SCITECH
2014
13–17 JANUARY 2014
NATIONAL HARBOR, MARYLAND
THE LARGEST EVENT FOR AEROSPACE RESEARCH, DEVELOPMENT, AND TECHNOLOGY
FINAL PROGRAM
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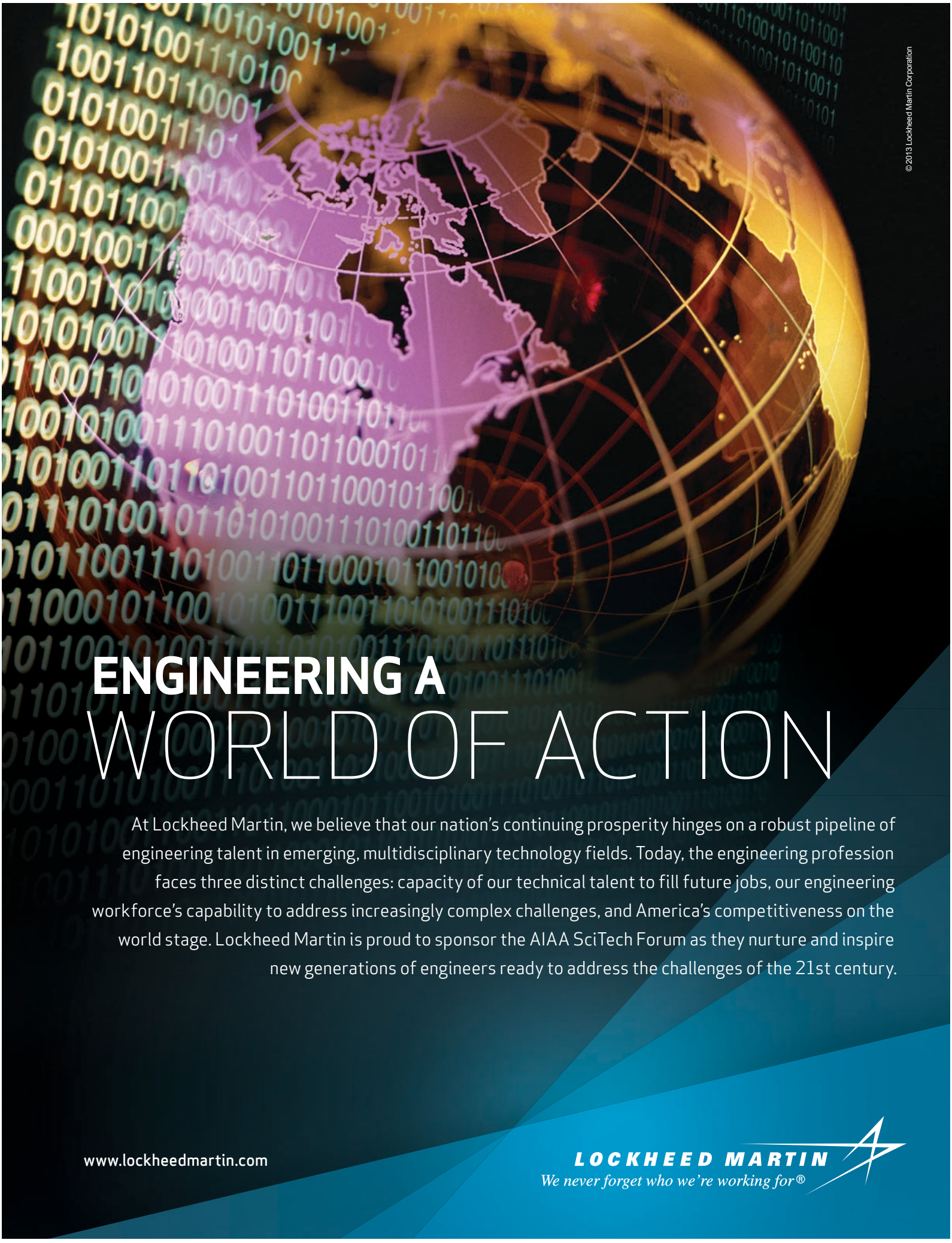
AIAA
14-125



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ENGINEERING A WORLD OF ACTION

At Lockheed Martin, we believe that our nation's continuing prosperity hinges on a robust pipeline of engineering talent in emerging, multidisciplinary technology fields. Today, the engineering profession faces three distinct challenges: capacity of our technical talent to fill future jobs, our engineering workforce's capability to address increasingly complex challenges, and America's competitiveness on the world stage. Lockheed Martin is proud to sponsor the AIAA SciTech Forum as they nurture and inspire new generations of engineers ready to address the challenges of the 21st century.

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AIAA SciTech 2014

Robert Braun
Georgia Institute of Technology

John Evans
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James Shields
Draper Laboratory

Tom Shih
Purdue University

David Throckmorton
Northrop Grumman

SCITECH 2014

Welcome

Dear Colleagues:

We are very excited to welcome you to the 2014 AIAA Science and Technology Forum and Exposition (SciTech 2014), the inaugural SciTech event in the new AIAA event model!

From the small, but brilliantly simple innovations that affect everyday life to the major discoveries and missions that fuel our collective drive to accomplish amazing things, AIAA SciTech 2014 will give you extensive access to a wide range of state-of-the-art thinking in aerospace research, development, and technology.

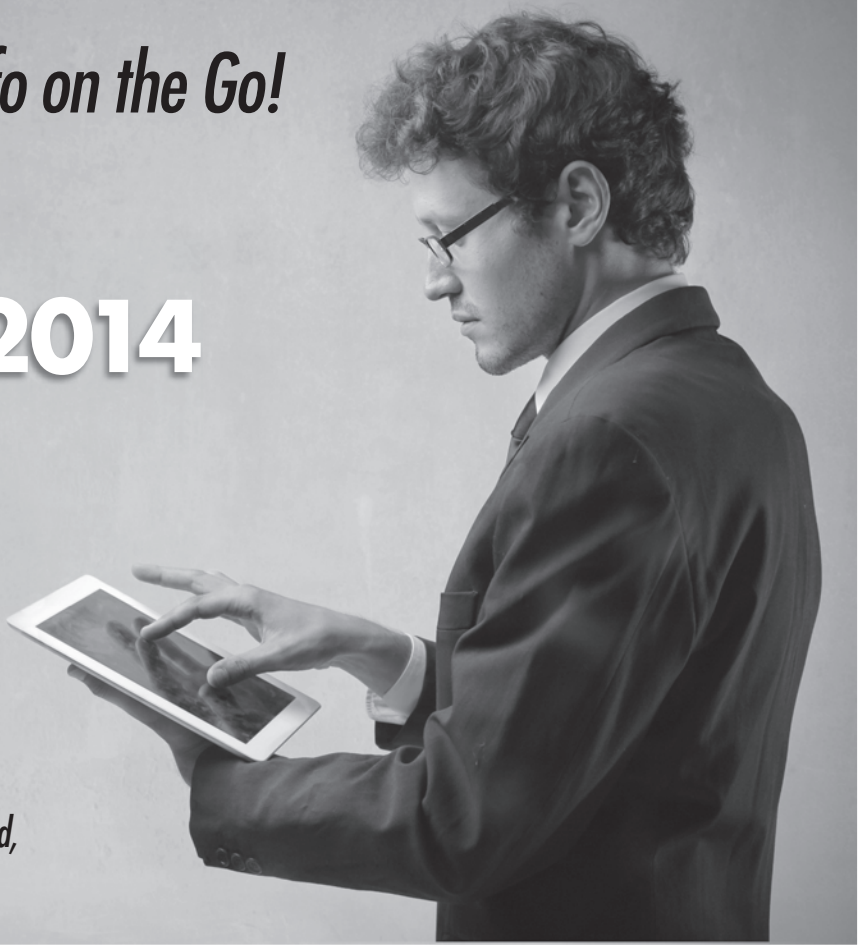
As a steering committee, we've worked to develop plenary sessions that provide insights into some of the most pressing issues that face our industry and our profession today – R&D policy, affordability, and education. We think the stimulating conversations we have planned with some of the foremost thinkers and decision makers in these areas will provide context for the other panel sessions and technical presentations planned throughout the week.

New this year are panel sessions designed to build on each day's opening plenaries to allow for a deeper dive into some of the issues we uncover in the morning discussions. We encourage you to take advantage of this opportunity to interact with industry leaders in these intimate settings and to share your knowledge and insights.

The SciTech 2014 technical paper program is second to none in terms of the breadth and depth of cutting-edge aerospace research it represents. Nowhere else can you hear about so many of the cool things this amazing industry is working on in one place! The technical program committee that brought this all together deserves a huge thank you for their work to curate this content for us.

It's such an exciting time to be a part of the aerospace profession. This week provides a unique opportunity for all of us to take a break from the office or the classroom and to celebrate the collective accomplishments of our community. Combining the conference programming with the numerous networking opportunities, Exposition Hall activities, and committee meetings makes for an experience you won't find anywhere else. If you love aerospace, this is where it's at. Have a great week!

Get Your Conference Info on the Go!



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Compatible with iPhone/iPad, Android, and BlackBerry!

FEATURES

Browse Program
View the program at your fingertips

My Itinerary
Create your own conference schedule

Conference Info
Including special events

Take Notes
Take notes during sessions

City Map
See the surrounding area and the Gaylord National Harbor

Connect to Twitter
Tweet about what you're doing and who you're meeting with #aiaaSciTech

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On-Site Wi Fi Information

Network Name: AIAA2014

Username: SciTech

Password: 2014

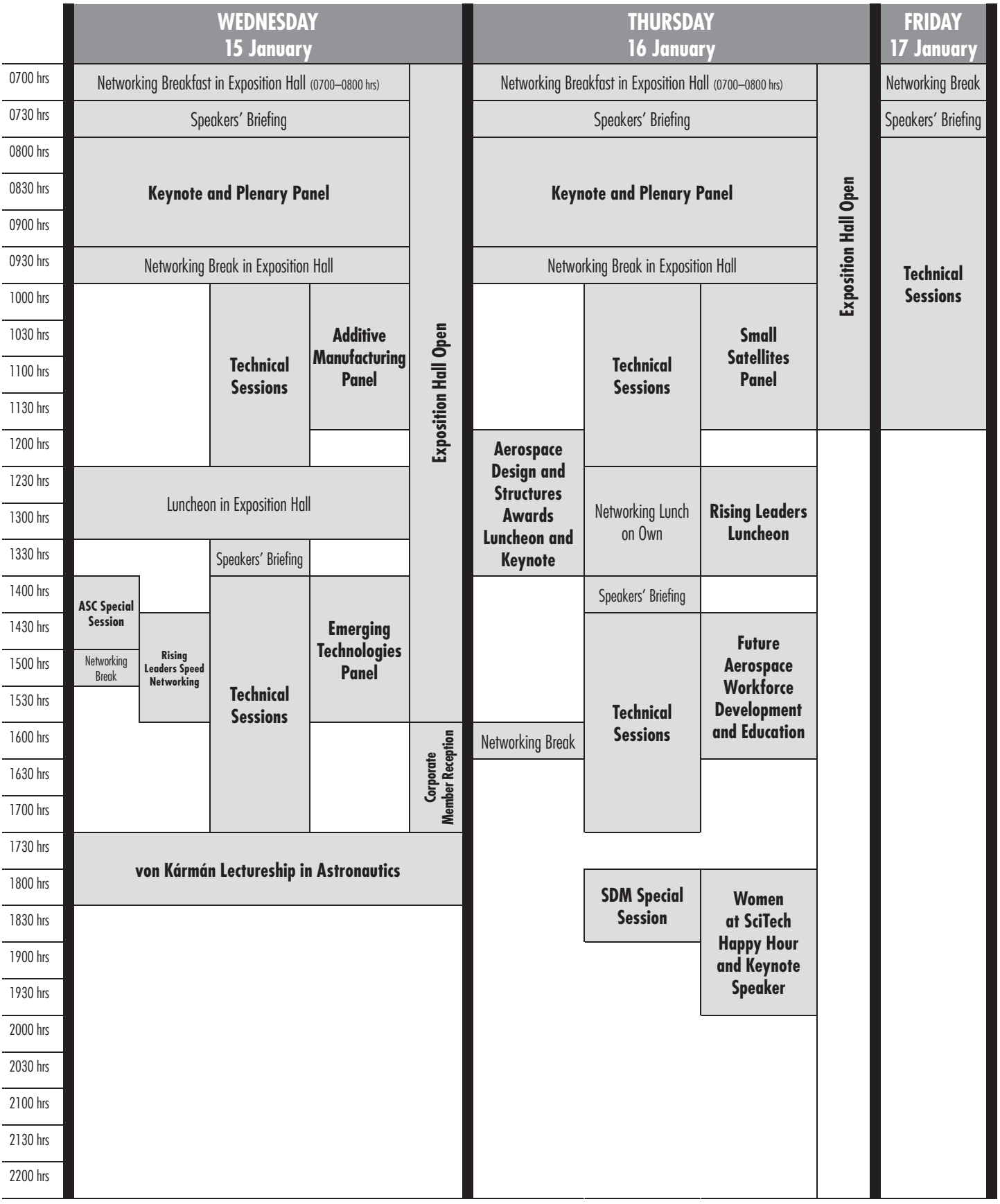
AIAA is the world's largest technical society dedicated to the global aerospace profession. With more than 35,000 individual members worldwide, and one hundred corporate members, AIAA brings together industry, academia, and government to advance engineering and science in aviation, space, and defense.

www.aiaa.org

Forum Overview

	SATURDAY/ SUNDAY 11–12 January	MONDAY 13 January			TUESDAY 14 January			
0700 hrs					Networking Breakfast in Exposition Hall (0700–0800 hrs)			Exposition Hall Open
0730 hrs		Speakers' Briefing			Speakers' Briefing			
0800 hrs	Continuing Education Courses and Workshops	Opening Keynote and Plenary Panel			Keynote and Plenary Panel			
0830 hrs								
0900 hrs								
0930 hrs		Networking Break			Networking Break in Exposition Hall		National Space Technology Strategy Workshop and Public Listening Session	
1000 hrs		B2B	Technical Sessions	Analysis and Perspectives from CASE 2013		Technical Sessions		
1030 hrs								
1100 hrs								
1130 hrs								
1200 hrs								
1230 hrs			Durand Lectureship for Public Service and Public Policy Luncheon		Aerospace Sciences Awards Luncheon		Networking Lunch on Own	Hall Closed
1300 hrs								
1330 hrs								
1400 hrs		Speakers' Briefing/Networking Break				Speakers' Briefing		Exposition Hall Open
1430 hrs		MDO Special Session	Technical Sessions	Aeronautics R&D Policy Panel	NDA Special Session	Technical Sessions	Turning Technology Into a Business Panel	
1500 hrs								
1530 hrs					Networking Break			
1600 hrs								Hall Closed
1630 hrs					Rising Leaders Keynote			
1700 hrs								
1730 hrs		Dryden Lectureship in Research			Reception in the Exposition Hall			
1800 hrs								
1830 hrs				AIAA Foundation Student Reception and Awards Ceremony				
1900 hrs		Associate Fellows Reception (1845 hrs)	Rising Leaders Reception					
1930 hrs		AIAA Associate Fellows Dinner (Tickets Required)						
2000 hrs								
2030 hrs								
2100 hrs								
2130 hrs								
2200 hrs								

Forum Overview



Sponsors and Supporters

Premier Sponsor and Durand Lectureship and Public Policy Luncheon Sponsor

Supporting Sponsors

Keynote Speakers and Plenary Sessions

Industry, academic, and government leaders share their perspectives on the new challenges, future opportunities, and emerging trends in Aerospace Science and Technology.

Monday, 13 January

0800–0930 hrs **Potomac Ballroom A&B**

Monday Morning Opening Keynote and Plenary Panel

The Societal Importance of Federal R&D Investments

Congressman Chaka Fattah, 2nd District Pennsylvania, U.S. House of Representatives

R&D Policy Implications and Investments

Moderator: **Robert Braun,** David and Andrew Lewis Professor of Space Technology, Georgia Institute of Technology

Panelists:

Michael Gazarik, Associate Administrator, Space Technology Mission Directorate, NASA Headquarters

Michael Griffin, Chairman and CEO, Schafer Corporation, AIAA President

Arati Prabhakar, Director, DARPA

1230–1400 hrs **Potomac Ballroom A&B**

Durand Lectureship for Public Service and Public Policy Luncheon

American Space Strategy: Choose to Steer, Not Drift

Scott Pace, Director, Space Policy Institute, Elliott School of International Affairs, George Washington University

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1730–1830 hrs **Potomac Ballroom C**

Dryden Lectureship in Research

Taking the Hype Out of Hypersonics: Research Contributions to Operational High-Speed-Systems

Mark J. Lewis, Director, The Science and Technology Policy Institute, Institute for Defense Analyses

Tuesday, 14 January

0800–0930 hrs **Potomac Ballroom A&B**

Tuesday Morning Keynote and Plenary Panel

Innovating for an Era of Affordability: The Future of the Space Industry

Rick F. Ambrose, Executive Vice President, Lockheed Martin Space Systems Company

AIAA's Role in Defining the Future of Aerospace

Moderator: **Jim Albaugh,** President, The Boeing Company (Retired), AIAA President-Elect

Panelists:

David Hills, Director, Research and Technology, Airbus Americas

Ray Johnson, Senior Vice President, Chief Technology Officer, Lockheed Martin Corporation

Michael Ryschkewitsch, Head of the Space Sector of Johns Hopkins University, Applied Physics Laboratory

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

Keynote Speakers and Plenary Sessions

Wednesday, 15 January

0800–0930 hrs **Potomac Ballroom A&B**

Wednesday Morning Keynote and Plenary Panel

Tech Superiority in an Age of Austerity

Frank Kendall, Under Secretary of Defense for Acquisition, Technology and Logistics, Department of Defense

Designing for Affordability

Moderator: **The Honorable Jacques S. Gansler,** Professor and Roger C. Lipitz Chair, Glenn L. Martin Institute Fellow of Engineering Center for Public Policy & Private Enterprise, School of Public Policy, University of Maryland

Panelists:

Carl Avila, Director, Advanced Weapons and Missile Systems, Boeing Defense, Space & Security

John Bergeron, Senior Director, Raytheon Six Sigma, Engineering Technology and Mission Assurance, Raytheon Company

John Fisher, Chief Engineer, Engineering, Manufacturing, and Logistics, Northrop Grumman Electronic Systems

1730–1830 hrs **Potomac Ballroom C**

von Kármán Lectureship in Astronautics

Space Transportation: Past, Present, and . . . ??

