 hrs AIAA-2015-1988 **Robust Three-Dimensional Collision Avoidance for Fixed-Wing Unmanned Aerial Systems** T. Stastny, G. Garcia, S. Keshmiri, University of Kansas, Lawrence, Lawrence, KS	1000 hrs AIAA-2015-1989 **Aspects of Intuitive Control: Stabilize, Optimize, and Identify** P. Nuthi, K. Subbarao, University of Texas, Arlington, Arlington, TX	1030 hrs AIAA-2015-1990 **Reinforcement Learning Applied to a Quadrotor Guidance Law in Autonomous Flight** J. Junell, E. Van Kampen, C. de Visser, Q. Chu, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2015-1991 **Discrete Multiobjective Optimization Methodology applied to the Mixed Actuators Problem and Tested in a Hardware-in-the-loop Rendezvous Simulator** W. Gomes, E. Marconi Rocco, National Institute for Space Research (INPE), São José dos Campos, Brazil; T. Boge, F. Rems, H. Benninghoff, German Aerospace Center (DLR), Wessling, Germany	1130 hrs AIAA-2015-1992 **Aircraft Energy Management: Finite-time Optimal Control with Dynamic Constraints** M. Yasar, InnoVital Systems, Inc., Beltsville, MD; H. Kwatny, Drexel University, Philadelphia, PA; G. Bajpai, Techno-Sciences, Inc., Beltsville, MD		

Friday, 9 January 2015						
424-GNC-41	**Design and Analysis of Aircraft Control Laws**					**Sun Ballroom 6**
Chaired by: D. OSSMANN, DLR - German Aerospace Center and F. HUGON, Gulfstream Aerospace Corporation						
0930 hrs AIAA-2015-1993 **Control of Nonlinear Aerospace Systems using Micro-Jet Actuators** S. Mehta, University of Florida, Shalimar, Shalimar, FL; W. Mackunis, Embry-Riddle Aeronautical University, Daytona Beach, FL; M. McCourt, University of Florida, Shalimar, Shalimar, FL; J. Curtis, Air Force Research Laboratory, Eglin AFB, FL	1000 hrs AIAA-2015-1994 **Nonlinear Flight Control Design for Longitudinal Dynamics** T. Tran, B. Newman, Old Dominion University, Norfolk, VA	1030 hrs AIAA-2015-1995 **Integrator resetting for enforcing constraints in aircraft flight control systems** K. McDonough, I. Kolmanovsky, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2015-1996 **Kalman Filter Based Modification on Helicopter Adaptive Control** M. Okatan, G. Gursoy, I. Yavrucuk, Middle East Technical University, Ankara, Turkey	1130 hrs AIAA-2015-1997 **Hardware-In-Loop and Flight Testing of Modified State Observer Based Adaptation for a General Aviation Aircraft** V. Subba Reddiar Pappu, J. Steck, Wichita State University, Wichita, KS; B. Steele, Beechcraft Corporation, Wichita, KS; K. Rajagopal, S. Balakrishnan, Missouri University of Science and Technology, Rolla, MO		

Friday, 9 January 2015						
425-GNC-42	**Control of Satellites, Spacecrafts and Missiles**					**Sun Ballroom 3**
Chaired by: J. MIGNOT, CNES and J. THEIS, Hamburg University of Technology						
0930 hrs AIAA-2015-1998 **Quaternion Error Based Optimal Attitude Control Applied to Pinpoint Landing** P. Ghiglino, V. Lappas, University of Surrey, Guildford, United Kingdom	1000 hrs AIAA-2015-1999 **Nano-Satellite Transition Mode Attitude Determination and Control** J. Mignot, F. Viaud, French Space Agency (CNES), Toulouse, France	1030 hrs AIAA-2015-2000 **Orbital Pursuit-Evasion Hybrid Spacecraft Controllers** W. Hafer, H. Reed, Texas A&M University, College Station, TX	1100 hrs AIAA-2015-2001 **Linear Parameter-Varying Feedforward Control: A Missile Autopilot Design** J. Theis, Hamburg University of Technology, Hamburg, Germany; H. Pfifer, University of Minnesota, Minneapolis, Minneapolis, MN; A. Knoblach, F. Saupe, German Aerospace Center (DLR), Wessling, Germany; H. Werner, Hamburg University of Technology, Hamburg, Germany	1130 hrs AIAA-2015-2002 **Feedback Control of a Nonlinear Non-Minimum Phase Missile with Limited Modeling Information** A. Narang-Siddarth, University of Washington, Seattle, Seattle, WA; F. Peter, F. Holzapfel, Technical University of Munich, Munich, Germany	1200 hrs AIAA-2015-2003 **Adaptive Continuous Higher Order Sliding Mode Control of Air Breathing Hypersonic Missile for Maximum Target Penetration** P. Yu, Y. Shtessel, University of Alabama, Huntsville, Huntsville, AL; C. Edwards, University of Exeter, Exeter, United Kingdom	