Antonio L. Elias, Executive Vice President and Chief Technical Officer, Orbital Sciences Corporation

Thursday, 16 January

0800–0930 hrs **Potomac Ballroom A&B**

Thursday Morning Keynote and Plenary Panel

Talent, the Coin of the Realm

C.D. Mote Jr., President, National Academy of Engineering

Future of Aerospace Education and Professional Development

Moderator: **Alton Romig,** Vice President, Engineering and Advanced Systems, Chief Skunk, Lockheed Martin Aeronautics

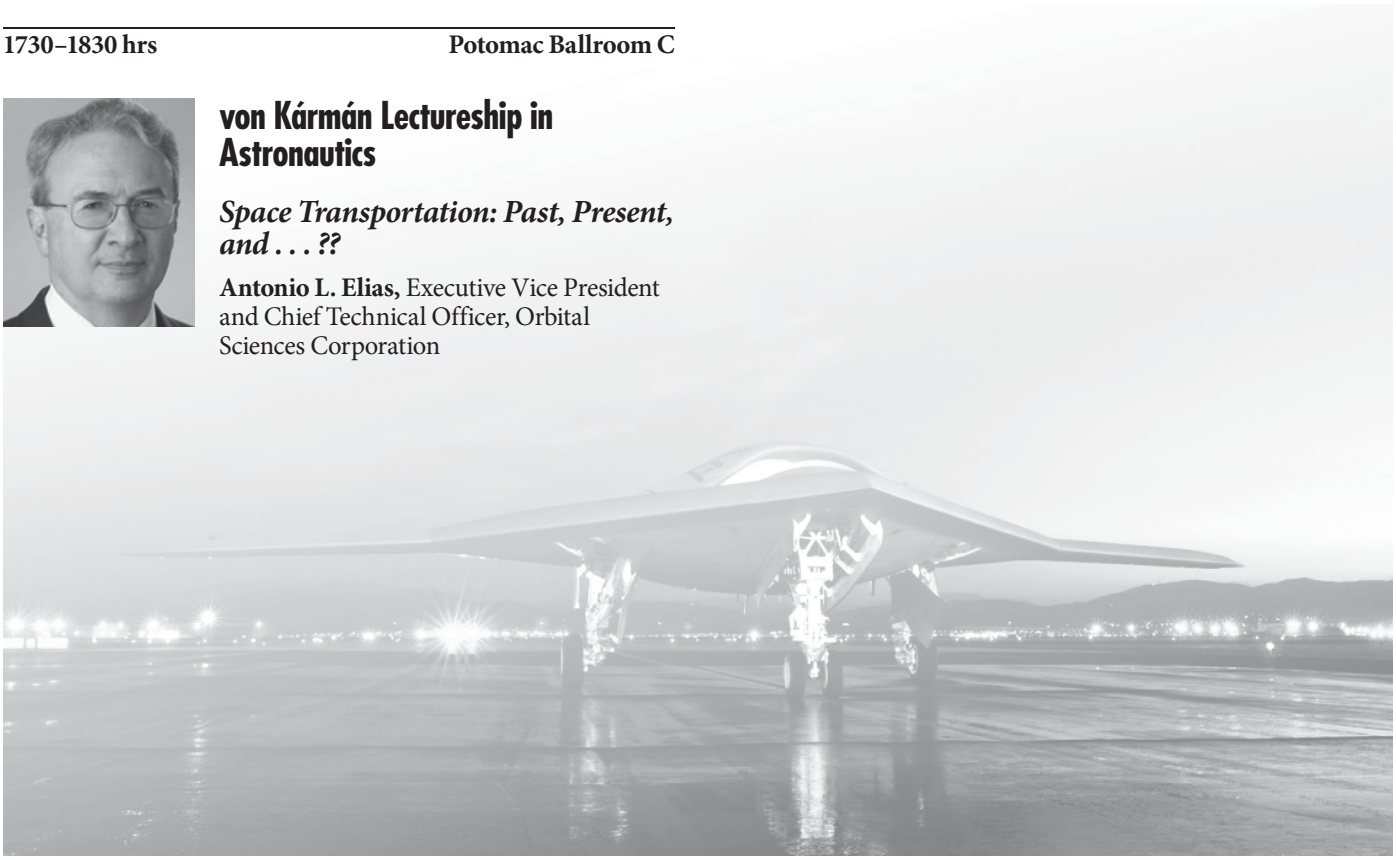
Panelists:

Leland Nicolai, Emeritus Member, Lockheed Martin Aeronautics

David Radcliffe, Kamyar Haghighi Head of Engineering Education and Epistemology Professor of Engineering Education, Purdue University

Ed Hoffman, Chief Knowledge Officer and APPEL Director, NASA

Kate Stambaugh, Space Systems Engineer, JHU/Applied Physics Laboratory



Highlighted Sessions

Monday, 13 January

1000–1230 hrs **Potomac Ballroom C**

Analysis and Perspectives from the Complex Aerospace Systems Exchange (CASE) 2013

1000–1025 hrs

Characteristics of the Design and Development of Complex Aerospace Systems

Authors: **Anna-Maria Rivas McGowan,** Senior Aerospace Technologist, NASA Langley Research Center

Peter Parker, Senior Aerospace Technologist, NASA Langley Research Center

1025–1050 hrs

Leadership in Pursuit of Systems Thinking for Individuals and Organizations

Authors: **Kurt Detweiler,** Deputy Center Chief Engineer, NASA Langley Research Center

David Dress, Deputy, Space Technology Projects Office, NASA Langley Research Center

1050–1115 hrs

The Future May Not Be Where We Are Looking Today

Authors: **Kennie Jones,** Senior Aerospace Technologist, NASA Langley Research Center

William Kimmel, Chief Technologist for Systems Analysis and Concepts Directorate, NASA Langley Research Center

1115–1230 hrs

Insights from the CASE 2013 Conference Organizers

Moderator: **Anna-Maria Rivas McGowan,** Senior Aerospace Technologist, NASA Langley Research Center

Panelists:

Allen Arrington, Engineering Manager, Sierra Lobo

Sophia Bright, Boeing Global Services and Support, The Boeing Company

David Dress, Deputy, Space Technology Projects Office, NASA Langley Research Center

Laura McGill, Deputy Vice President of Engineering, Raytheon Company

1430–1630 hrs **Potomac Ballroom C**

Aeronautics R&D Policy and the Strategic Direction of NASA's Aeronautics Research Panel

Moderator: **Robert Pearce,** Director – Strategy, Architecture & Analysis, NASA Aeronautics Research Mission Directorate

Panelists:

Marion Blakey, President and Chief Executive Officer, Aerospace Industries Association

Alan Epstein, Vice-President, Technology and Environment, Pratt & Whitney

Les Lyles, Consultant, The Lyles Group

Jaiwon Shin, Associate Administrator for Aeronautics Research Mission Directorate, NASA Headquarters

1430–1530 hrs **Maryland Ballroom C**

MDO Special Session

MDAO - Boeing's Perspective on This Key Development Capability Need

William Carrier, Vice President, Engineering, Boeing

Tuesday, 14 January

0930–1230 hrs **National Harbor 7**

National Space Technology Strategy Workshop & Public Listening Session

Chair: **Dr. Mark Lewis,** Director, Science and Technology Policy Institute

The session will serve to kick off an extended effort to collect inputs for the development of a National Space Technology Strategy. A panel consisting of representatives from the President's Office of Science and Technology Policy (OSTP) and Office of Management and Budget (OMB) along with several industrial chief technologists will pose and then work to frame the questions that will need to be answered in the development of a comprehensive and cohesive national strategy on space technology investment. The panel will expect feedback and discussion from the audience as the boundaries and constraints of the framework are developed. Questions such as "what are the gaps in the current U.S. investment policy for space technology" and "what overlaps or inefficiencies exist in the current U.S. portfolio" will be posed. In addition an examination of the strengths and weaknesses of the National Space Policy and National Space Transportation Policy related to technology policy and U.S. strategy for competitiveness will be discussed. This panel kicks off an effort by AIAA, working with the Science and Technology Policy Institute (STPI) to collect inputs in support of this initiative.

Highlighted Sessions

Tuesday, 14 January (continued)

1000–1230 hrs **Chesapeake Conference 6**

Author Panel

Writing a New History "Space Shuttle Legacy: How We Did It and What We Learned"

Experts who contributed to the book *Space Shuttle Legacy* examine key aspects of the Space Shuttle program including its long history, its successes and failures, and what lessons it offers to those engaged in current or future spaceflight programs.

Moderator: **Roger D. Launius,** Associate Director for Collections and Curatorial Affairs, Smithsonian Institution's National Air and Space Museum

Speakers:

Vigor Yang, Chair, School of Aerospace Engineering, Georgia Institute of Technology

Matthew H. Hersch, Lecturer in Science, Technology and Society, University of Pennsylvania

Linda Billings, Fellow, George Washington University School of Media and Public Affairs

John M. Logsdon, Professor Emeritus of Political Science and International Affairs, George Washington University

1430–1630 hrs **Potomac Ballroom C**

Turning Technology into a Business Panel

Moderator: **Stephen Fleming,** Vice President and Executive Director, Enterprise Innovation Institute at Georgia Tech

Panelists:

Jason Dunn, Co-Founder and CTO, Made in Space, Inc.

Debra Facktor Lepore, Vice President and General Manager, Strategic Operations, Ball Aerospace Technologies Corporation

David Thompson, CEO, Orbital Sciences Corporation

John Tylko, President, Aurora Flight Sciences

1430–1530 hrs **Maryland Ballroom C**

NDA Special Session

Assuring Aero-Structural Reliability in an Uncertain World

Ravi Chona, USAF Senior Scientist and Director, Structural Sciences Center, AFRL

Wednesday, 15 January

1000–1200 hrs **Potomac Ballroom C**

Additive Manufacturing – A Transformative Technology Panel

Moderator: **Ed Morris,** Director; Vice President, America Makes - National Additive Manufacturing Innovation Institute; National Center for Defense Manufacturing and Machining (NCDMM)

Panelists:

William Flite, Project Engineering Senior Manager, Lockheed Martin Aeronautics

Dan Johns, Chief Technologist, Additive Manufacturing, GKN Aerospace

Eric MacDonald, Associate Director, W. M. Keck Center of 3D Innovation, The University of Texas at El Paso

Paul Susalla, Section Supervisor - Rapid Manufacturing, Global Powertrain Manufacturing Engineering, Ford Motor Company

1400–1600 hrs **Potomac Ballroom C**

Emerging Technologies of Importance to Aerospace Panel

Moderator: **Daniel Jensen,** Head of Engineering for Services, Rolls-Royce Corporation

Panelists:

W. Keith Belvin, Chief Technologist, NASA Langley Research Center

Rupak Biswas, Deputy Director, Exploration Technology Directorate, NASA Ames Research Center

Dan Bodony, Professor, University of Illinois at Urbana-Champaign

Mark Moore, Design Engineer, NASA Langley Research Center

1400–1500 hrs **Maryland Ballroom C**

ASC Special Session

DLR's Adaptive Structures Activities within the European Network

Hans-Peter Monner, Head of Department Adaptronics, DLR German Aerospace Center

Highlighted Sessions

Wednesday, 15 January (continued)

1800–1900 hrs **Chesapeake Conference C**

AIAA Advocacy and Grassroots Session

This session will introduce participants to AIAA's Grassroots Advocacy programs and efforts. It will review the AIAA Congressional Visits Day program, and will explain why grassroots advocacy is vitally important to AIAA's mission and to the benefit of the aerospace industry. The program will also include an introduction to successful advocacy, review the role of Congress in the aerospace industry, and introduce attendees to the basics of argumentation and persuasion. If you are interested in using your voice to make a difference in Washington, D.C., this session is for you!

Thursday, 16 January

1000–1200 hrs **Potomac Ballroom C**

Small Satellite Technology and its Role in Education and Professional Development Panel

Moderator: **Simon "Pete" Worden,** Director, NASA Ames Research Center

Panelists:

James Cutler, Assistant Professor, University of Michigan

Adarsh Deepak, Chairman, Taksha University and CEO, Science & Technology Corp. (STC)

Garrett Skrobot, Mission Manager, Launch Services Program, NASA Kennedy Space Center

Bruce Yost, Program Manager for the Edison Small Spacecraft Flight Demonstration Program, NASA Ames Research Center

Directly following the panel discussion, poster sessions will be presented. See website for more details.

1200–1400 hrs **Potomac Ballroom A&B**

Aerospace Design and Structures Awards Luncheon and Keynote

Making a MUTT - Lessons from the X-56A Program

Peter Flick, Program Manager, X-56A Program, AFRL/RQ

Jeff Beranek, Chief Engineer, X-56A MAD MUTT Program, Lockheed Martin Advanced Development Programs

1430–1630 hrs **Potomac Ballroom C**

Future Aerospace Workforce Development and Education

Moderator: **Vigor Yang,** Chair, School of Aerospace Engineering, Georgia Institute of Technology

Panelists:

Jennifer Byrne, Vice President, Corporate Engineering and Technology, Lockheed Martin Corporation

Carole Hedden, Senior Editor, *Aviation Week*

Jaime Peraire, H.N. Slater Professor and Department Head, Department of Aeronautics and Astronautics, Massachusetts Institute of Technology

Darryll Pines, Dean of Engineering, University of Maryland

Larry Schneider, Vice President, Chief Project Engineer - 777 Program, Boeing Commercial Airplanes

1800–2000 hrs **National Harbor 3**

Women at SciTech Happy Hour and Keynote Speaker

The Women at SciTech Happy Hour and Keynote is hosted by the AIAA Guidance, Navigation, and Control Technical Committee. The speaker will be **Sandra H. Magnus**, Executive Director, AIAA. Women participating in SciTech are invited to attend at no charge. Women are underrepresented in the engineering sciences and industry, and this event provides an opportunity to meet informally, network, discuss experiences, and identify women who are leaders in their fields for possible special recognition by AIAA.

1800–1900 hrs **Maryland Ballroom C**

SDM Special Session

Damping: The Turbulence of Structural Mechanics

George Lesieutre, Professor and Department Head, Department of Aerospace Engineering, Pennsylvania State University

1830–1930 hrs **Chesapeake Conference D**

Oh, My Aching Back: Protective Aircraft Seat Design Using Adaptive Structures Technology

Norman Wereley, Minta Martin Professor and Department Chair, Department of Aerospace Engineering, University of Maryland

A key goal in long duration flights is to protect the human body, especially the lumbar spine, against potentially injurious vibratory and shock loads. To achieve this, vertically stroking seats can be used that adjust stroking load for wide range of occupant weights and vibration or shock severity. This talk, hosted by the National Capital Section, discusses inter-disciplinary design of helicopter seats incorporating concepts from biomechanics, adaptive structures materials, and ground testing, to achieve a comprehensive occupant protection capability.

Highlighted Sessions

Forum Chair:
Tim Hinermann,
Aerojet Rocketdyne

AIAA's Rising Leaders in Aerospace Forum provides a forum for young aerospace leaders, age 35 and under, to learn from and engage with others. The multidimensional program features a speed mentoring leadership exchange, panel or keynote sessions, Q&A with top industry leaders, and multiple opportunities for networking. This exciting and energetic forum will provide access to top aerospace leaders and their perspectives, with subject matter relevant to your career stage.

Program Agenda

Rising Leaders Reception

Monday, 13 January **Potomac Ballroom 1-2**
1900–2000 hrs

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

Rising Leaders Keynote

Tuesday, 14 January **Potomac Ballroom 1**
1630–1730 hrs

Speaker to be announced; for latest information see **www.aiaa.org/RLAF_SciTech**

Leadership Exchange and Speed Networking

Wednesday, 15 January **Potomac Ballroom D**
1430–1600 hrs

Senior Mentors:

Jim Albaugh, AIAA President Elect

Mike Griffin, AIAA President

Kelly Laflin, Senior Specialist Engineer – CFD/AeroSciences, Cessna Aircraft

George Lesieutre, Professor and Department Head, Penn State University

Mark Lewis, Director, Science and Technology Policy Institute

Sandy Magnus, Executive Director, AIAA

Laura McGill, Engineering Deputy, Raytheon Company

Laura Richard, Mission Manager, United Launch Alliance

Merrie Sanchez, Senior Director – Space Exploration Systems, Sierra Nevada Corporation

Rising Leaders Panel Session and Luncheon

Thursday, 16 January **Potomac Ballroom 1**
1230–1400 hrs

Expectations and Reality of Your Career

Moderator: **Kate Stambaugh,** JHU Applied Physics Laboratory

Panelists:

Ben Marchionna, Lockheed Martin Aeronautics Company
Ryan Rudy, Boeing Engineering Operations & Technology
Gregory P. Scott, Naval Research Laboratory
Cheryl Blomberg, University of Colorado

Hosted by YPC Young Professional Committee

Networking Events

Networking Breakfasts

A great way to start the day and interact with colleagues old and new, networking breakfasts will be offered on Tuesday–Thursday, 0700–0800 hrs, in the Exposition Hall. This event is open to all forum attendees (no tickets are required).