Friday, 9 January 2015						
426-GNC-43	**Multi-Vehicle Control**					**Sun Ballroom 4**
Chaired by: T. YUCELEN, Missouri University of Science & Technology						
0930 hrs AIAA-2015-2004 **An Active-Passive Networked Multiagent Systems Approach to Environment Surveillance** J. Peterson, T. Yucelen, Missouri University of Science and Technology, Rolla, MO	1000 hrs AIAA-2015-2005 **Market-Based Task Assignment for Cooperative Timing Missions over Networks with Limited Connectivity** G. Oh, Y. Kim, Seoul National University, Seoul, Korea (the Republic of); J. Ahn, H. Choi, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1030 hrs AIAA-2015-2006 **Distributed MIN-MAX Optimization Application to Time-optimal Consensus: An Alternating Projection Approach** C. Hu, Z. Chen, Beihang University, Beijing, China	1100 hrs AIAA-2015-2007 **Nonlinear Guidance of Unmanned Aircraft Formations** O. Tekinalp, S. Ariyibi, Middle East Technical University, Ankara, Turkey	1130 hrs AIAA-2015-2008 **Guidance Law Design For Two Flight Vehicles Cooperative Interception** W. Long, F. He, Y. Yao, Harbin Institute of Technology, Harbin, China		

Friday, 9 January 2015						
427-GNC-44	**Spacecraft Guidance, Navigation, and Control VI**					**Sun Ballroom 5**
Chaired by: L. MASSOTTI, European Space Agency (ESA) and D. PEREZ						
0930 hrs AIAA-2015-2009 **A Causality Free Computational Method for HJB Equations with Application to Rigid Body Satellites** W. Kang, L. Wilcox, Naval Postgraduate School, Monterey, CA	1000 hrs AIAA-2015-2010 **Spacecraft Attitude Control under Constrained Zones via Quadratically Constrained Quadratic Programming** C. Sun, R. Dai, Iowa State University, Ames, IA	1030 hrs AIAA-2015-2011 **Sun Safe Mode Controller Design for LADEE** J. Fusco, S. Swei, R. Nakamura, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2015-2012 **Optimal Low-Thrust Orbital Transfers for Rendezvous Between Active Spacecraft with Return Position Constraints** A. Dutta, Wichita State University, Wichita, KS	1130 hrs AIAA-2015-2013 **A Linear Model for Low-Thrust Spiral Orbits and Optimal Control** D. Kolosa, J. Hudson, Western Michigan University, Kalamazoo, MI		

Friday, 9 January 2015						
428-GT-10	**New Capabilities in Ground Test Facilities II**					**Sanibel 1**
Chaired by: T. WAYMAN, Gulfstream Aerospace Corporation and S. DUNN, Jacobs Technology						
0930 hrs AIAA-2015-2014 **Development and Demonstration of A Free-to-Roll Rig in A Blow-down Tri-sonic Wind Tunnel** K. Xie, N. Chen, Q. Shen, China Academy of Aerospace Aerodynamics, Beijing, China	1000 hrs AIAA-2015-2015 **Commissioning of a Polysonic Wind Tunnel at the Florida State University** D. Van Every, S. Best, Aiolos Engineering Corporation, Toronto, Canada; J. Strike, R. Kumar, Florida State University, Tallahassee, FL	1030 hrs AIAA-2015-2016 **Low Power Plasma Facilities for the Investigation of Gas-Surface Interaction at the University of Kentucky** M. Winter, H. Koch, University of Kentucky, Lexington, Lexington, KY	1100 hrs AIAA-2015-2017 **Extension of LENS Shock Tunnel Test Times and Lower Mach Number Capability** A. Dufrene, CUBRC, Buffalo, NY	1130 hrs AIAA-2015-2018 **Development of the WVU 1.25s Reduced-Gravity Drop Tower** J. Kuhlman, K. Phillips, West Virginia University, Morgantown, WV	1200 hrs AIAA-2015-2019 **MOIRE Thermal Vacuum Structural Stability Testing** D. Waller, J. Domber, C. Price, R. Schweickart, R. Thompson, K. Whiteaker, Ball Aerospace & Technologies Corporation, Boulder, CO	

Friday, 9 January 2015						
429-GT-11	**Advances in Test Techniques, Test Management, & EFD/CFD Integration**					**Miami 3**
Chaired by: J. MICOL, NASA-Langley Research Center						
0930 hrs AIAA-2015-2020 **Strain Gage Loads Calibration Testing With Airbag Support for the Gulfstream III SubsoniC Research Aircraft Testbed (SCRAT)** W. Lokos, E. Miller, L. Hudson, A. Holguin, D. Neufeld, R. Haraguchi, NASA Armstrong Flight Research Center, Edwards, CA	1000 hrs AIAA-2015-2021 **Motive Methods of Heat Flux Measurement in Stagnation Ablation Test** H. Gao, L. Chen, D. Ou, China Academy of Aerospace Aerodynamics, Beijing, China	1030 hrs AIAA-2015-2022 **Numerical Study of the High-Speed Leg of a Wind Tunnel** S. Nayani, W. Sellers, Analytical Services & Materials, Inc., Hampton, VA; S. Brynildsen, ViGYAN, Inc., Hampton, VA; J. Everhart, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2015-2023 **Assessment of New Load Schedules for the Machine Calibration of a Force Balance** N. Ulbrich, Jacobs, Moffett Field, CA; R. Gisler, NASA Ames Research Center, Moffett Field, CA; R. Kew, Triumph Aerospace, San Diego, CA	1130 hrs AIAA-2015-2024 **Boundary Corrections for Wind Tunnel Testing of Large Ground Vehicles in Strong Crosswind Conditions** C. Britcher, Old Dominion University, Norfolk, VA; W. Mokhtar, Grand Valley State University, Grand Rapids, MI	1200 hrs AIAA-2015-2025 **Numerical Investigation of Wall Mounting Effects in Semi-Span Wind-Tunnel Tests** M. Bouriga, F. Morency, J. Weiss, École de Technologie Supérieure, Montréal, Canada	

Friday, 9 January 2015						
430-IS-13	**Intelligent System Approach to Quadcopter Obstacle Avoidance**					**Osceola Ballroom 1**
Chaired by: E. KIVELEVITCH, University of Cincinnati and A. YUCEL, Lockheed Martin Aeronautics						
0930 hrs AIAA-2015-2026 **Laser-Guided Quadrotor Obstacle Avoidance** A. Stubblebine, B. Feie, B. Redmond, E. Kivelevitch, University of Cincinnati, Cincinnati, OH	1000 hrs AIAA-2015-2027 **A Taxonomy of Intelligent Systems** E. Kivelevitch, University of Cincinnati, Cincinnati, OH	1030 hrs AIAA-2015-2028 **Location Determination of an Unmanned Aerial Vehicle in a GPS-Denied, Hazard-Cluttered Indoor Environment** S. Sridhar, A. Sathyan, S. Kukreti, E. Kivelevitch, University of Cincinnati, Cincinnati, OH	1100 hrs AIAA-2015-2029 **Development of a Model based Fuzzy-PID Controller for the AeroQuad Cyclone Quad-copter** W. Wei, K. Cohen, University of Cincinnati, Cincinnati, OH	1130 hrs AIAA-2015-2030 **Target Detection using Image Processing Techniques** J. Hartmann, B. Brown, S. Mummidivarapu, E. Kivelevitch, University of Cincinnati, Cincinnati, OH	1200 hrs AIAA-2015-2031 **UAS Collision Avoidance, Navigation, and Target Assignment in a Congested Airspace Using Fuzzy Logic** B. Cook, T. Arnett, B. Rich, E. Kivelevitch, University of Cincinnati, Cincinnati, OH	

Friday, 9 January 2015						
431-MST-16	**Modeling of Vehicle Dynamics III**					**Sun Ballroom 1**
Chaired by: D. CRIDER, National Transportation Safety Board						
0930 hrs AIAA-2015-2032 **Representative Post-Stall Modeling of T-tail Regional Jet and Turboprop Aircraft for Flight Training Simulator** T. Teng, T. Zhang, P. Grant, University of Toronto, Toronto, Canada	1000 hrs AIAA-2015-2033 **Application of SPRT based reset methods for damaged aircraft parameter estimation** H. Koolstra, H. Damveld, J. Mulder, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2015-2034 **Geometry Based Quick Aircraft Modeling Method for Upset Recovery Applications** Y. Nie, E. Van Kampen, Q. Chu, Delft University of Technology, Delft, The Netherlands; T. Kier, G. Looye, German Aerospace Center (DLR), Wessling, Germany	1100 hrs AIAA-2015-2035 **Model Based Analysis of Precursors of Electromechanical Servomechanism Failures** M. Battipede, M. Dalla Vedova, P. Maggiore, S. Romeo, Technical University of Turin, Turin, Italy	1130 hrs AIAA-2015-2036 **Effective Model size for the prediction of the lateral control envelope of damaged aircraft** H. Koolstra, J. Mulder, Delft University of Technology, Delft, The Netherlands		