Networking Coffee Breaks

Networking 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. Networking coffee breaks will be located in the locations at the following times:

Monday, 13 January — **Foyer**
0930–1000 hrs and 1400–1430 hrs
Sponsored by: Airbus

Tuesday, 14 January — **Exposition Hall**
0930–1000 hrs and 1530–1600 hrs

Wednesday, 15 January — **Exposition Hall**
0930–1000 hrs and 1500–1530 hrs

Thursday, 16 January — **Exposition Hall**
0930–1000 hrs

Thursday, 16 January — **Foyer**
1530–1600 hrs

Friday, 17 January — **Foyer**
0700–0730 hrs

AIAA Business to Business (B2B) Matchmaking Event

Monday, 13 January — **Potomac Ballroom 1–2**
1000–1400 hrs

This B2B Matchmaking event will help both our prime and our small business members of the supply chain to learn about the latest technology opportunities, to form new alliances and partnerships, and to maximize business resources. Companies will outline what they're looking for in partnerships, followed by one-on-one matchmaking and detailed discussion about programs and opportunities. This event is complimentary for AIAA Corporate Members and there is a nominal fee of $200 for all other attendees. Lunch will be served.

Susan Nichols, Program Director, DARPA Small Business Programs Office, SBIR/STTR Program Manager

Joseph Grant Ph.D., Space Technology Mission Directorate, NASA Headquarters, SBIR/STTR Program

Nafiz Karabudak, Global Technology Manager and SBIR/STTR Technology Lead, Corporate Engineering and Technology, Lockheed Martin Corporation

Welcome Reception

Tuesday, 14 January — **Exposition Hall**
1730–1900 hrs

Take this opportunity to engage new contacts, refresh old ones, listen to the sounds of The Robert King Experience and have your photo taken at the Photo Fun Station (Booth 108). A ticket for the reception is required, and is included in the registration fee where indicated. Additional tickets may be purchased upon registration or on site, as space is available.

AIAA/ARCS Alum Happy Hour

Tuesday, 14 January — **Gaylord Belvedere Lobby Bar**
1630–1730 hrs

If you are an alumni or current scholar supported by Achievement Rewards for College Scientists (ARCS), or if you represent one of 55 U.S. ARCS-funded universities, or if you want to learn more about this organization, you are invited to an informal ARCS Networking Happy Hour. Many ARCS alumni and faculty from ARCS universities are also active members of AIAA, so we especially hope to see you there. Just follow signage to meet your ARCS colleagues.

Luncheon in the Exposition Hall

Wednesday, 15 January — **Exposition Hall**
1230–1330 hrs

Lunch ticket included in registration packages where indicated. Please come to the registration desk if you are interested in purchasing a ticket (while supplies last).

Corporate Member & Exhibitor Reception

Wednesday, 15 January — **Exposition Hall**
1600–1730 hrs

By invitation only for AIAA Corporate Members and Exhibiting Companies. Join us for a private reception and networking in the Exposition Hall directly following the close of the exhibits.

AIAA Bookstore: Author Signings

Leland Nicolai, co-author of *Fundamentals of Aircraft and Airship Design, Vols. 1 & 2*
PM Networking Coffee Break, Tuesday, 14 January, 1530–1600 hrs
AM Networking Coffee Break, Wednesday, 15 January, 0930–1000 hrs

Michael V. Ciminera, author of *The Aircraft Designers: A Grumman Historical Perspective,*
Opening Reception, Tuesday, 14 January, 1730–1900 hrs

Kent Hollinger, author of *Safety Management Systems for Aviation Practitioners: Real-World Lessons*
AM Networking Coffee Break, Tuesday, 14 January 0930–1030 hrs

Daniel P. Raymer, author of *Aircraft Design: A Conceptual Approach, Fifth Edition*
Networking Luncheon, Wednesday, 15 January, 1230–1330 hrs

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.

Verification and Validation Best Practices for Integrated Computational Materials Engineering

Tuesday, 14 January **Chesapeake Conference K**
1400–1600 hrs

This tutorial will introduce the evolving V&V Guidelines and Recommended Best Practices for ICME. Concepts and methodology to support this process and improve communication between the validation team (model developers and experimentalists) and the customer will be emphasized. The tutorial will lead the attendee through the process using a realistic case study where a model is developed to predict the fatigue crack growth life of forged and machined parts, which includes induced residual stresses.

Get Your Green Card Workshop

Wednesday, 15 January **Chesapeake Conference 8**
1000–1230 hrs

Attorney Mark Harrington will present an overview of "Green Card" options available for foreign-born scientists and R&D engineers. This presentation will cover employer-sponsored Green Card cases as well as cases that can be self-filed directly by immigrants without the need for official sponsorship from an employer. A Q&A session will follow the presentation.

Protecting Intellectual Property — Patents and Trademark Law Workshop

Wednesday, 15 January **Chesapeake Conference L**
1430–1730 hrs

Investing in innovation is one of the keys to maintaining a competitive edge and for expanding business opportunities. Protecting this investment through intellectual property rights such as patents, copyrights, and trademarks is essential in today's global economy, particularly when contracting with government entities. The United States recently implemented extensive changes to the patent system with far-reaching effects for companies who wish to obtain and enforce their intellectual property rights. This workshop will explore various methods of protecting intellectual property, IP issues when contracting with government agencies, and how the new patent laws will impact your vital business assets.

Introduction to the AIAA Educator Academy

Wednesday, 15 January **Chesapeake Conference A**
1900–2100 hrs

Do you ever wish your local schools taught AIAA-approved aerospace curricula in grades 3-12? Well, now they can, if you or your Section engages them in using one of the AIAA's brand new Educator Academy curriculum modules. Come find out how! This presentation introduces the Educator Academy; describes the three exciting inquiry-based modules, Space Weather Balloon, Mars Rover Celebration, and Electric Cargo Plane; and gives details on how to adopt the Academy as one of your STEM K-12 Outreach Programs.

Recognition Events

Join with us throughout the SciTech Forum as AIAA recognizes the very best in our industry: those individuals and teams who have taken aerospace technology to the next level…who have advanced the quality and depth of the aerospace profession…who have leveraged their aerospace knowledge for the benefit of society. Their achievements have inspired us to dream and to explore new frontiers.

International Student Conference

Sessions will recognize the accomplishments of the regional student conference winners from the 2013 Regional Student Conferences and they will present their award-winning work. These presenters are in the forefront of the student community that will soon be entering the workforce.

Monday, 13 January

Master Division
0930–1300 hrs — **National Harbor 6**

Undergraduate Division
0930–1300 hrs — **National Harbor 2**

Team Division
1000–1200 hrs — **National Harbor 4**

Community Division
1430–1730 hrs — **Potomac Ballroom 3**

AIAA Associate Fellows Reception and Dinner

Monday, 13 January — **Cherry Blossom Ballroom**
Reception begins at 1845 hrs
Dinner at 1930 hrs

The 2014 Associate Fellows will be inducted during the Associate Fellows Dinner. Each year, the Institute recognizes exemplary professionals for their accomplishments in engineering or scientific work, outstanding merit, and contributions to the art, science, or technology of aeronautics or astronautics.

Please support your colleagues, and join us for the induction of the 2014 Associate Fellows. Tickets to this celebrated event are available on a first-come, first-served basis and can be purchased via the AIAA SciTech registration form or on site based on availability. Business attire is requested.

AIAA Foundation Student Reception and Awards Ceremony

Monday, 13 January — **Potomac Ballroom D**
1830–2000 hrs

This reception acknowledges and highlights university students who have performed significantly. Many of the attendees will be students who have won awards for work that they have done. This event will provide an opportunity for all students and those who have an interest in student activities to meet, recognize peers for excellence, and to mingle.

Awards to be presented include:

AIAA Foundation Orville and Wilbur Wright Graduate Awards

Luis P Zea
University of Colorado-Boulder, Boulder, Colorado

Daniel Cuppoletti
University of Cincinnati
Cincinnati, Ohio

AIAA Foundation Abe M. Zarem Award For Distinguished Achievement Astronautics:

Eliseo Iglesias
University of Texas at San Antonio, San Antonio, Texas

AIAA Foundation Abe M. Zarem Educator Award Astronautics:

Harry R Millwater, Jr.
Professor/Educator
University of Texas at San Antonio, San Antonio, Texas

Winners in the Master, Undergraduate, Team, and Community Divisions of the International Student Conference will also be announced.

Recognition Events

Aerospace Sciences Awards Luncheon

Tuesday, 14 January **Potomac Ballroom A&B**
1230–1400 hrs

Join colleagues and friends for the AIAA Awards Luncheon in celebrating discovery and achievements in aerospace sciences and aerospace literature. Ticket included in the registration package where indicated.

Aerospace Sciences

AIAA Aerospace Guidance, Navigation, and Control Award

Bernard Etkin
University Professor Emeritus
University of Toronto
Ontario, Canada

"For outstanding achievement in and dedication to research and education in the field of guidance, navigation and control for over a half century."

AIAA Intelligent Systems Award

Heinz Erzberger
Senior Scientist, Aviation Systems Division
NASA Ames Research Center
Moffett Field, California

"For pioneering research in developing intelligent systems that increase the efficiency and safety of aircraft and air traffic control operations."

AIAA Lawrence Sperry Award

Kimberley Clayfield
Executive Manager, Space Sciences and Technology
Commonwealth Scientific and Industrial Research Organisation (CSIRO)
Canberra ACT Australia

"For significant and sustained contributions to the development of the Australian aerospace sector through national public policy, scientific leadership, and education activities."

(Award will be presented by the AIAA Sydney Section)

AIAA Mechanics and Control of Flight Award

Maruthi R. Akella
Associate Professor, Aerospace Engineering and Engineering Mechanics
University of Texas at Austin
Austin, Texas

"For far-reaching theoretical and practical advances in aircraft/spacecraft guidance, navigation and control, particularly nonlinear attitude estimation and control."

ASEE/AIAA J. Leland Atwood Award

Mark D. Maughmer
Professor/Educator
The Pennsylvania State University
University Park, Pennsylvania

"For weaving a unique tapestry of real-world engineering and engineering education."

Aerospace Literature

AIAA Gardner-Lasser Aerospace History Literature Award

William Clancey
Senior Research Scientist, Florida Institute for Human and Machine Cognition
Pensacola, Florida

"Working on Mars: Voyages of Scientific Discovery with The Mars Exploration Rovers"

AIAA History Manuscript Award

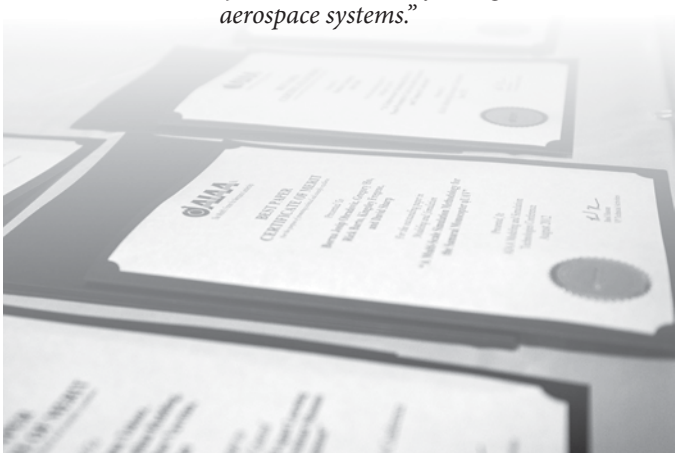
Lawrence Benson
Air Force Historian (retired)
Albuquerque, New Mexico

"Quieting the Boom: The Shaped Sonic Boom Demonstrator and the Quest for Quiet Supersonic Flight"

AIAA Pendray Aerospace Literature Award

Wassim Haddad
Professor of Aerospace Engineering
Georgia Institute of Technology
Daniel Guggenheim School of Aerospace Engineering
Atlanta, Georgia

"For paramount and fundamental contributions to the literature of dynamical systems and control for large-scale aerospace systems."



Recognition Events

Recognizing Technical and Scientific Excellence (Best Papers and Student Paper Competitions)

Tuesday, 14 January **Presentation Stage**
1745–1815 hrs **Exposition Hall**
No Ticket Required

Best papers in the fields of aerospace sciences or aerospace design and structures will be recognized for technical and scientific excellence. A certificate of merit will be presented to authors.

ASME/Boeing Best Paper

AIAA 2013-1702, "Dynamic Aeroservoelastic Response with Nonlinear Structural Elements," Mordechay Karpel, Technion-Israel Institute of Technology; Alexander Shousterman, Israeli Computational Fluid Dynamics Center; and Carlos Maderuelo and Hector Climent, Airbus Military.

Atmospheric Flight Mechanics Best Paper

AIAA Paper 2013-4844, "Virtual Deformation Control of the X-56A Model with Simulated Fiber Optic Sensors," Peter Suh and Dimitri Mavris, George Institute of Technology; and Alexander Chin, NASA Dryden

Collier Research HyperSizer/AIAA Structures Best Paper

AIAA 2013-1769, "Structural Assessment of Advanced Composite Tow-Steered Shells," K. Chauncey Wu, Bret Stanford, Glenn Hrinda, Zhuosong Wang, and Robert A. Martin, NASA Langley Research Center; and H. Alicia Kim, University of Bath.

Computational Fluid Dynamics Best Student Paper

AIAA 2013-2940, "Multidimensional Active Flux Schemes," Timothy Eymann, CREATE-AV/Kestrel and Phillip Roe, University of Michigan.

Gossamer Systems Best Paper

AIAA 2013-1671 "Deployable Helical Antennas for CubeSats," Gina Olson, Sergio Pellegrino, and Joseph Costantine, California Institute of Technology; and Jeremy Banik, Air Force Research Laboratory, Kirtland AFB.

Guidance, Navigation and Control Best Paper

AIAA 2013-5202, "Experimental Validation of Pulse Phase Tracking for X-ray Pulsar Based Spacecraft Navigation," Kevin D. Anderson and Darryll Pines, University of Maryland.

Shahyar Pirzadeh Memorial Award for Outstanding Paper in Meshing Visualization and Computational Environments

AIAA 2013-1162, "Visualization and Analysis of Vortex Features in Helicopter Rotor Wakes," David Kao, Jasim Ahmad, Terry Holst, and Brian Allan, NASA Langley Research Center.

AIAA Sustained Service Awards

Wednesday, 15 January **Presentation Stage**
0930–0945 hrs **Exposition Hall**

AIAA members will be recognized for their dedicated service.

Ramana Grandhi
Distinguished Professor
Wright State University
Dayton, Ohio

"For sustained and dedicated service to AIAA through conference leadership, significant publications in structural design, and leadership of the Multidisciplinary Design Optimization and Non-Deterministic Approaches Technical Committee."

James Horkovich
Engineering Fellow,
RMS Systems Engineering
Raytheon Advanced Systems
Design Center
Tucson, Arizona

"For professional commitment and leadership, for education and mentoring of scientist engineers, and for distinguished contributions to science and innovation of directed energy systems."

Paresh Parikh
Associate Director for Project Implementation, Research Directorate,
NASA Langley Research Center,
Hampton, Virginia

"For 25 years of continuous service to AIAA and the Hampton Roads Section, including organization of the "Future In Aerospace" scholarship program and service as a Section Officer, Committee Chair, and Council Member."

Balu Sekar
Senior Aerospace Engineer
ARFL/RZTC
Wright-Patterson AFB, Ohio

"For 30 years of participation in AIAA technical and section activities."

Recognition Events

Aerospace Design and Structures Awards Luncheon and Keynote

Thursday, 16 January **Potomac Ballroom A&B**
1200–1400 hrs

Join colleagues and friends for the AIAA Awards Luncheon to celebrate innovation and achievement in aerospace design and structures. Ticket included in the registration package where indicated.

AIAA Aerospace Design Award

Michael Benjamin
Senior Engineer
GE Aviation
Cincinnati, Ohio

"For leadership in the design of advanced fuel nozzles and combustors for the next generation of GE aircraft engines including the LEAP and GEnx."

AIAA Structures, Structural Dynamics, and Materials Award

Daniel Inman
"Kelly" Johnson Professor and Chair
Department of Aerospace Engineering
University of Michigan
Ann Arbor, Michigan

"For outstanding contributions and innovative integration of smart materials into both air and space vehicles ranging from flexible satellites to morphing aircraft structures."

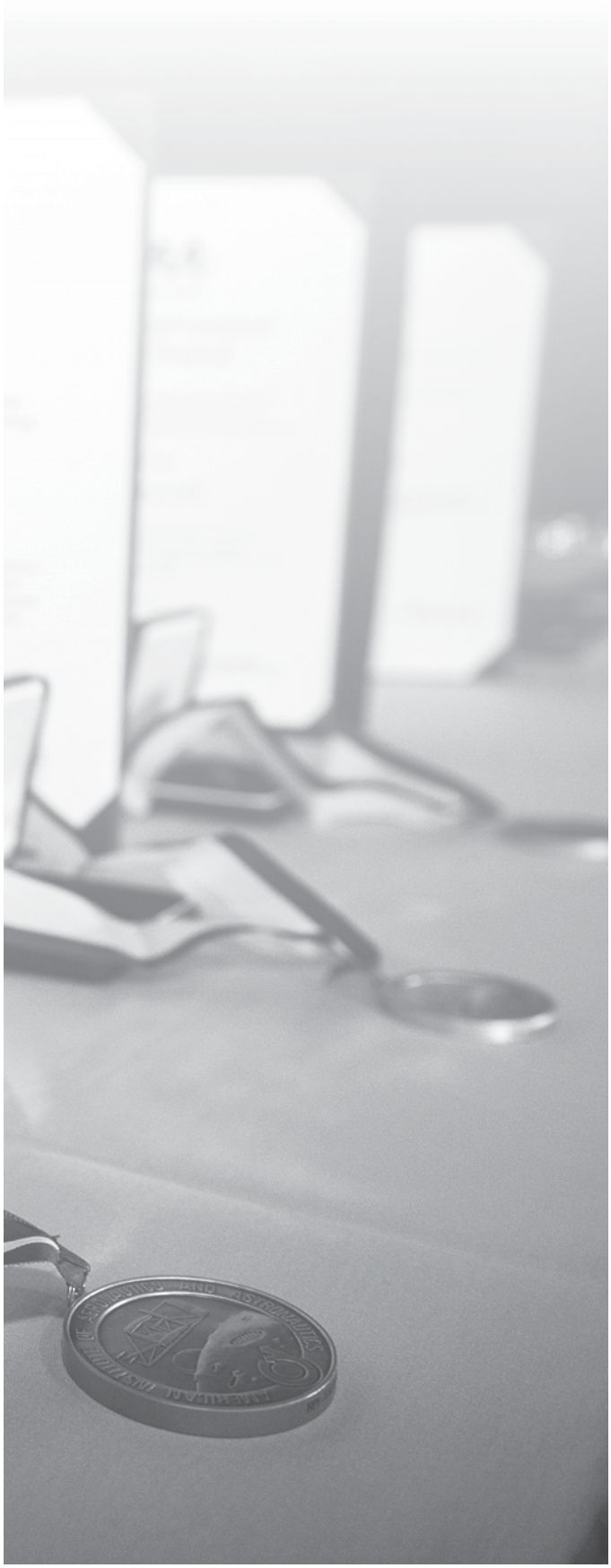
AIAA Survivability Award

John M. Vice
President
Skyward, Ltd.
Hendersonville, North Carolina

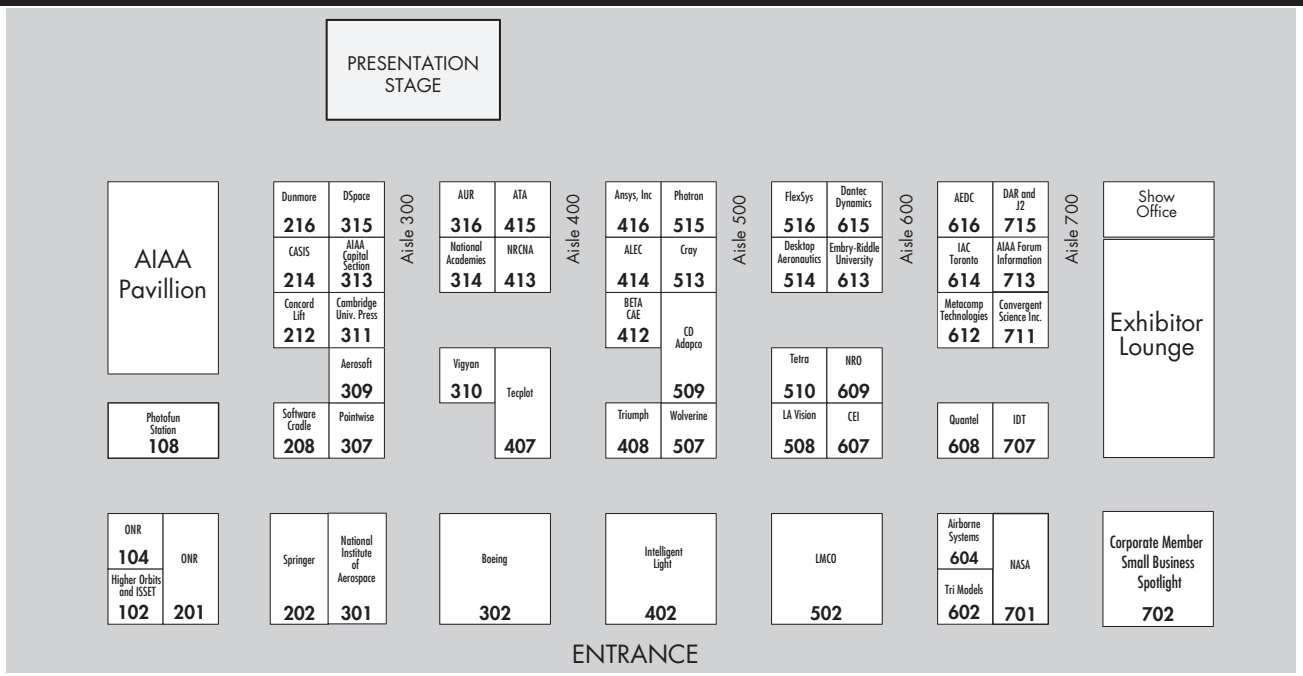
"For leadership and technical contributions instrumental in enhancing aircraft survivability through test and evaluation, combat data collection, and aircraft battle damage assessment and repair."

New Lectureship in Aerospace Engineering Seeks Nominees!

Nominations are now being solicited for the inaugural Yvonne C. Brill Lectureship in Aerospace Engineering established in memory of Yvonne Brill, pioneering rocket scientist, AIAA Honorary Fellow, and NAE member, and are due to AIAA by 31 January 2014. The ideal nominee should have a distinguished career involving significant contributions in aerospace research and/or engineering and will be selected based on technical expertise, originality, and influence on other important aerospace issues such as ensuring a diverse and robust engineering community. NAE or AIAA members are eligible to place a nomination. Contact **carols@aiaa.org** to request the nomination form.



Exposition Hall



Exhibitors by Booth Number

309 Aerosoft, Inc.
313 AIAA Capital Section
713 AIAA Forum Information
604 Airborne Systems
414 American Legislative Exchange Council (ALEC)
416 Ansys, Inc.
616 Arnold Engineering Development Complex (AEDC)
415 ATA Engineering, Inc.
316 AUR, Inc.
412 BETA CAE Systems USA, Inc.
302 Boeing Technology Services
311 Cambridge University Press
214 CASIS
509 CD-adapco
607 Computational Engineering International
212 ConcordLift
702 Corporate Member Small Business Spotlight
711 Convergent Science, Inc.
513 Cray, Inc.
615 Dantec Dynamics, Inc
715 DARcorporation/J2 Aircraft Dynamics
514 Desktop Aeronautics, Inc.
315 dSPACE
216 Dunmore Corporation
613 Embry-Riddle Aeronautical University
516 FlexSys
102 Higher Orbits and ISSET
614 IAC 2014 Toronto (CASI)
707 Integrated Design Tools (IDT)
402 Intelligent Light
508 LaVision, Inc.
502 Lockheed Martin Corporation
612 Metacomp Technologies
701 NASA
313 National Capital Section (AIAA)
301 National Institute of Aerospace (NIA)
609 National Reconnaissance Office (NRO)
413 National Research Council of the National Academies
104/201 Office of Naval Research (ONR)
108 Photo Fun Station
515 Photron
307 Pointwise, Inc.
608 Quantel USA
208 Software Cradle
202 Springer
407 Tecplot, Inc.
510 Tetra Research Corporation
602 Tri Models, Inc.
408 Triumph Aerospace Systems - Newport News
310 ViGYAN, Inc.
507 Wolverine Ventures, Inc.

Exposition Hall

The exposition hall is the hub of activity during this event. Networking coffee breaks and breakfasts, luncheons, receptions, recognition activities, and exhibitor presentations are all held in the exposition hall to give attendees and exhibitors an opportunity to celebrate technical excellence and connect with partners, industry-thought leaders, and collaborators who can help move your business forward.

Exposition Hall Hours

Tuesday, 14 January	**0700–1230 hrs** **1400–1600 hrs**
Wednesday, 15 January	**0700–1600 hrs**
Thursday, 16 January	**0700–1200 hrs**

Networking Activities in the Exposition Hall

Networking Breakfasts

Tuesday–Thursday, 14–16 January	**0700–0800 hrs**

Networking Breaks

Tuesday, 14 January	**0930–1000 hrs** **1530–1600 hrs**
Wednesday, 15 January	**0930–1000 hrs** **1500–1530 hrs**
Thursday, 16 January	**0930–1000 hrs**

Reception

Tuesday, 14 January	**1730–1900 hrs**

Luncheon

Wednesday, 15 January	**1230–1330 hrs**

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.

30% Off All Books at the AIAA SciTech 2014 Forum

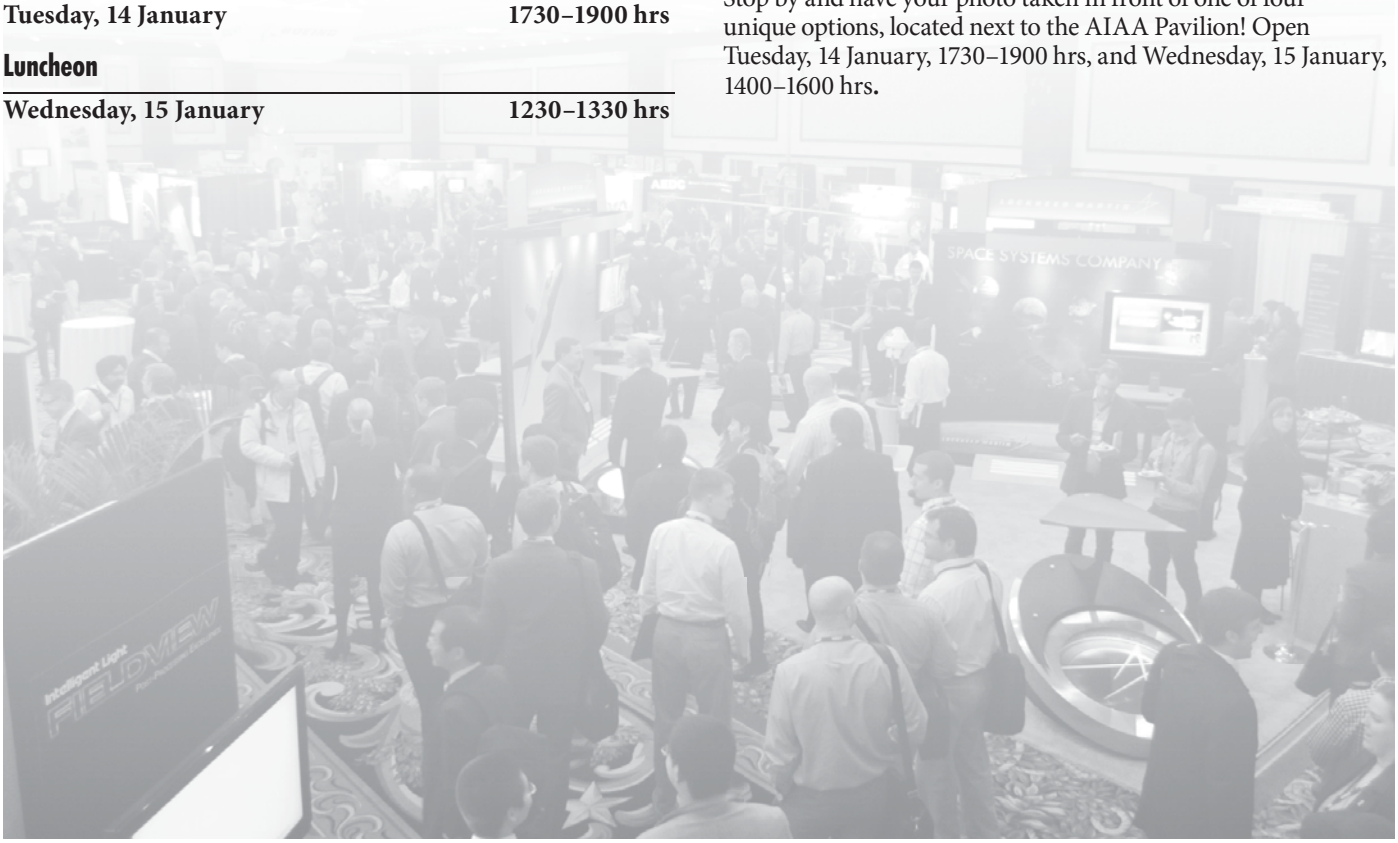
AIAA Publications is offering a special discount on all titles featured at the AIAA SciTech 2014 Forum. Attendees can take advantage of a 30% discount off the list price of all books for sale at the AIAA Bookstore located in the AIAA Pavilion. This special offer will only be available during the forum! Take advantage of these super savings and visit the AIAA Bookstore!

AIAA Forum Information

Come join us in the Exposition Hall at the Forum Information booth, #713, to learn about AIAA's Forums. Drop off your business card for a chance to win a prize. Visit the booth before lunch on Wednesday to be eligible, the drawing will be held at 1245 hrs!

Photo Fun Station

Stop by and have your photo taken in front of one of four unique options, located next to the AIAA Pavilion! Open Tuesday, 14 January, 1730–1900 hrs, and Wednesday, 15 January, 1400–1600 hrs.



Exhibitors

Aerosoft, Inc. 309

2000 Kraft Drive, Suite 1400
Blacksburg, VA 24060
www.aerosoft.com
questions@aerosoftinc.com

AeroSoft specializes in high-fidelity numerical algorithms for aerodynamics simulation and design. Services include licensing, training and support of GASP, our premier structured and unstructured flow solver, as well as detailed analysis of customer applications and customized solutions. Come by and see what's new with GASP version 5.1.

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www.airborne-sys.com
kurt.hempe@airborne-sys.com

Airborne Systems is a world leader in the design, development, fabrication, test and integration of Entry Descent and Landing Systems (EDLS), including parachutes systems, Air Bag Landing Attenuation systems, Inflatable Aerodynamic Decelerators. We provide EDLS systems for various aircraft and spacecraft and are leading the development of new technologies including Inflatable Aerodynamic Decelerators.

American Legislative Exchange Council (ALEC) 414

2900 Crystal Drive
Suite 600
Arlington, VA 22202
www.alec.org
jdusoe@alec.org

The American Legislative Exchange Council (ALEC) is America's largest nonpartisan, membership organization of state legistlators (2,000+) with a commitment to free markets and limited government. Capitalizing on our members' specialized knowledge, we have task forces and subcommittees focusing on national security, international relations, education and tort reform, among other issues.

ANSYS, Inc. 416

275 Technology Drive
Cannonsburg, PA 15317
www.ansys.com
jennifer.dorazio@ansys.com

ANSYS brings clarity and insight to customers' most complex design challenges through fast, accurate and reliable engineering simulation. Our technology enables organizations to predict with confidence that their products will thrive in the real world. Customers trust our software to help ensure product integrity and drive business success through innovation.

Arnold Engineering Development Complex (AEDC) 616

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Arnold AFB, TN 37389-2213
www.arnold.af.mil
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Arnold Engineering Development Complex (AEDC) is the most advanced and largest complex of flight simulation test facilities in the world. The Complex operates aerodynamic and propulsion wind tunnels, rocket and turbine engine test cells, space environmental chambers, arc heaters, ballistic ranges and other specialized units.

ATA Engineering, Inc. 415

1995 El Camino Real, Suite 200
San Diego, CA 92130
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ATA Engineering, Inc (ATA) is an engineering consulting firm that provides innovative solutions through test- and analysis-driven design by focusing on the needs of manufacturers in addressing their cost, quality, and time-to-market challenges for their mechanical and aerospace systems.

AUR, Inc 316

605 Preston Avenue
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aur@aurinc.com

AUR, Inc. (founded in 1973) develops and sells unique miniature 3-velocity-component non-intrusive laser systems built upon advanced technologies and software (AUR Studio™) to solve complex flow problems in complex practical systems. AUR optimizes these capabilities for each application using its experience-based knowledge of complex flow problems. (See our ad in the October 2012 *Aerospace America* for details.)

BETA CAE Systems USA, Inc. 412

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www.ansa-usa.com
Deepak@ansa-usa.com

BETA CAE Systems is an engineering services company that distributes & supports the industry leading ANSA & META software. ANSA is CAE pre-processing tool for FE & CFD Analysis, for full-model build, from CAD to solver input file, in one integrated environment. META is a post-processor for analyzing results from ANSYS, NASTRAN, ABAQUS, LS-DYNA, PAMCRASH, RADIOSS, MADYMO, FLUENT, STAR CCM, CFD++ & other solvers.

Exhibitors

Boeing Technology Services 302

7755 E. Marginal Way S
Mail Code 1W-02
Seattle, WA 98108
http://www.boeing.com/commercial/techsvcs/boeingtech/

Boeing Technology Services can help you find the Boeing testing facilities, test technicians and engineers to fit your needs at a wide variety of laboratories/test and measurements facilities in the Puget Sound area, Southern California, St. Louis, MO., Philadelphia, PA., and other Boeing locations across the country. We can arrange on-site work, accommodating your need to have Boeing experts perform testing at your own location.

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info@iss-casis.org

The Center for the Advancement of Science in Space (CASIS) is the sole manager of the International Space Station (ISS) U.S. National Laboratory. CASIS is responsible for managing and promoting innovative research on the ISS capable of improving life on Earth.

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CEI makes EnSight, the leading CFD and CSM post-processor and visualization software. EnSight is known for its strong support for large models, transient models, and moving and adapting meshes. If you make a CFD or CSM solver, EnSight is available to bundle with your software. Stop by the booth and see the new EnSight 10.1 with faster performance, native polyhedrals, and case linking.

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This is a "thought experiment" for a low cost per ton mile competitor for truck, train, ship cargo with fast direct airborne service. ConcordLift develops theoretical studies on practical problems and develops workable cost effective solutions.