Friday, 9 January 2015						
432-MVC-6	**Solution Adaptive Meshing, Error Estimation and Uncertainty Quantification Techniques**					**Sun Ballroom D**
Chaired by: W. JONES, NASA-Langley Research Center						
0930 hrs AIAA-2015-2037 **Anisotropic Norm-Oriented Mesh Adaptation for Compressible Flows** A. Loseille, A. Dervieux, F. Alauzet, French National Institute for Research in Computer Science and Control (INRIA), Le Chesnay, France	1000 hrs AIAA-2015-2038 **Adaptive Optimization-Based Smoothing for Tetrahedral Meshes** S. Karman, University of Tennessee, Chattanooga, Chattanooga, TN	1030 hrs AIAA-2015-2039 **Metric-Based Anisotropic Mesh Adaptation for Three-Dimensional Time-Dependent Problems Involving Moving Geometries** N. Barral, F. Alauzet, A. Loseille, French National Institute for Research in Computer Science and Control (INRIA), Le Chesnay, France	1100 hrs AIAA-2015-2040 **A Comparison Between Local h-Refinement and a Novel r-Refinement Method** J. Grisham, N. Vijayakumar, G. Liao, B. Dennis, F. Lu, University of Texas, Arlington, Arlington, TX	1130 hrs AIAA-2015-2041 **Multigrid Strategies Coupled with Anisotropic Mesh Adaptation** V. Menier, A. Loseille, F. Alauzet, French National Institute for Research in Computer Science and Control (INRIA), Rocquencourt, France	1200 hrs AIAA-2015-2042 **An Anisotropic Adjoint-Based hp-Adaptive HDG Method for Compressible Turbulent Flow** M. Woopen, G. May, RWTH Aachen University, Aachen, Germany	

Friday, 9 January 2015						
433-SATS-4	**Small Satellites - Technologies II**					**Osceola Ballroom 5**
Chaired by: J. STRAUB, University of North Dakota						
0930 hrs AIAA-2015-2043 **Information-Driven Systems Engineering Study of a Formation Flying Demonstration Mission using Six CubeSats** G. Subramanian, R. Foust, D. Chen, S. Chan, Y. Taleb, D. Rogers, University of Illinois, Urbana-Champaign, Urbana, IL; et al.	1000 hrs AIAA-2015-2044 **A CubeSat Mission and Configuration Analysis for Locating and Mapping Spot Beams of Geostationary Comm-Satellites** J. LaSarge, J. Black, Air Force Institute of Technology, Wright-Patterson AFB, OH	1030 hrs AIAA-2015-2045 **Orbit Selection Trade-Offs for LEO Observation Microsatellites** S. Mortazavi, Satellite Research Institute, Tehran, Iran				

Friday, 9 January 2015						
434-SD-20	**Plate/Shell Modeling**					**Sarasota 3**
Chaired by: Z. SOTOUDEH, Rensselaer Polytechnic Institute and A. SCOTTI, Pilatus Aircraft Ltd						
0930 hrs AIAA-2015-2046 **Variational Asymptotic Modeling of Cosserat Elastic Plates** R. Kovvali, D. Hodges, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2015-2047 **A New Element for Mixed Plate Formulation** Z. Sotoudeh, Rensselaer Polytechnic Institute, Troy, NY	1030 hrs AIAA-2015-2048 **Evaluating the Dynamic Behavior and Analytically Predicted Displacements of Printed Circuit Boards (PCBs) Using the "Smeared-Mass" & Fine Mesh Approach** A. Sayles, T. Stoumbos, Orbital Sciences Corporation, Dulles, VA	1100 hrs AIAA-2015-2049 **Finite Element Approach to the Static, Vibration and Buckling Analysis of Curvilinearly Stiffened Plates** P. Shi, Beijing Institute of Technology, Beijing, China; R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA; C. Dong, Beijing Institute of Technology, Beijing, China	1130 hrs AIAA-2015-2050 **Free Vibration Analysis of Curvilinearly Stiffened Cylindrical Shells** P. Shi, Beijing Institute of Technology, Beijing, China; R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA; C. Dong, Beijing Institute of Technology, Beijing, China	1200 hrs AIAA-2015-2051 **Nonlinear Membrane Inverse Finite Element Model for Pliant Wings** M. Alioli, P. Masarati, M. Morandini, Technical University of Milan, Milan, Italy; T. Carpenter, R. Albertani, Oregon State University, Corvallis, OR	