Convergent Science, Inc. 711

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Middleton, WI 53562
convergecfd.com
info@convergecfd.com

Convergent Science, Inc. is a world leader in Computational Fluid Dynamics (CFD) software. Our flagship product, CONVERGE™, is a CFD software package that is revolutionizing how fluid dynamics modeling is being used by engineers, researchers and designers. With CONVERGE™, traditional CFD bottlenecks (namely grid generation) have been removed from the modeling process, allowing users to spend more time analyzing their simulations and no time generating grids.

Cray, Inc 513

901 Fifth Avenue, Suite 1000
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Exhibitors

DARcorporation/J2 Aircraft Dynamics 715

DARcorporation
1440 Wakarusa Drive
Suite 500
Lawrence, KS 66049
www.darcorp.com
info@darcorp.com

j2 Aircraft Dynamics Ltd
Daresbury Innovation Centre
Keckwick Lane
Daresbury, Warrington, Cheshire
WA4 4FS
United Kingdom
www.j2aircraft.com
info@j2aircraft.com

DARcorporation: aeronautical engineering consulting services in airplane design, wind turbine design, prototype manufacturing, wind tunnel testing. DAR develops and sells airplane design and analysis software. J2 Aircraft Dynamics develops and sells the j2 Universal Tool Kit software. J2 software is used for aircraft design, flight test, simulation and accident investigation.

Dantec Dynamics, Inc. 615

750 Blue Point Road
Holtville, NY 11742
www.dantecdynamics.com
usa@dantecdynamics.com

Dantec Dynamics is a leading developer and supplier of advanced measurement systems for fluid mechanics, solid mechanics, microfluidics, spray analysis and combustion technology. Our products include: PIV, CTA, LDA, PDA, PLIF, DIC, and more. Measurement data include velocity, turbulence, particle size, concentration, temperature, combustion species, strain/stress and vibration.

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Desktop Aeronautics provides conceptual aircraft design and shape optimization services to aircraft manufactures and Government agencies, specializing in design for natural laminar flow (NLF). We also develop and distribute licensed software that addresses the needs of aircraft designers. We are NASA's licensed commercial distributor of Cart3D.

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Wixom, MI 48393-2020
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dSPACE is the world's leading provider of hardware and software tools for developing and testing sophisticated electronic control systems. For over 20 years, dSPACE's high-quality, off-the-shelf software and hardware tools have empowered engineers to design and innovate, while dramatically reducing development times and cost. Learn more by visiting: www.dspaceinc.com.

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amallettjr@dunmore.com

DUNMORE is a manufacturer of engineered films and tapes for aerospace, supplying multilayer insulation materials to the aerospace industry for over twenty-five years. With a highly technical product base of over 400 certified products, DUNMORE is the trusted source for engineered aerospace films and tapes.

Embry-Riddle Aeronautical University 613

600 S. Clyde Morris Blvd.
Daytona Beach, FL 32114
www.embryriddle.edu
univadm@erau.edu

Embry-Riddle Aeronautical University, the world's largest university specializing in aviation and aerospace, offers more than 40 baccalaureate, master's and Ph.D. degree programs. Embry-Riddle educates students at residential campuses in Daytona Beach, Fl, and Prescott, AZ and through the Worldwide Campus with more than 150 locations.

FlexSys 516

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Ann Arbpr, MI 48105
www.flxsys.com

FlexSys is a world-leader in variable geometry wings that offer significant reduction in fuel-burn (emissions), noise and stresses. Leveraging our pioneering compliant systems design method, we demonstrated (TRL 6) lightweight, reliable and cost-effective seamless shape-adaptive control surfaces. A Gulfstream business-jet retrofitted with FlexFoil is scheduled for flight tests in July 2014.

Exhibitors

Higher Orbits and ISSET 102

32 Upshur Road
Annapolis, MD 21402
www.higherorbits.org
www.isset.org
michelle@higherorbits.org

Higher Orbits & ISSET (International Space School Educational Trust) are "sister" non-profits that use space, through a variety of experiences, to get individuals excited about STEM, Leadership and Teamwork.

IAC 2014 Toronto 614

350 Terry Fox Drive, Suite 104
Kanata, Ontario K2K 2W5
Canada
www.iac2014.org
Geoff@iac2014.org or lynne@iac2014.org

The 2014 International Astronautical Congress – IAC 2014 – will attract over 3,000 space experts from around the world to Toronto from 29 September – 5 October. Toronto is the ideal host city-accessible, affordable, efficient, safe, exciting – a wonderful place to visit!

Integrated Design Tools, Inc. (IDT) 707

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Bethesda, MD 20817
www.lockheedmartin.com
david.g.welch@lmco.com

Headquartered in Bethesda, Md., Lockheed Martin is a global security and aerospace company that employs about 120,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. Its exhibit will feature programs from Lockheed Martin Aeronautics, Skunk Works®, including Stalker UAV and Advanced Air Mobility concepts. Space Systems Company will highlight the ongoing Human Space Flight activity and the next generation of robotic exploration missions.

Metacomp Technologies 612

28632 Roadside Drive, Suite 255
Agoura Hills, CA 91301
www.metacomptech.com
info@metacomptech.com

Metacomp Technologies is at the forefront of cutting edge technology with its products Computation Fluid Dynamics CFD++, Mesh Generation MIMI and Computations Structural Mechanics CSM++, in widespread global use. Metacomp Technologies is a developer of comprehensive computational multiphysics tools for a better view of the world.

NASA 701

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Exhibitors

National Institute of Aerospace 301

100 Exploration Way
Hampton, VA 23666
inquiries@nianet.org

National Institute of Aerospace is a non-profit research and graduate education institute conducting research sponsored by NASA, other government agencies and the aerospace industry in the fields of space exploration, systems engineering, materials science, flight systems, aerodynamics, air traffic management, aviation safety, planetary and space science and global climate change.

National Reconnaissance Office (NRO) 609

14675 Lee Road
Chantilly, VA 21051
dii.westfield.net
dii@nro.mil

The National Reconnaissance Office's Director's Innovation Initiative invests in advanced technologies, fosters innovation, and provides seed funding to push the boundaries of technology to dramatically improve our satellite reconnaissance capabilities. It presents an opportunity for developers not traditionally associated with the NRO to participate in building the National Reconnaissance Office of the 21st century.

National Research Council of the National Academies 413

500 Fifth Street, NW
Washington, DC 20001
www.nationalacademies.org/rap
rap@nas.edu

The National Research Council of the National Academies offers awards for independent graduate, postdoctoral and senior research in all fields in science and engineering to be conducted at participating U.S. federal laboratories and affiliated institutions. Awards include generous stipend, relocation, professional travel and health insurance. Online applications are on the website.

Office of Naval Research 104/201

875 North Randolph Street
Arlington, VA 22203
www.onr.navy.mil
onrpublicaffairs@navy.mil

As an executive branch agency within the Department of Defense, the Office of Naval Research (ONR) supports the President's budget. ONR provides technical advice to the Chief of Naval Operations and the Secretary of the Navy. The Naval Air Warfare and Weapons Division supports the Navy's power projection needs, fostering the technology development of naval aircraft, structures, propulsion, autonomy, energetics, directed energy and electric weapons.

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Software Cradle is a leading provider of Computational Fluid Dynamics (CFD) software including SC/Tetra (general purpose unstructured mesh), scSTREAM (general purpose Cartesian mesh), and HEAT Designer (Cartesian mesh for electronics). Since inception in 1984, Cradle has established itself as a major innovator for advancing the role of simulation in engineering design.

Exhibitors

Springer 202/204

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Tecplot, Inc 407

3535 Factoria Blvd SE, Suite 550
Bellevue, WA 98006
425-653-1200 X236 (phone)
425-653-9200 (fax)
www.tecplot.com
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Tecplot is the visualization tool of choice for thousands of engineers and scientists worldwide. Its use while performing simulations, analysis, or experiments, provides insight and understanding of the mechanisms inside the data—information critical in pinpointing and solving problems to optimize designs or processes, or to explain physical observations.

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Tetra Research specialized in Loci/CHEM CFD software development and advanced flow applications. Loci/CHEM is a unique CFD analysis tool that is formally second order accurate on polyhedral meshes, scales thousands of processors and contains advanced physical and body dynamics modules. We provide software support, customized development, and application training services to allow you to make the most efficient and productive use of Lodi/CHEM.

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ViGYAN, Inc. 310

30 Research Drive
Hampton, VA 23666
www.vigyan.com
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ViGYAN

For almost 35 years, ViGYAN has provided aerospace engineering research and development services to NASA, other government agencies and corporations. Our business areas include aeronautics and space R&D; scientific; engineering, and business software development; educational support services; and computer technology services. We have specialized expertise in wind tunnel testing and systems, including the operation of the ViGYAN Wind Tunnel in Hampton, Virginia. ViGYAN was selected as the 2010, NASA Langley Research Center Small Business Subcontractor of the Year. ViGYAN is a minority–owned, small disadvantaged business (SDB) and is ISO 9001 certified.

Wolverine Ventures, Inc. 507

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Wolverine Ventures, Inc. is an engineering software firm with more than 40+ years of combined experience in customized NPSS coding and complex systems modeling. As the exclusive distributor of NPSS Software and the leading provider for NPSS related services, WVI is an unparalleled resource NPSS Sales, Service and Training.

Presentation Stage

The Presentation Stage provides a range of learning, recognition, and networking opportunities. It offers exhibitors a chance to explain in detail how their products and services can help you achieve your goals, as well as providing the chance to hear other interesting demonstrations and discussions. Please join us in the exposition hall for the following special presentations!

Tuesday, 14 January	Wednesday, 15 January	Thursday, 16 January
0700–1230 & 1400–1600 Show Open	0700–1600 Show Open	0700–1200 Show Open
0700–0800 Networking Coffee Break	0700–0800 Networking Coffee Break	0700–0900 Networking Coffee Break
0930–1000 Networking Coffee Break	0930–1000 Networking Coffee Break	0930–1000 Networking Coffee Break
1530–1600 Networking Coffee Break	1230–1330 Networking Luncheon	1500–1530 Networking Coffee Break

Tuesday, 14 January

0930-0945 **Dantec Dynamics, Inc. (Booth 615)**

New Developments and Improvements of Measurement Technology for Aerodynamics and Material Testing

Cliff Weissman

The understanding and characterization of fluid and particle dynamics and material testing is crucial for many applications in the aerospace industry. An overview of a few of the latest developments in advanced measurement techniques from Dantec Dynamics are presented with emphasis on aeronautic R&D applications.

0945-1000 **dSPACE (Booth 315)**

Tools for Embedded Software Development and Validation

Noal Garber, Account Manager

The presentation will describe dSPACE tool-chain for model-based design, development and testing of embedded software. dSPACE tools for Rapid Controls Prototyping including solutions for simulation of Aerospace communication busses, and automatic code generation tool for efficient systems will be presented. The presentation will include examples of successful applications currently in flight developed using dSPACE systems.

1530-1545 **Concord Lift (Booth 212)**

Concord Lift, a thought experiment. Is it possible to have very heavy lift at very low cost per ton mile?

Stephen Funck

Concord Lift is a unique configuration that opens the way to previously unreachable capabilities.

1545-1530 **Triumph Aerospace Systems (Booth 408)**

Wind Tunnel Unsteady Aerodynamic Load Measurement

Daniel Stuewe

Measurement of static loads is conventionally performed using a combination of strain gage measurements. For the case of an unsteady loading environment with energy content in the same frequency band as structural modes, measurements can be significantly corrupted. M4 Engineering has developed a product to accurately measure such unsteady loads.

1715-1730 **Michael V. Ciminera (Author)**

The Aircraft Designers: A Grumman Historical Perspective

1745-1815

Recognizing Technical Excellence: Certificates of Merit for Best Papers and Student Competitions

Wednesday, 15 January

0930-0945

Presentation of Sustained Service Awards

0945-1000 **ViGYAN (Booth 310)**

ViGYAN's Wind Tunnel, Economies of Scale

Richard White, Vice President

Brief review of the value of various types of micro testing, which may eliminate the need for further testing, or provide a firm foundation for macro testing.

Presentation Stage

Wednesday, 15 January (continued)

1245-1300 **Daniel P. Raymer (Author)**

Aircraft Design: A Conceptual Approach, Fifth Edition

Demonstration of software which is included in the publication.

1500-1515 **Higher Orbits & ISSET (Booth 102)**

Mission Discovery

Michelle Hamm

Learn about a unique program that uses space to get students interested in Science, Technology, Engineering & Math, as well as Leadership and Teamwork. The culmination of program results in a student experiment flying to space.

1515-1530 **BETA CAE Systems, USA, Inc (Booth 412)**

Advanced CAE pre- and post-processing solutions for Aerospace applications using ANSA and META

Pravin Peddiraju, Team Lead, CFD Applications

BETA CAE System's flagship products, ANSA and MetaPost, are one of the leading Pre- and Post-processing software solutions in the CAE market, widely used in industries such as automotive, motor sports, defense, bio-medical, aerospace etc… This presentation will discuss in detail some of the features in the NSA-METAPost software suite for the Aerospace Industry.

Thursday, 16 January

0930-0945 **Boeing Technology Services (Booth 302)**

Boeing Transonic Wind Tunnel Model Roll Mechanism (MRM)

Dale Belter

Boeing Technology Services will present an overview of the new Model Roll Mechanism (MRM) that is now in use in the Boeing Transonic Wind Tunnel. The new MRM mounting system enables more functionality and productivity with the 180 degree roll capability plus less time required for testing parameter changes.

General Information

AIAA Registration and Information Center Hours

The AIAA Registration and Information Center will be located in the Foyer. Hours are as follows:

Sunday, 12 January	**1500–1900 hrs**
Monday, 13 January	**0700–1800 hrs**
Tuesday, 14 January –Thursday, 16 January	**0700–1730 hrs**
Friday, 17 January	**0700–1200 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 and Information Center.

On-Site Wi Fi Information

Network Name: AIAA2014

Username: SciTech

Password: 2014

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 13 January 2014. Attendees who register in advance for the online proceedings will be provided with instructions on how to access them. Those registering on site will be provided with instructions at that time.

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:
      i. By paper number: Click the "Paper Number" link, select the conference year, and enter the paper number.
      ii. Use the Search textbox to find papers by author, title, or keyword. The Advanced Search link provides additional search information and options.
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. AIAA provides 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.
4. Direct any questions concerning access to proceedings and/or ARC to **arcsupport@aiaa.org.**

Manuscript Revisions:

1. To **request access to submit a revision**, email AIAA at **revisions@aiaa.org** no later than seven business days after the last day of the conference. Include the name of this conference as well as your paper number in the body of the email.
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.

AIAA Livestream Channel

Visit www.livestream.com/aiaa to view selected keynotes and plenary sessions from the week's events. Share the link so colleagues who cannot attend the conference can watch live or view afterward.

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 beginning on Wednesday. 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.

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**. Additionally, a message board will be available for postings in the exhibit hall.

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.**

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 Speakers' Briefing preparation slides will be provided in each session room. Speakers' Briefing schedule is as follows:

Monday – Friday Morning Sessions
0730–0800 hrs

Monday, Tuesday and Thursday Afternoon Sessions
1400–1430 hrs

Wednesday Afternoon Sessions
1330–1400 hrs

Speakers' Practice Room

Speakers who wish to practice their presentations may do so in the National Harbor Conference 1 and National Harbor Conference 9 rooms. A sign-up sheet will be posted on each 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 17 January 2014.

Audiovisual

Each session room will be preset with the following: one laptop computer, one LCD projector, one screen, one microphone and sound system (if necessitated by room size), and one laser pointer. You may also use your own computer. Any additional audiovisual equipment requested on site 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 a paper is not presented at the forum, it will be withdrawn from the proceedings. It is the responsibility of those 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

Authors of appropriate papers are encouraged to submit them for possible publication in 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 (*formerly *Journal of Aerospace Computing, Information, and Communication).* You may now submit your paper online at **http://mc.manuscriptcentral.com/aiaa.**

Nondiscriminatory Practices

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

Restrictions

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

International Traffic in Arms Regulations (ITAR)

AIAA speakers and attendees are reminded that some topics discussed at the forum 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.

AIAA is the largest aerospace professional society in the world, serving more than 35,000 individual and corporate members from 80 countries, who help make the world safer, more connected, more accessible, and more prosperous. AIAA brings together industry, academia, and government to advance engineering and science in aviation, space, and defense, and provides its members with the lifelong community, connections, and development opportunities that lead to a thriving profession and enduring contributions to society.

American Institute of Aeronautics and Astronautics
1801 Alexander Bell Drive, Suite 500
Reston, VA 20191-4344
703.264.7500 or 800.639.AIAA (2422)
Fax: 703.264.7657
custserv@aiaa.org
www.aiaa.org

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Robbie Robertson, Mission Lead, Space Situational Awareness Air Force Research Lab, Space Vehicles Directorate

AIAA SciTech 2014 Features:

- 22nd AIAA/ASME/AHS Adaptive Structures Conference
- 52nd AIAA Aerospace Sciences Meeting
- AIAA Atmospheric Flight Mechanics Conference
- AIAA Spacecraft Structures Conference
- AIAA Guidance, Navigation, and Control Conference
- AIAA Modeling and Simulation Technologies Conference
- 10th AIAA Multidisciplinary Design Optimization Specialist Conference
- 16th AIAA Non-Deterministic Approaches Conference
- 55th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference
- 7th Symposium on Space Resource Utilization
- 32nd ASME Wind Energy Symposium

Supported by:

- AIAA Aerospace Design & Structures Technical Group (Director: Kathleen Atkins, Lockheed Martin Aeronautics Company)
- AIAA Aerospace Sciences Technical Group (Director: Dr. James Keenan, US Army AMRDEC)

Committee Meetings and Events

Time	Title	Location
Saturday, 11 January 2014		
0800-1700 hrs	**AIAA CE Course: Decision Analysis**	Chesapeake Conference Room A
0800-1700 hrs	**1st AIAA Sonic Boom Prediction Workshop**	Chesapeake Conference Room D
0800-1700 hrs	**Low Reynolds Number Workshop**	Chesapeake Conference Room E
Sunday, 12 January 2014		
0800-1700 hrs	**AIAA CE Course: Decision Analysis**	Chesapeake Conference Room A
0800-1700 hrs	**Introduction to Integrated Computational Materials**	Chesapeake Conference Room B
0900-1200 hrs	**TAC Director/Deputy Director Training**	National Harbor 5
0900-1430 hrs	**TAC TC/PC Chair Training**	National Harbor 4
1400-1800 hrs	**ASI-WG**	Chesapeake Conference Room 1
1430-1700 hrs	**TAC Workshop: Exploring Virtual Opportunities Information Session**	National Harbor 3
1430-1500 hrs	**APATC Liaisons Subcommittee**	Chesapeake Conference Room C
1500-1600 hrs	**APATC Education Subcommittee**	Chesapeake Conference Room 2
1500-1600 hrs	**APATC Honors & Awards Subcommittee**	Chesapeake Conference Room 8
1500-1600 hrs	**APATC Membership & Nominations Subcommittee**	Chesapeake Conference Room 9
1500-1600 hrs	**APATC Planning Subcommittee**	Chesapeake Conference Room 12
1500-1600 hrs	**APATC Publicity & Publications Subcommittee**	Chesapeake Conference Room C
1600-1700 hrs	**APATC Technical Activities Subcommittee**	Chesapeake Conference Room C
1600-1700 hrs	**GEPC Steering Committee**	National Harbor 5
1600-1800 hrs	**FDTC CFD Undergraduate Education DG**	Chesapeake Conference Room 9
1600-1800 hrs	**FDTC High-Order Methods WG**	Chesapeake Conference Room D
1600-1800 hrs	**FDTC Transition DG**	Chesapeake Conference Room E
1600-1800 hrs	**Student Briefing**	National Harbor 4
1630-1930 hrs	**SRTC Book Subcommittee**	Chesapeake Conference Room 2
1700-1800 hrs	**APATC Steering Committee**	Chesapeake Conference Room C
1700-1800 hrs	**GEPC Conference Subcommittee**	National Harbor 5
1700-2200 hrs	**SDM Student Paper Competition**	National Harbor 6
1730-1800 hrs	**GTTC Membership Subcommittee**	National Harbor 10
1730-2030 hrs	**Structures TC**	National Harbor 11
1800-1900 hrs	**GTTC Steering Subcommittee**	National Harbor 10
1800-2100 hrs	**Applied Aerodynamics TC**	National Harbor 2
1800-2100 hrs	**Atmospheric Flight Mechanics TC**	Chesapeake Conference Room F
1800-2200 hrs	**GNC Student Paper Competition**	National Harbor 7
1830-2000 hrs	**TAC Aerospace Design & Structures Group Meeting**	Chesapeake Conference Room C
1830-2000 hrs	**TAC Aircraft & Atmospheric Systems Group Meeting**	Chesapeake Conference Room 8
1830-2000 hrs	**TAC Engineering & Technology Management Group Meeting**	Chesapeake Conference Room 9
1830-2000 hrs	**TAC Propulsion & Energy Group Meeting**	National Harbor 5
1830-2000 hrs	**TAC Space & Missiles Group Meeting**	Chesapeake Conference Room 12
1900-2000 hrs	**GTTC Introduction/Overview**	National Harbor 10
1900-2100 hrs	**Academic Affairs Committee Meeting**	Chesapeake Conference Room D
2000-2100 hrs	**GTTC Aerodynamics/Propulsion Subcommittee**	National Harbor 10

Committee Meetings and Events

Time	Title	Location
	Monday, 13 January 2014	
0800-1600 hrs	**GTTC Dual Flow Reference Nozzle 1**	Potomac Ballroom 6
0900-1000 hrs	**ABPTCs Steering Committee**	Chesapeake Conference Room K
0900-1500 hrs	**NIA Technical Advisory Committee**	Chesapeake Conference Room J
1000-1400 hrs	**B2B Matchmaking**	Potomac Ballroom 1&2
1000-1100 hrs	**ABPTCs Honors and Awards Subcommittee**	Chesapeake Conference Room 12
1100-1200 hrs	**ABPTCs Education Subcommittee**	Chesapeake Conference Room 12
1100-1400 hrs	**General Aviation TC**	Chesapeake Conference Room 11
1200-1230 hrs	**ABPTCs Communications Subcommittee**	Chesapeake Conference Room 12
1200-1400 hrs	**Space Operations & Support TC**	Chesapeake Conference Room K
1230-1530 hrs	**Communications Systems TC**	Chesapeake Conference Room L
1230-1400 hrs	**Durand Lectureship in Public Service / Public Policy Luncheon**	Potomac Ballroom A&B
1300-1400 hrs	**Student Conference Luncheon**	Potomac Ballroom 3
1300-1400 hrs	**ABPTCs Conference Subcommittee**	Chesapeake Conference Room 12
1300-1400 hrs	**HSABPTC Membership Subcommittee**	Chesapeake Conference Room 10
1300-1400 hrs	**GTETC Membership Subcommittee**	Potomac Ballroom 5
1300-1400 hrs	**ABPSITC Membership Subcommittee**	Potomac Ballroom 4
1330-1530 hrs	**P&E Group Meeting I**	Chesapeake Conference Room 1
1500-1700 hrs	**Education Series Editorial Advisory Board**	Potomac Ballroom 5
1500-1700 hrs	**Aerospace America Steering Committee**	Chesapeake Conference Room K
1600-1700 hrs	**ABP Working Groups**	Chesapeake Conference Room 10
1600-1700 hrs	**CGNS Committee on Standards**	Chesapeake Conference Room L
1630-1800 hrs	**CASE 2014 Planning Meeting**	Potomac Ballroom 4
1630-1730 hrs	**AMTTC New Member Orientation**	Chesapeake Conference Room 12
1700-1800 hrs	**FDTC Free Shear Mixing Layer Control DG**	Chesapeake Conference Room 11
1700-1830 hrs	**FDTC Low Re Aerodynamics DG**	Chesapeake Conference Room 1
1700-1900 hrs	**Computational Fluid Dynamics Committee on Standards**	Chesapeake Conference Room L
1700-1900 hrs	**FDTC Turbulence Modeling Benchmarks WG**	Chesapeake Conference Room J
1700-1900 hrs	**Solid Rockets TC**	Chesapeake Conference Room 2
1730-1830 hrs	**Dryden Lectureship in Research**	Potomac Ballroom C
1730-1830 hrs	**APATC Missile & Projectile Aeroprediction DG**	National Harbor 11
1730-1900 hrs	**APATC Validation of Numerical Models DG**	Maryland Ballroom 4
1800-2100 hrs	**Legal Aspects of Aeronautics and Astronautics TC**	Chesapeake Conference Room 10
1830-1930 hrs	**GTTC New Members Briefing**	Maryland Ballroom 3
1830-2000 hrs	**AMTTC Awards Subcommittee**	Chesapeake Conference Room 11
1830-2000 hrs	**Student Reception**	Potomac Ballroom D
1830-2030 hrs	**High Speed Air Breathing Propulsion TC**	Potomac Ballroom 6
1830-2030 hrs	**Gas Turbine Engines TC**	Maryland Ballroom 1
1830-2030 hrs	**Air Breathing Propulsion Systems Integration TC**	Maryland Ballroom 2
1830-2030 hrs	**University of Illinois, Department of Aerospace Engineering Reception**	Chesapeake Conference Room D
1845-1930 hrs	**Associate Fellows Reception**	Cherry Blossom Prefunction
1900-2000 hrs	**Verification and Validation Committee on Standards**	Chesapeake Conference Room L

Committee Meetings and Events

Time	Title	Location
Monday, 13 January 2014 (continued)		
1900-2100 hrs	**FDTC CFD Methods Subcommittee**	Chesapeake Conference Room 1
1900-2100 hrs	**FDTC Flow Control and Fluid Applications Subcommittee**	Chesapeake Conference Room J
1900-2200 hrs	**Terrestrial Energy Systems TC**	Chesapeake Conference Room K
1900-2200 hrs	**History TC**	Potomac Ballroom 4
1900-2200 hrs	**TAC Aerospace Sciences Group Meeting**	Maryland Ballroom 6
1900-2200 hrs	**Survivability TC**	Potomac Ballroom 5
1900-2200 hrs	**Intelligent Systems TC**	Potomac Ballroom 3
1900-2200 hrs	**Society and Aerospace Technology TC**	Chesapeake Conference Room 12
1900-2200 hrs	**Propellants & Combustion TC**	Maryland Ballroom A
1930-2030 hrs	**GTTC Awards Subcommittee**	Maryland Ballroom 3
1930-2130 hrs	**2014 Associate Fellows Dinner**	Cherry Blossom Ballroom
1930-2130 hrs	**CADWG**	Chesapeake Conference Room 5&6
2100-2200 hrs	**FDTC Steering Committee**	Chesapeake Conference Room L
2030-2130 hrs	**GTTC Publications Subcommittee**	Maryland Ballroom 3
Tuesday, 14 January 2014		
0800-1200 hrs	**AIAA Ethics Committee**	Chesapeake Conference Room 12
0800-1000 hrs	**Books Subcommittee**	Chesapeake Conference Room 10
0800-1200 hrs	**GTTC Future of Ground Testing WG**	Chesapeake Conference Room 11
0900-1200 hrs	**TAC Executive Board Meeting**	Potomac Ballroom 5
0930-1130 hrs	**Education Activities Committee**	Chesapeake Conference Room K
1000-1100 hrs	**SciTech Executive Steering Committee**	Chesapeake Conference Room 2
1000-1200 hrs	**Progress Series Editorial Advisory Board**	Chesapeake Conference Room 10
1000-1200 hrs	**AIAA Journal Editorial Advisory Board**	Potomac Ballroom 6
1100-1200 hrs	**SciTech Forum Organizing Committee Meeting**	Chesapeake Conference Room 1
1300-1400 hrs	**HyTASP Steering Committee**	Potomac Ballroom 5
1300-1400 hrs	**Compensation Committee**	Chesapeake Conference Room 2
1300-1700 hrs	**GTTC Dual Flow Reference Nozzle 2**	Potomac Ballroom 4
1400-1500 hrs	**Pressure Gain Combustion Working Group**	Chesapeake Conference Room 1
1400-1600 hrs	**HyTASP PC**	Potomac Ballroom 5
1400-1600 hrs	**Verification and Validation Best Practices for Integrated Computational Materials Engineering Tutorial**	Chesapeake Conference Room K
1400-1600 hrs	**Emerging Technologies Committee**	Chesapeake Conference Room 12
1400-1800 hrs	**TAC New Initiatives Subcommittee**	Potomac Ballroom 6
1400-1800 hrs	**Student Activities Committee**	Potomac Ballroom 2&3
1500-1600 hrs	**ABPTCs PAW Committee**	Chesapeake Conference Room L
1500-1600 hrs	**TPTC Awards Subcommittee**	Chesapeake Conference Room 10
1500-1600 hrs	**TPTC Best Paper Subcommittee**	Chesapeake Conference Room 11
1530-1700 hrs	**Crichlow Prize Selection Committee**	Chesapeake Conference Room J
1530-1730 hrs	**Journal of Aircraft Editorial Advisory Board**	Chesapeake Conference Room 1

Committee Meetings and Events

Time	Title	Location
Tuesday, 14 January 2014 (Continued)		
1600-1700 hrs	**Book Authors Reception**	Chesapeake Conference Room 2
1600-1700 hrs	**TPTC Publications Subcommittee**	Chesapeake Conference Room 10
1600-1700 hrs	**TPTC Conferences Subcommittee**	Chesapeake Conference Room 11
1600-1730 hrs	**AIAA Cybersecurity Working Group**	National Harbor 2
1630-1730 hrs	**AIAA/ARCS Alum Happy Hour**	Belvedere Lobby Bar
1700-1800 hrs	**TPTC Nominations Subcommittee**	Chesapeake Conference Room 10
1700-1800 hrs	**TPTC Education Subcommittee**	Chesapeake Conference Room 11
1730-1930 hrs	**APATC Aerodynamic Design Optimization DG**	Maryland Ballroom 3
1730-2030 hrs	**ASME Wind Energy TC**	Chesapeake Conference Room J
1800-1900 hrs	**ABPTCs Working Groups**	Chesapeake Conference Room L
1800-1900 hrs	**TPTC Publicity Subcommittee**	Chesapeake Conference Room 10
1800-2000 hrs	**Information and Command and Control Systems TC**	Chesapeake Conference Room 12
1830-2030 hrs	**ASME Structures and Materials TC**	Chesapeake Conference Room A
1830-2030 hrs	**ABPTCs Meeting**	Woodrow Wilson B
1830-2130 hrs	**Space Resources TC**	Chesapeake Conference Room 11
1900-2200 hrs	**Aerodynamic Measurement Technology TC**	Potomac Ballroom 2&3
1900-2200 hrs	**Design Engineering TC**	Chesapeake Conference Room 1
1900-2200 hrs	**Aerospace Department Chair Association (ADCA)**	Maryland Ballroom A
1900-2200 hrs	**Materials TC**	Maryland Ballroom B
1900-2200 hrs	**Thermophysics TC**	Maryland Ballroom 1&2
1900-2200 hrs	**Fluid Dynamics TC**	Maryland Ballroom C
1900-2200 hrs	**Multidisciplinary Design Optimization TC**	Potomac Ballroom 6
1900-2200 hrs	**Adaptive Structures TC**	Potomac Ballroom 5
1900-2200 hrs	**Plasmadynamics and Lasers TC**	Maryland Ballroom 5
1900-2200 hrs	**Meshing, Visualization and Computational Environments TC**	Maryland Ballroom 6
1900-2200 hrs	**TAC Program Committee Group Meeting**	Chesapeake Conference Room K
1900-2200 hrs	**Aeroacoustics TC**	Chesapeake Conference Room 2
2000-2130 hrs	**FDTC Shock Wave/Boundary Layer Interaction DG**	Potomac Ballroom 4
2000-2200 hrs	**TAC Information Systems Group Meeting**	Chesapeake Conference Room 10
Wednesday, 15 January 2014		
0800-1000 hrs	**Journals Subcommittee**	Chesapeake Conference Room J
0800-1100 hrs	**Winter Public Policy Committee Meeting**	Maryland Ballroom 2
0800-1200 hrs	**STEM K-12 Committee Meeting**	Chesapeake Conference Room 1
0800-1200 hrs	**DETC Subcommittee**	Chesapeake Conference Room K
0800-1200 hrs	**GTTC Model Attitude and Deformation WG**	Chesapeake Conference Room 12
0800-1400 hrs	**Mass Properties Committee on Standards for S-120**	Chesapeake Conference Room 11
0830-0945 hrs	**Audit Committee Meeting**	Chesapeake Conference Room 10
0830-1700 hrs	**Systems Engineering TC**	Potomac Ballroom 1
0900-1100 hrs	**RAC V Meeting**	Chesapeake Conference Room 2
0900-1600 hrs	**Membership Committee Meeting**	Potomac Ballroom 3
1000-1200 hrs	**Finance Committee Meeting**	Potomac Ballroom 4

Committee Meetings and Events

Time	Title	Location
	Wednesday, 15 January 2014 (continued)	
1000–1230 hrs	**Journals Editors-in-Chief**	Chesapeake Conference Room J
1030–1130 hrs	**SciTech 2015 Technical Program Committee Meeting**	Potomac Ballroom 5
1130–1230 hrs	**Aviation 2014 LM Planning Team**	Chesapeake Conference Room 2
1300–1400 hrs	**National Capital Section Council**	Chesapeake Conference Room K
1200-1500 hrs	**Energy Optimized Aircraft and Equipment Systems PC**	Chesapeake Conference Room 10
1300–1400 hrs	**National Capital Section Council**	Chesapeake Conference Room K
1300–1500 hrs	**P&E Group Meeting II**	Potomac Ballroom 2
1300–1500 hrs	**GTTC Wind Tunnel Flow Quality WG**	Chesapeake Conference Room 12
1300–1500 hrs	**RAC II Meeting**	Chesapeake Conference Room 2
1300–1500 hrs	**Journal of Guidance, Control, and Dynamics Editorial Advisory Board**	Chesapeake Conference Room 1
1300–1600 hrs	**Corporate Membership Committee**	Potomac Ballroom 5&6
1300–1600 hrs	**Aircraft Design TC**	Potomac Ballroom 4
1300–1500 hrs	**Publications Planning and Review Subcommittee**	Chesapeake Conference Room J
1500–1700 hrs	**Journal of Aerospace Information Systems Editorial Advisory Board**	Chesapeake Conference Room 11
1500–1700 hrs	**Publications Ethical Standards Subcommittee**	Chesapeake Conference Room J
1500–1700 hrs	**RAC IV Meeting**	Chesapeake Conference Room 2
1500–1700 hrs	**RAC I Meeting**	Chesapeake Conference Room K
1530–1730 hrs	**International Activities Committee**	Baltimore 3–5
1530–2200 hrs	**Computer Systems TC**	Chesapeake Conference Room 12
1600–1730 hrs	**Corporate Member/Exhibitor Reception**	Prince George's Exhibit Hall D&E
1630–1830 hrs	**GTTC DOE Focus Group**	Potomac Ballroom 4
1730–1830 hrs	**ABCM/AIAA MOU Signing**	Baltimore 3–5
1730–1830 hrs	**von Kármán Lectureship in Astronautics**	Potomac Ballroom C
1730–1830 hrs	**FDTC Solver Technology for Turbulent Flows DG**	Potomac Ballroom 1
1730–1930 hrs	**Green Engineering PC**	Potomac Ballroom 5&6
1800–1900 hrs	**FDTC New Frontiers Subcommittee**	Chesapeake Conference Room J
1800–2000 hrs	**APATC Rotorcraft Simulations & Performance Predictions DG**	Chesapeake Conference Room 11
1830–1930 hrs	**GTTC Conferences Subcommittee**	Chesapeake Conference Room 10
1830–1930 hrs	**FDTC Large Eddy Simulation DG**	Chesapeake Conference Room K
1830–2030 hrs	**AMTTC Update Presentations**	Chesapeake Conference Room E
1830–2030 hrs	**Intelligent Light Customer Reception (Private Function)**	Azalea 3
1830–2130 hrs	**Small Satellite TC**	Maryland Ballroom 5
1800–2100 hrs	**Transformational Flight PC**	Potomac Ballroom 2
1800–2100 hrs	**V/STOL Aircraft Systems TC**	Chesapeake Conference Room 2
1800–2100 hrs	**Software TC**	Potomac Ballroom 3
1830–2030 hrs	**University of Michigan, Aerospace Centennial Celebration Dessert Reception**	Maryland Ballroom C
1830–2200 hrs	**Guidance, Navigation and Control TC**	Maryland Ballroom D
1900–2000 hrs	**APATC Low Reynolds Number Aerodynamic Modeling & Test DG**	Potomac Ballroom 1
1900–2100 hrs	**FDTC Fundamentals of Flow Phenom Subcommittee**	Chesapeake Conference Room L
1900–2100 hrs	**Introduction to the AIAA Educator Academy**	Chesapeake Conference Room A
1900–2200 hrs	**Spacecraft Structures TC**	Maryland Ballroom 4