Friday, 9 January 2015						
435-SD-21	**Computational Reduced Order Models**					**Tampa 2**
Chaired by: D. RAVEH, AIST and W. SU, University of Alabama, Tuscaloosa						
0930 hrs AIAA-2015-2052 **Deterministic and Stochastic Partial Linearization Approach for Nonlinear Reduced Order Models of Structures** R. Perez, Universal Technology Corporation, Dayton, OH; B. Smarslok, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Mignolet, Arizona State University, Tempe, AZ	1000 hrs AIAA-2015-2053 **Basis Identification for Reduced Order Modeling of Unsteady Flows Using Sparse Coding** R. Deshmukh, Z. Liang, A. Gogulapati, J. McNamara, Ohio State University, Columbus, OH; Z. Kolter, Carnegie Mellon University, Pittsburgh, PA	1030 hrs AIAA-2015-2054 **Reduced Order Modeling with Local Enrichments for Nonlinear Geometric Vibration of a Notched Panel** X. Wang, Arizona State University, Tempe, AZ; R. Perez, Universal Technology Corporation, Dayton, OH; G. Phlipot, M. Mignolet, Arizona State University, Tempe, AZ	1100 hrs AIAA-2015-2055 **Development of Aeroelastic and Aeroservoelastic Reduced Order Models for Active Structural Control** H. Song, J. Qian, Y. Wang, K. Pant, CFD Research Corporation, Huntsville, AL; A. Chin, M. Brenner, NASA Armstrong Flight Research Center, Edwards, CA	1130 hrs AIAA-2015-2056 **Aeroservoelastic Simulation Considering Control System Component Uncertainty** S. Wu, E. Livne, University of Washington, Seattle, Seattle, WA	1200 hrs AIAA-2015-2057 **Dynamic Aeroelastic Response of Highly Flexible Aircraft with Wing Camber Deformations** W. Su, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1230 hrs AIAA-2015-2058 **Tensegrity Structure Modal Analysis Using a Linear Perturbation Approach** A. DiCarlo, MITRE Corporation, Bedford, MA; B. Knight, U.S. Air Force, Chantilly, VA

Friday, 9 January 2015						
436-SD-22	**Advanced Measurement Techniques**					**Tampa 3**
Chaired by: D. JOHNSON, NASA Glenn Research Center and B. WILLIS, Boeing Defense, Space & Security						
0930 hrs AIAA-2015-2059 **Temporal Aliasing in High-Speed 3-Dimensional Digital Image Correlation Vibration Measurement** T. Beberniss, Air Force Research Laboratory, Wright-Patterson AFB, OH; D. Ehrhardt, University of Wisconsin, Madison, Madison, WI	1000 hrs AIAA-2015-2060 **Experimental Validation of the Dynamic Inertia Measurement Method to find the Mass Properties of an Iron Bird Test Article** A. Chin, C. Herrera, N. Spivey, NASA Armstrong Flight Research Center, Edwards, CA; W. Fladung, D. Cloutier, ATA Engineering, Inc., San Diego, CA	1030 hrs AIAA-2015-2061 **Identification of the Smart Spring properties from FRFs measurements** M. Arras, G. Coppotelli, University of Rome "La Sapienza", Rome, Italy; F. Nitzsche, D. Feszty, Carleton University, Ottawa, Canada	1100 hrs AIAA-2015-2062 **Preliminary Investigation of Flight Loads of Single-Engine Air Tankers** K. Rokhsaz, L. Kliment, Wichita State University, Wichita, KS			

Friday, 9 January 2015						
437-STR-20	**Special Session: Structural Joints & Repair II**					**Sarasota 2**
Chaired by: S. KUMAR and D. NORWOOD, Lockheed Martin Aeronautics						
0930 hrs AIAA-2015-2063 **Experimental and Computational Evaluation of Out-of-Autoclave Adhesively Bonded Repairs on Carbon/Epoxy Fuselage Skin** F. Leone, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2015-2064 **Investigation of Composite Patch Modeling Techniques for Impact Loading Conditions** S. TerMaath, A. Sproul, University of Tennessee, Knoxville, Knoxville, TN	1030 hrs AIAA-2015-2065 **Co-Simulation of Fatigue Crack Growth and Delamination Evolution in Cracked Aluminum Plates Repaired with a Composite Patch** X. Cui, X. Liu, E. Fang, P. Liu, Global Engineering and Materials, Inc., Princeton, NJ	1100 hrs AIAA-2015-2066 **Analytical and Experimental Studies on Delamination Arrest Features in Aircraft Composite Structures** L. Richard, K. Lin, University of Washington, Seattle, Seattle, WA	1130 hrs AIAA-2015-2067 **Practical Bonded Joint Stress Analysis** A. Selvarathinam, C. Rouseau, Lockheed Martin Corporation, Fort Worth, TX	1200 hrs AIAA-2015-2068 **Effect of Reinforcement Material on the Properties of Pin-Reinforced Metal to Composite Joints** S. Clay, Air Force Research Laboratory, Wright-Patterson AFB, OH	1230 hrs AIAA-2015-2069 **Modeling of Stresses in an Axisymmetric Composite Patch-Repair System** P. Upadhyaya, S. Kumar, G. Pal, U. Javed, Masdar Institute of Science and Technology, Abu Dhabi, United Arab Emirates