Committee Meetings and Events

Time	Title	Location
1900-2200 hrs	**Structural Dynamics TC**	Maryland Ballroom B
	Wednesday, 15 January 2014 (continued)	
1900-2200 hrs	**Non-Deterministic Approaches TC**	Potomac Ballroom D
1900-2200 hrs	**PDLTC Plasma Aerodynamics DG**	Maryland Ballroom 3
1900-2200 hrs	**Structures TC**	Maryland Ballroom A
1930-2030 hrs	**Ground Testing Committee on Standards**	Chesapeake Conference Room 10
1930-2200 hrs	**Alumni and Friends of UC Reception**	Woodrow Wilson B
1930-2200 hrs	**Unmanned Systems PC**	Chesapeake Conference Room J
2030-2130 hrs	**GTTC Education and Student Activities Subcommittee**	Chesapeake Conference Room 10
	Thursday, 16 January 2014	
0700-0930 hrs	**Standards Executive Council**	Chesapeake Conference Room 12
0730-1430 hrs	**Region & Section Activities Committee (RSAC)**	Potomac Ballroom 4
0800-1200 hrs	**Publications Committee**	Potomac Ballroom 2&3
0800-1600 hrs	**GTTC Internal Balances WG**	Potomac Ballroom 5&6
0800-1600 hrs	**Technical Activities Committee**	Potomac Ballroom D
0830-1200 hrs	**Honors and Awards Committee**	Chesapeake Conference Room 10
0930-1300 hrs	**Modeling and Simulation Technical Committee**	Chesapeake Conference Room 1
1000-1200 hrs	**Foundation Board of Trustees**	Chesapeake Conference Room 11
1300-1500 hrs	**Institute Development Committee**	Chesapeake Conference Room 11
1730-2000 hrs	**Ground Testing TC**	Potomac Ballroom D
1800-2000 hrs	**Women at SciTech Happy Hour and Keynote Speaker**	National Harbor 3
1830-1930 hrs	**AIAA National Capital Section Guest Speaker**	Chesapeake Conference Room D
	Friday, 17 January 2014	
0800-1200 hrs	**Board of Directors Meeting**	Woodrow Wilson B&C

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Aeroacoustics				
AA-1	**Airframe Noise and Sound Propagation**	13-Jan	1000 hrs	1230 hrs	Azalea 3
AA-2	**Jet Noise I**	13-Jan	1430 hrs	1730 hrs	Woodrow Wilson C
AA-3	**Community Noise and Sonic Boom**	14-Jan	1000 hrs	1230 hrs	Woodrow Wilson B
AA-4	**Jet Noise II**	14-Jan	1430 hrs	1730 hrs	Azalea 2
AA-5	**Fan and Duct Acoustics**	15-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 3
AA-6	**Jet Noise III**	15-Jan	1400 hrs	1730 hrs	Azalea 2
AA-7	**Jet Noise IV**	16-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room I
AA-8	**Computational Aeroacoustics**	17-Jan	0800 hrs	1200 hrs	Maryland Ballroom D
	Air Breathing Propulsion Systems Integration				
ABPSI-1	**Group for Aeronautical Research and Technology in EURope (GARTEUR) I**	14-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 7
ABPSI-2	**Air Breathing Propulsion System Integration and Optimization**	14-Jan	1430 hrs	1730 hrs	Maryland Ballroom D
ABPSI-3	**Group for Aeronautical Research and Technology in EURope (GARTEUR) II**	15-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 9
ABPSI-5	**Educating Today's and Tomorrow's Propulsion Engineers**	16-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 4
	Aircraft Design				
ACD-1	**Aircraft Design Methodologies**	13-Jan	1000 hrs	1230 hrs	Azalea 1
ACD-2	**Aircraft Design Studies**	13-Jan	1000 hrs	1230 hrs	Azalea 2
ACD-3	**Aircraft Design Issues**	13-Jan	1430 hrs	1730 hrs	Azalea 1
ACD-4	**Aircraft Design Optimization**	13-Jan	1430 hrs	1730 hrs	Azalea 2
ACD-5	**Aircraft Design Education**	14-Jan	1000 hrs	1230 hrs	Azalea 1
ACD-6	**Electric Systems for Aircraft Design**	14-Jan	1000 hrs	1230 hrs	Azalea 2
ACD-7	**Aircraft Design with Electric Propulsion**	14-Jan	1430 hrs	1730 hrs	Azalea 1
ACD-8	**Unmanned Aircraft Design**	15-Jan	1000 hrs	1230 hrs	Azalea 1
	Atmospheric Flight Mechanics				
AFM-1	**Flight Dynamics and Handling Qualities I**	13-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 12
AFM-2	**LOC Prevention and Recovery (Invited)**	13-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 13
AFM-3	**Flight Dynamics and Handling Qualities II**	13-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 13
AFM-4	**Flight Dynamics and Handling Qualities III**	14-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 12
AFM-5	**Planetary Reentry I**	14-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 13
AFM-6	**Flight Dynamics and Handling Qualities IV**	14-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 13
AFM-7	**Aerodynamic Predictive Methods**	15-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 13
AFM-8	**Launch Vehicles**	15-Jan	1400 hrs	1730 hrs	National Harbor Conference Room 12
AFM-9	**Micro UAVs**	15-Jan	1400 hrs	1730 hrs	National Harbor Conference Room 13
AFM-10	**Planetary Reentry II**	16-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 13
AFM-11	**Planetary Reentry III**	16-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 8

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Aerodynamic Measurement Technology				
AMT-1	**Absorption and Emission Spectroscopy**	14-Jan	1000 hrs	1230 hrs	Maryland Ballroom 1
AMT-2	**Volumetric Measurement Techniques**	14-Jan	1000 hrs	1230 hrs	Maryland Ballroom 2
AMT-3	**Review of Skin Friction and Shear Stress Measurement Techniques (Invited)**	14-Jan	1430 hrs	1730 hrs	Maryland Ballroom 1
AMT-4	**Supersonic Flow Diagnostics**	14-Jan	1430 hrs	1730 hrs	Maryland Ballroom 2
AMT-5/ PC-11	**Combustion Diagnostics I**	15-Jan	1000 hrs	1230 hrs	Maryland Ballroom 1
AMT-6	**Recent Advances and Applications of Stochastic Estimation Techniques (Invited)**	15-Jan	1400 hrs	1730 hrs	Maryland Ballroom 2
AMT-7	**Advances in Coherent Anti-Stokes Raman Scattering and Other Spectroscopic Techniques**	16-Jan	1000 hrs	1230 hrs	Maryland Ballroom 1
AMT-8	**Velocimetry**	16-Jan	1000 hrs	1230 hrs	Maryland Ballroom 2
AMT-9	**Surface Measurements**	16-Jan	1430 hrs	1730 hrs	Maryland Ballroom 1
AMT-10/ GT-8	**Velocity and Other Measurements In Wind Tunnels**	16-Jan	1430 hrs	1730 hrs	Maryland Ballroom 2
AMT-12/ GT-10	**Pressure and Temperature Measurements in Wind Tunnels**	17-Jan	0800 hrs	1200 hrs	Maryland Ballroom 2
	Applied Aerodynamics				
APA-1	**Low Speed Low Reynolds Number Aerodynamics I**	13-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 3
APA-2	**Simulation of Rotor in Hover (Invited) I**	13-Jan	1000 hrs	1230 hrs	Maryland Ballroom D
APA-3	**Unsteady Aerodynamics I**	13-Jan	1000 hrs	1230 hrs	Maryland Ballroom 3
APA-4	**Vortical/Vortex Flow**	13-Jan	1000 hrs	1230 hrs	Maryland Ballroom B
APA-5	**Weapons Aerodynamics and Store Separation I**	13-Jan	1000 hrs	1230 hrs	Maryland Ballroom A
APA-6	**Active and Passive Flow Control I**	13-Jan	1430 hrs	1730 hrs	Maryland Ballroom A
APA-7	**Best Practices for CFD Validation - Validation of Numerical Models Discussion Group (Invited)**	13-Jan	1430 hrs	1730 hrs	Maryland Ballroom 4
APA-8	**Simulation of Rotor in Hover (Invited) II**	13-Jan	1430 hrs	1730 hrs	Maryland Ballroom 3
APA-9	**Weapons Aerodynamics and Store Separation II**	13-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 11
APA-10	**Active and Passive Flow Control II**	14-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room I
APA-11	**High Angle of Attack and High Lift Aerodynamics**	14-Jan	1000 hrs	1230 hrs	Maryland Ballroom 5
APA-12	**Propeller/Rotorcraft Aerodynamics I**	14-Jan	1000 hrs	1230 hrs	Maryland Ballroom 4
APA-13	**Special Session: Aerodynamic Design Optimization: Current Trends and Future Direction I**	14-Jan	1000 hrs	1230 hrs	Maryland Ballroom D
APA-14	**Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-Up Air Vehicles I**	14-Jan	1000 hrs	1230 hrs	Woodrow Wilson A
APA-15	**Special Session: 2nd Cranked Arrow Wing Aerodynamic Project International (CAWAPI) I**	14-Jan	1000 hrs	1230 hrs	Maryland Ballroom B
APA-16	**Aerodynamic Design: Analysis, Methodologies and Optimization**	14-Jan	1430 hrs	1730 hrs	Maryland Ballroom 4
APA-17	**Applied CFD**	14-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 5
APA-18	**Propeller/Rotorcraft Aerodynamics II**	14-Jan	1430 hrs	1730 hrs	Maryland Ballroom A
APA-19	**Special Session: Aerodynamic Design Optimization: Current Trends and Future Direction II**	14-Jan	1430 hrs	1730 hrs	Maryland Ballroom 3
APA-20	**Icing Effects on Vehicle Aerodynamics**	15-Jan	1000 hrs	1230 hrs	Maryland Ballroom 3

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Applied Aerodynamics (continued)				
APA-21	**Low Speed Low Reynolds Number Aerodynamics II**	15-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room I
APA-22	**Special Session: 2nd High Lift Prediction Workshop (HiLiftPW-2) I**	15-Jan	1000 hrs	1230 hrs	Maryland Ballroom A
APA-23	**Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-Up Air Vehicles II**	15-Jan	1000 hrs	1230 hrs	Maryland Ballroom 4
APA-24	**Special Session: 2nd Cranked Arrow Wing Aerodynamic Project International (CAWAPI) II**	15-Jan	1000 hrs	1230 hrs	Maryland Ballroom D
APA-25	**Aerodynamic and Multi-Disciplinary Design and Optimization**	15-Jan	1400 hrs	1730 hrs	Maryland Ballroom 4
APA-26	**Environmentally Friendly Aircraft Design - Laminar Flow Enabling Technology**	15-Jan	1400 hrs	1730 hrs	Maryland Ballroom A
APA-27	**Special Session: 2nd High Lift Prediction Workshop (HiLiftPW-2) II**	15-Jan	1400 hrs	1730 hrs	Maryland Ballroom 3
APA-28	**Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-Up Air Vehicles III**	15-Jan	1400 hrs	1730 hrs	Maryland Ballroom 5
APA-29	**Airfoil/Wing/Configuration Aerodynamics**	16-Jan	1000 hrs	1230 hrs	Maryland Ballroom 5
APA-30	**Innovative Aerodynamic Concept and Bio-inspired Designs**	16-Jan	1000 hrs	1230 hrs	Maryland Ballroom 4
APA-31	**Wind Tunnel and Flight Test Aerodynamics**	16-Jan	1000 hrs	1230 hrs	Maryland Ballroom D
APA-32	**Active and Passive Flow Control V**	16-Jan	1430 hrs	1730 hrs	Maryland Ballroom A
APA-33	**Aerodynamic-Structural Dynamics Interaction**	16-Jan	1430 hrs	1730 hrs	Maryland Ballroom D
APA-34	**Characterization of the Physical Environments related to Space Launch System (SLS) (Invited)**	16-Jan	1430 hrs	1730 hrs	Maryland Ballroom 4
	Adaptive Structures				
AS-1	**Optimization and Structural Health Monitoring**	15-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room D
AS-2	**Adaptive Actuation**	15-Jan	1400 hrs	1730 hrs	Chesapeake Conference Room D
AS-3	**Biomimitic Adaptive Flying Structures**	16-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room D
AS-4	**Morphing**	16-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room D
AS-5	**Modeling Simulation**	17-Jan	0800 hrs	1100 hrs	Chesapeake Conference Room D
	Atmospheric and Space Environments				
ASE-1	**Topics in the Tropospheric Environment**	15-Jan	1400 hrs	1730 hrs	Chesapeake Conference Room 9
ASE-2	**Topics in Space Environments**	17-Jan	0800 hrs	1200 hrs	Chesapeake Conference Room 9
	Design Engineering				
DE-1	**Design Engineering - Design Education**	13-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 6
DE-2	**Design Engineering - Design Process**	13-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 6
DE-3	**Design Engineering**	14-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room D
	Education				
EDU-1	**Advancing Aerospace Education I**	13-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 5
EDU-2	**Advancing Aerospace Education II: Best practices in Teaching CFD in Undergraduate Aerospace Education**	13-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 5

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Fluid Dynamics				
FD-1	**Applications of CFD I**	13-Jan	1000 hrs	1230 hrs	Maryland Ballroom 5
FD-2	**Bioinspired Aerodynamics: Experimental**	13-Jan	1000 hrs	1230 hrs	Woodrow Wilson A
FD-3	**Hypersonic Boundary Layer Transition I**	13-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 8
FD-4	**Mesh Adaptation**	13-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room I
FD-5	**Solver Technology for Turbulent Flows I**	13-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 7
FD-7	**Bioinspired Aerodynamics: Numerical**	13-Jan	1430 hrs	1730 hrs	Maryland Ballroom 5
FD-8	**CFD for Turbulent Flows**	13-Jan	1430 hrs	1730 hrs	Maryland Ballroom D
FD-9	**Jet Flows**	13-Jan	1430 hrs	1730 hrs	Maryland Ballroom 6
FD-10	**Roughness-Influenced Boundary Layer Transition I**	13-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 4
FD-11	**Solver Technology for Turbulent Flows II**	13-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 3
FD-12	**Turbulence I: Jets and Wakes**	13-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 8
FD-13	**Wing Aerodynamics**	13-Jan	1430 hrs	1730 hrs	Maryland Ballroom 2
FD-15	**Higher-Order Methods I**	14-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 8
FD-16	**Hypersonic Boundary Layer Transition II**	14-Jan	1000 hrs	1230 hrs	Maryland Ballroom 6
FD-17	**Roughness-Influenced Boundary Layer Transition II**	14-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room H
FD-18	**Shock Boundary Layer Interactions I**	14-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 4
FD-19	**Thermal Environment**	14-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room G
FD-20	**Combustion Engines**	14-Jan	1430 hrs	1730 hrs	Maryland Ballroom 5
FD-21	**RANS Turbulence Modeling: Strengths, Weaknesses and New Approaches**	14-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 8
FD-22	**Turbulence II: Large Eddy Simulations**	14-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 3
FD-23	**Active and Passive Flow Control III**	15-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 6
FD-24	**Higher-Order Methods II**	15-Jan	1000 hrs	1230 hrs	Maryland Ballroom 5
FD-25	**Hypersonic Boundary Layer Receptivity**	15-Jan	1000 hrs	1230 hrs	Maryland Ballroom 6
FD-26/ MVC-5	**Overset Grid Methods**	15-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 5
FD-27/TP-5	**Rarefied Gas Dynamics in Micro- and Nano-Systems**	15-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 4
FD-28	**Flow Control of Bodies and Riblets**	15-Jan	1400 hrs	1730 hrs	Woodrow Wilson D
FD-29	**Higher-Order Methods III**	15-Jan	1400 hrs	1730 hrs	Chesapeake Conference Room 8
FD-30	**Shock Interactions and Control**	15-Jan	1400 hrs	1730 hrs	Maryland Ballroom 6
FD-31	**Shock-Dominated Flows**	15-Jan	1400 hrs	1730 hrs	National Harbor Conference Room 2
FD-32	**Transition Open Forum**	15-Jan	1400 hrs	1730 hrs	National Harbor Conference Room 4
FD-33	**Transonic and Supersonic Flows**	15-Jan	1400 hrs	1730 hrs	Azalea 1
FD-34	**Vortex Flows**	15-Jan	1400 hrs	1730 hrs	National Harbor Conference Room 3
FD-35	**Active and Passive Flow Control IV**	16-Jan	1000 hrs	1230 hrs	Azalea 2
FD-36	**Applications of GPUs for CFD**	16-Jan	1000 hrs	1230 hrs	Azalea 3
FD-37	**Boundary Layer Transition**	16-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 3
FD-38	**Shock Boundary Layer Interactions II**	16-Jan	1000 hrs	1300 hrs	Woodrow Wilson D
FD-39	**Synthetic Jets**	16-Jan	1000 hrs	1230 hrs	Maryland Ballroom 6
FD-40	**Active and Passive Flow Control VI**	16-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 8
FD-41	**Applications of CFD II**	16-Jan	1430 hrs	1730 hrs	Maryland Ballroom 6
FD-42	**Boundary Layer Stabilization and Natural Laminar Flow**	16-Jan	1430 hrs	1730 hrs	Woodrow Wilson D
FD-43	**Higher-Order Methods IV**	16-Jan	1430 hrs	1730 hrs	Azalea 1