Friday, 9 January 2015						
438-STR-21	**Finite Element Analysis**					**Sarasota 1**
Chaired by: R. TAYLOR, Optimal Structures, LLC. and V. RANATUNGA, Air Force Research Laboratory						
0930 hrs AIAA-2015-2070 **Some Observations on the Current Status of Performing Finite Element Analyses** I. Raju, NASA Langley Research Center, Hampton, VA; K. Shivakumar, North Carolina A&T State University, Greensboro, NC	1000 hrs AIAA-2015-2071 **Enhanced first order shear deformation theory for the improved visco-elastic FEM analysis of laminated composite plates** J. Han, Seoul National University, Seoul, Korea (the Republic of); J. Kim, Kumoh National Institute of Technology, Gumi, Korea (the Republic of); M. Cho, Seoul National University, Seoul, South Korea	1030 hrs AIAA-2015-2072 **A Refined Zigzag Element for Modeling Sandwich Construction with Embedded Stiffeners** M. Dorduncu, A. Borut, E. Madenci, University of Arizona, Tucson, Tucson, AZ; A. Tessler, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2015-2073 **Composite Beam Cross-Section Analysis by a Single High-Order Element Layer** P. Couturier, S. Krenk, Technical University of Denmark, Lyngby, Denmark	1130 hrs AIAA-2015-2074 **Three Dimensional Progressive Failure Analysis of Laminated Composite Structures** A. Khan, R. Kapania, R. Batra, E. Johnson, Virginia Polytechnic Institute and State University, Blacksburg, VA; J. Guimard, Airbus, Paris, France		

Friday, 9 January 2015						
439-TES-4	**Topics in Terrestrial Energy**					**Tampa 1**
Chaired by: E. KHALIL, Cairo University						
0930 hrs AIAA-2015-2075 **Mixture Preparation Effects on Distributed Combustion** A. Khalil Hasan, A. Gupta, University of Maryland, College Park, College Park, MD	1000 hrs AIAA-2015-2076 **Experimental Investigation of the Effects of Central Fuel Injectors on Premixed Swirling Flames** N. Syred, F. Hatem, A. Valera-Medina, R. Marsh, P. Bowen, Cardiff University, Cardiff, United Kingdom	1030 hrs AIAA-2015-2077 **Natural Ventilation System Versus Air Conditioning for Temperature Distribution in King Tutankhamuns's Gallery, Egyptian Museum** A. Zaki, E. Khalil, E. Bialy, W. AbdelMaksoud, Cairo University, Cairo, Egypt	1100 hrs AIAA-2015-2078 **Tensile Strength and Elongation of Thermoset Polymer Composites for Self-Healing** R. Amano, A. Matt, Q. Zhang, S. Strong, S. Mishra, University of Wisconsin, Milwaukee, Glendale, WI	1130 hrs AIAA-2015-2079 **Numerical Investigation Of Stratum Ventilation Performance In Office Room** A. ElHaroun, E. Bialy, Cairo University, Cairo, Egypt; A. Fahim, Housing and Building National Research Center, Cairo, Egypt; E. Khalil, Cairo University, Cairo, Egypt	1200 hrs Oral Presentation **Review of Organic and Inorganic Nanomaterials for Sustainable Energy** S. Arepalli, National Institute of Aerospace, Hampton, VA	

Friday, 9 January 2015						
440-TP-10	**Aerothermodynamics II/Other Thermophysics Topics**					**Sun Ballroom 2**
Chaired by: A. MARTIN, University of Kentucky						
0930 hrs AIAA-2015-2080 **An Expedient for Alleviating Aerodynamic Heating and Drag on Capsule Forward Heat Shield** N. Morimoto, J. Yamashita, S. Aso, Y. Tani, Kyushu University, Fukuoka, Japan	1000 hrs AIAA-2015-2081 **Blackout Analysis of Small Reentry Vehicles** S. Ramjatan, S. Roy, University of Florida, Gainesville, Gainesville, FL; T. Magin, T. Scholz, V. Van der Haegen, J. Thoemel, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1030 hrs AIAA-2015-2082 **Adjoint-Based Gradient Calculations for Projected-Force Objective Functions in Viscous, Nonequilibrium Hypersonic Environments** S. Copeland, F. Palacios, J. Alonso, Stanford University, Stanford, CA	1100 hrs AIAA-2015-2083 **The Effect of Applied Magnetic Field on Arc Spin Rate in High Pressure Arc Heaters** J. Sheeley, Aerospace Testing Alliance, Arnold AFB, TN	1130 hrs AIAA-2015-2084 **Numerical Study on Surface Oxidation of Carbonaceous Nano- and Micro-Particles in a Heavily Sooting Ethylene Turbulent Jet Flame** M. Darbandi, M. Ghafourizadeh, Sharif University of Technology, Tehran, Iran; G. Schneider, University of Waterloo, Waterloo, Canada		

Friday, 9 January 2015						
441-TP-11	University Space Systems Programs and Microgravity Flight Activities					Sun Ballroom B
Chaired by: E. SILK, NASA-Goddard Space Flight Center						
0930 hrs Oral Presentation **The NASA Sounding Rockets Program** P. Eberspeaker, C. Hesh, NASA Wallops Flight Facility, Wallops Island, VA	1000 hrs AIAA-2015-2085 **Fifteen Years of the "Microgravity Research Team" (MRT) Project Course at West Virginia University** J. Kuhlman, West Virginia University, Morgantown, WV	1030 hrs AIAA-2015-2086 **Dynamic Thermal Management for Aerospace Technology: A Review and Outlook** T. Fisher, Purdue University, West Lafayette, IN; K. Yerkes, L. Byrd, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Murthy, University of Texas, Austin, Austin, TX; A. Alleyne, University of Illinois, Urbana-Champaign, Urbana, IL; M. Wolff, Wright State University, Dayton, OH; *et al.*	1100 hrs AIAA-2015-2087 **U.S. Naval Academy Small Satellite Program: Leveraging Small Satellites for Engineering Education and Research** J. Kang, B. Bruninga, T. Lim, U.S. Naval Academy, Annapolis, MD			

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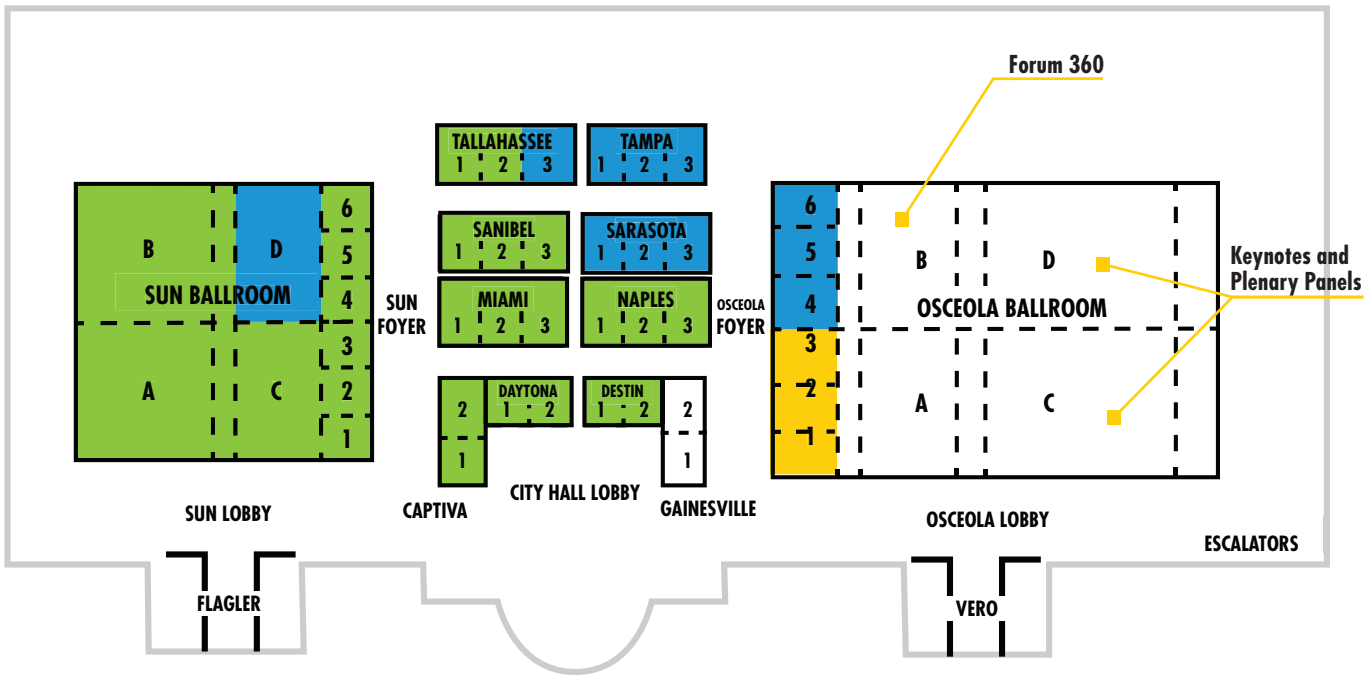

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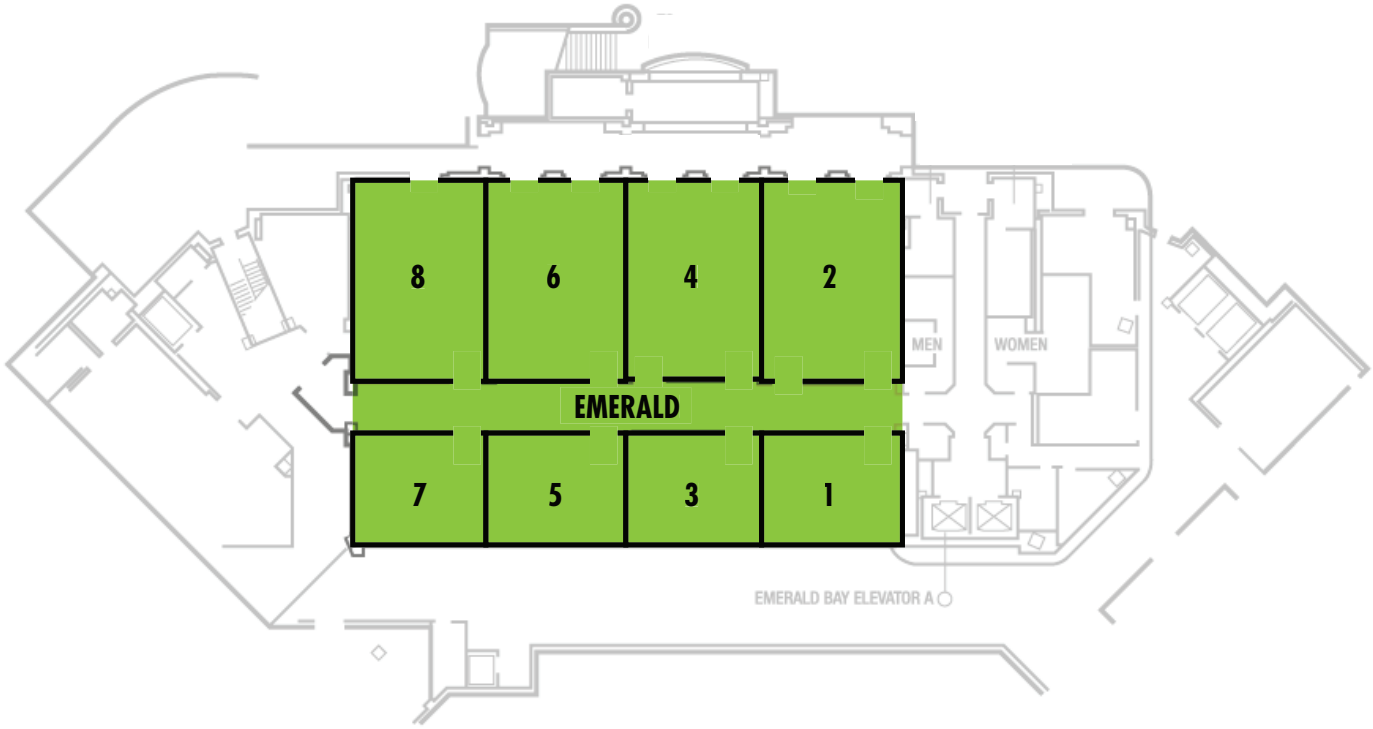


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Thank you for making AIAA SciTech 2015 an exceptional experience, where researchers from around the world can share the most original perspectives, collaborate on stimulating ideas, and influence the future of aerospace. We hope that you accomplished your goals, learned something new, caught up with colleagues, and established new connections. We look forward to seeing you in 2016!
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