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Fluid Dynamics (continued)				
FD-44	**Wing-Vortex Interactions**	16-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 9
FD-45	**CFD Methods for Unsteady Flows**	17-Jan	0800 hrs	1200 hrs	Chesapeake Conference Room G
FD-46	**Error Estimation and Control**	17-Jan	0800 hrs	1200 hrs	Azalea 3
FD-47	**Other CFD Methods**	17-Jan	0800 hrs	1200 hrs	Maryland Ballroom 1
FD-48	**Reacting Flows (Invited)**	17-Jan	0800 hrs	1200 hrs	Azalea 1
FD-49	**Shear and Slip Flows**	17-Jan	0800 hrs	1200 hrs	Azalea 2
FD-50	**Turbulence III: Models and Simulations**	17-Jan	0800 hrs	1200 hrs	Chesapeake Conference Room I
FD-51	**Unsteady Aerodynamics II**	17-Jan	0800 hrs	1200 hrs	National Harbor Conference Room 10
	Green Engineering				
GEPC-1	**Progress in NASA's Environmentally Responsible Aviation Project**	13-Jan	1430 hrs	1730 hrs	Woodrow Wilson A
GEPC-2	**Progress Towards N+3 Technologies in NASA's Fixed Wing Project**	14-Jan	1430 hrs	1730 hrs	Woodrow Wilson A
GEPC-3	**NASA Aeronautical Sciences Project Overview and Progress**	15-Jan	1400 hrs	1730 hrs	Woodrow Wilson A
GEPC-4	**Energy Efficiency for the Future USAF Transport Fleet**	16-Jan	1430 hrs	1730 hrs	Woodrow Wilson A
GEPC-5	**Legacy Fleet Fuel Efficiency – Reducing the USAF's Multi-Billion Dollar Annual Fuel Bill**	17-Jan	0800 hrs	1200 hrs	Woodrow Wilson A
	Guidance, Navigation, and Control				
GNC-1	**Adaptive Control**	13-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 8
GNC-2	**Spacecraft Rendezvous and Proximity Operations**	13-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 7
GNC-3	**Mini/Micro Air Vehicles I**	13-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 7
GNC-4	**Onboard Systems Technologies for LOC Prevention & Recovery – Improved Situational Awareness, Guidance, and Control, Session (Invited) I**	13-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 12
GNC-5	**Space Exploration and Transportation**	13-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 6
GNC-6	**Onboard Systems Technologies for LOC Prevention & Recovery – Improved Situational Awareness, Guidance, and Control, Session (Invited) II**	14-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 8
GNC-7	**Spacecraft Navigation**	14-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 5
GNC-8	**Control of Uncertain Systems**	14-Jan	1000 hrs	1300 hrs	National Harbor Conference Room 3
GNC-9	**Aircraft Guidance, Navigation and Control I**	14-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 7
GNC-10	**Novel Navigation, Estimation, and Tracking Methods**	14-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 8
GNC-11	**Validation of Onboard Systems Technologies for LOC Prevention and Recovery, Session (Invited) I**	14-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 12
GNC-12	**Intelligent Control in Aerospace Applications**	15-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 7
GNC-13	**Validation of Onboard Systems Technologies for LOC Prevention and Recovery, Session (Invited) II**	15-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 8
GNC-14	**Aircraft Guidance, Navigation and Control II**	15-Jan	1400 hrs	1730 hrs	National Harbor Conference Room 7
GNC-15	**Multi-Vehicle Coordination and Control**	15-Jan	1400 hrs	1730 hrs	National Harbor Conference Room 8
GNC-16	**Unmanned Autonomous Systems**	15-Jan	1400 hrs	1730 hrs	National Harbor Conference Room 5
GNC-17	**Fault Detection, Isolation and Reconstruction**	16-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 8
GNC-19	**Aerospace Robotics**	16-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 6
GNC-20	**Aircraft Control and Guidance**	16-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 12

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
Guidance, Navigation, and Control (continued)					
GNC-21	**Aircraft Guidance, Navigation and Control III**	16-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 7
GNC-22	**Spacecraft Attitude Control**	16-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 13
GNC-23	**Guidance, Navigation, and Control Concepts in Air Traffic Management**	17-Jan	0800 hrs	1200 hrs	National Harbor Conference Room 15
GNC-24	**Mini/Micro Air Vehicles II**	17-Jan	0800 hrs	1200 hrs	National Harbor Conference Room 7
GNC-25	**Missile Guidance, Navigation, and Control**	17-Jan	0800 hrs	1200 hrs	National Harbor Conference Room 8
Ground Testing					
GT-1	**Experimental Uncertainty in Ground Test Facilities**	13-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 10
GT-2	**NASA's ATP National Force Measurement Project Update (Invited)**	13-Jan	1430 hrs	1730 hrs	Maryland Ballroom B
GT-3	**Rapid Prototyping Applications in Ground Testing**	13-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 10
GT-4	**Wind Tunnel Data Corrections**	14-Jan	1430 hrs	1730 hrs	Maryland Ballroom B
GT-5	**The Direction and Integration of Experimental Ground Test Capabilities and Computational Methods, Part II (Invited)**	15-Jan	1000 hrs	1230 hrs	Maryland Ballroom B
GT-6	**Test Facility and Systems Development I**	15-Jan	1400 hrs	1730 hrs	Maryland Ballroom D
GT-7	**Hypersonic Test Techniques with an Emphasis on Heat Shield Ablation**	16-Jan	1000 hrs	1230 hrs	Maryland Ballroom 3
GT-9	**Test Facility and Systems Development II**	16-Jan	1430 hrs	1730 hrs	Maryland Ballroom 3
GT-11	**High Reynolds Number Aerodynamics and Testing (Invited)**	17-Jan	0800 hrs	1200 hrs	Maryland Ballroom 3
Gas Turbine Engines					
GTE-1	**Turbomachinery I**	13-Jan	1000 hrs	1230 hrs	Woodrow Wilson D
GTE-2	**Film Cooling**	13-Jan	1430 hrs	1730 hrs	Woodrow Wilson D
GTE-3	**Gas Turbine Combustor I**	14-Jan	1000 hrs	1230 hrs	Woodrow Wilson D
GTE-4	**Gas Turbine Combustor II**	14-Jan	1430 hrs	1730 hrs	Woodrow Wilson D
GTE-5	**Turbomachinery II**	15-Jan	1000 hrs	1230 hrs	Woodrow Wilson D
GTE-6	**Engine Systems I**	16-Jan	1000 hrs	1230 hrs	Azalea 1
GTE-7	**Engine Systems II**	16-Jan	1430 hrs	1730 hrs	Azalea 2
History					
HIS-1	**Aerospace Archives: All is NOT Lost - Keepers of the Right Stuff**	13-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 15
HIS-2	**History Session: Pioneering Contributions to Aeronautics**	13-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 15
High Speed Air Breathing Propulsion					
HSABP-1	**Pressure Gain Combustion I**	13-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 7
HSABP-2	**CFD Analysis of Scramjets I**	14-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 7
HSABP-3	**Experimental Investigations of Scramjets**	15-Jan	1400 hrs	1730 hrs	Chesapeake Conference Room 7
HSABP-4	**CFD Analysis of Scramjets II**	16-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 7
HSABP-5	**Pressure Gain Combustion II**	16-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 7

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Intelligent Systems				
IS-1	**Adaptive and Predictive Systems**	15-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 15
IS-2	**Unmanned Aircraft Sensing and Control**	15-Jan	1400 hrs	1730 hrs	National Harbor Conference Room 15
IS-3	**Applications of Unmanned Aerial Systems**	16-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 15
IS-4	**Intelligent Learning and Decision Making**	16-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 15
	International Student Conference				
ISC-1	**International Student Conference-Master's Division**	13-Jan	0930 hrs	1300 hrs	National Harbor Conference Room 6
ISC-2	**International Student Conference-Undergraduate Division**	13-Jan	0930 hrs	1300 hrs	National Harbor Conference Room 2
ISC-3	**International Student Conference-Team Division**	13-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 4
ISC-4	**International Student Conference-Community Outreach Division**	13-Jan	1430 hrs	1730 hrs	Potomac Ballroom 3
	Materials				
MAT-1	**Nanostructured Materials I**	13-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room A
MAT-2	**Integrated Computational Materials Engineering I**	14-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room D
MAT-3	**Nanostructured Materials II**	14-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room A
MAT-4	**Advanced Composites & Fabrics**	14-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room A
MAT-5	**Integrated Computational Materials Engineering II**	15-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room A
MAT-6	**Integrated Computational Materials Engineering III**	15-Jan	1400 hrs	1730 hrs	Chesapeake Conference Room A
MAT-7	**Multiscale Modeling of Materials I**	16-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room A
MAT-8	**Material Testing & Characterization**	16-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room B
MAT-9	**Multiscale Modeling of Materials II**	16-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room A
	Multidisciplinary Design Optimization				
MDO-1	**Optimization Methods and Algorithms I**	13-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 4
MDO-2	**Aerodynamic and Aircraft Optimization**	13-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 4
MDO-3	**Aeroelastic and Aero-Structures Optimization**	14-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 4
MDO-4	**Structural and Topology Optimization**	14-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 4
MDO-5	**Optimization Methods and Algorithms II**	15-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 4
MDO-6	**Optimization Framework and Applications**	15-Jan	1400 hrs	1730 hrs	Chesapeake Conference Room 4
MDO-7	**Aerodynamic Optimization**	16-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 4
MDO-8	**Optimization Applications**	16-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 4
MDO-9	**Optimization Methods and Algorithms III**	17-Jan	0800 hrs	1100 hrs	Chesapeake Conference Room 6
	Modeling and Simulation Technologies				
MST-1	**Applications of Modeling and Simulation**	14-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 6
MST-2	**Modeling and Simulation Tools and Technologies**	14-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 6
MST-3	**Air Traffic Management/Human Factors**	15-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 12
MST-4	**Simulation Requirements for LOC Prevention & Recovery Training (Invited)**	15-Jan	1400 hrs	1730 hrs	National Harbor Conference Room 6
MST-6	**Modeling and Simulation of Uninhabited Aircraft Systems (UAS)**	16-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 14
MST-7	**Modeling and Simulation of Space Systems**	17-Jan	0800 hrs	1200 hrs	National Harbor Conference Room 14

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Meshing, Visualization, and Computational Environments				
MVC-1	**Meshing Technology and Application**	13-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 9
MVC-2	**Integrated Computational Environments**	13-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 9
MVC-3	**Geometry Preparation and Grid Quality Assessment**	14-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 9
MVC-4	**Current Status and Future Trends of Integrated Computational Environments**	14-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 9
	Non-Deterministic Approaches				
NDA-1	**Model Validation and Uncertainty Quantification**	13-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 5
NDA-2	**Uncertainty Quantification Methods**	13-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 5
NDA-3	**Probabilistic Methods for Diagnostics & Prognostics**	14-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 5
NDA-4	**Reliability**	14-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 5
NDA-5	**Validation & Uncertainty Quantification Applications**	15-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 5
NDA-6	**Nondeterministic Methods for Design**	15-Jan	1400 hrs	1730 hrs	Chesapeake Conference Room 5
NDA-7	**Nondeterministic Methods**	16-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 5
NDA-8	**NASA Multidisciplinary UQ Challenge I**	16-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 5
NDA-9	**NASA Multidisciplinary UQ Challenge II**	17-Jan	0800 hrs	1100 hrs	Chesapeake Conference Room 5
	Space Operations				
OPS-1	**Space Operations & Support**	13-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 8
	Propellants and Combustion				
PC-1	**Fuels and Combustion Kinetics**	13-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room G
PC-2	**Gas Turbine Combustion**	13-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room H
PC-3	**Rockets and Airbreathing Propulsion I**	13-Jan	1000 hrs	1230 hrs	Maryland Ballroom 6
PC-4	**Jet Fuel Surrogate Models and Kinetics (Invited)**	13-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room I
PC-5	**Rockets and Airbreathing Propulsion II**	13-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room G
PC-6	**Turbulent Flames I**	13-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room H
PC-7	**Frontiers of Combustion Research (Invited)**	14-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 2
PC-8	**Heterogeneous Combustion and Propellants**	14-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room G
PC-9	**Laminar Flames**	14-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room I
PC-10	**Turbulent Flames II**	14-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room H
PC-12	**Advanced Combustion Concepts and New Technologies**	15-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 2
PC-13	**Kinetic Model Reduction**	15-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room H
PC-14	**Turbulent Combustion Modeling I**	15-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room G
PC-15	**Detonation and PDEs I**	15-Jan	1400 hrs	1730 hrs	Chesapeake Conference Room H
PC-16	**Spray and Droplet Combustion I**	15-Jan	1400 hrs	1730 hrs	Chesapeake Conference Room G
PC-17	**Turbulent Combustion Modeling II**	15-Jan	1400 hrs	1730 hrs	Chesapeake Conference Room I
PC-18	**Plasma-Assisted Combustion II**	16-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room G
PC-19	**Spray and Droplet Combustion II**	16-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room H
PC-20	**Turbulent Combustion Modeling III**	16-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 2
PC-21/ AMT-11	**Combustion Diagnostics II**	16-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room G
PC-22	**Plasma-Assisted Combustion III (Invited)**	16-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room H
PC-23	**Detonation and PDEs II**	17-Jan	0800 hrs	1200 hrs	Chesapeake Conference Room H

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Plasmadynamics and Lasers				
PDL-1	**Electric Propulsion/Laser Applications of Plasmas**	13-Jan	1000 hrs	1230 hrs	Maryland Ballroom 4
PDL-2	**Plasma-Actuators and Flow Control I**	13-Jan	1000 hrs	1230 hrs	Maryland Ballroom 1
PDL-3	**AeroOptics**	13-Jan	1430 hrs	1730 hrs	Azalea 3
PDL-4	**Plasma-Actuators and Flow Control II**	13-Jan	1430 hrs	1730 hrs	Maryland Ballroom 1
PDL-5	**Plasma-Actuators and Flow Control III**	14-Jan	1000 hrs	1230 hrs	Azalea 3
PDL-6	**Plasma-Assisted Combustion I**	14-Jan	1430 hrs	1730 hrs	Azalea 3
PDL-7	**Plasma Discharge Structure**	14-Jan	1430 hrs	1730 hrs	Maryland Ballroom 6
PDL-8	**Magnetohydrodynamics/Microwave Plasmas**	15-Jan	1000 hrs	1230 hrs	Azalea 3
PDL-9	**Non-Equilibrium Effects in Discharges**	15-Jan	1400 hrs	1730 hrs	Azalea 3
PDL-10	**Plasma Discharge Modeling**	16-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 9
PDL-11	**Plasma Diagnostics**	16-Jan	1430 hrs	1730 hrs	Maryland Ballroom 5
	Society and Aerospace Technology				
SAT-1	**Space and Society: Social Impacts of Air and Space Technologies**	14-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 15
SAT-2	**Space and Society: Social Dimensions of Space Exploration and Exploitation**	14-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 15
	Spacecraft Structures				
SCS-1	**Materials for Gossamer Systems**	14-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 6
SCS-2	**Solar Sails and Tensioned Membranes**	15-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 6
SCS-3	**Packaging & Deployment of Gossamer Systems**	15-Jan	1400 hrs	1730 hrs	Chesapeake Conference Room 6
SCS-4	**Testing of Large, Ultra-Lightweight Spacecraft**	16-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room 6
SCS-5	**Mechanics, Dynamics, & Control of Gossamer Systems**	16-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room 6
SCS-6	**Design, Analysis, & Test of Gossamer Systems**	17-Jan	0800 hrs	1100 hrs	Chesapeake Conference Room A
	Structural Dynamics				
SD-1	**Computational Aeroelasticity ROM I**	13-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room C
SD-2	**Energy Harvesting, Damping and Vibration Suppression**	13-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room B
SD-3	**Aircraft Dynamics and Vibration**	13-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room B
SD-4	**Computational Aeroelasticity I**	13-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room C
SD-5	**Beam, Plate, Cable Dynamics**	14-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room B
SD-6	**Computational Aeroelasticity ROM II**	14-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room C
SD-7	**Computational Aeroelasticity II**	14-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room C
SD-8	**Nonlinear Dynamics and Aeroelasticity**	14-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room B
SD-9	**Adaptive Aeroelastic Wing Shaping Control I**	15-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room C
SD-10	**Very Flexible Aircraft**	15-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room B
SD-11	**Adaptive Aeroelastic Wing Shaping Control II**	15-Jan	1400 hrs	1730 hrs	Chesapeake Conference Room C
SD-12	**Aircraft Design and Nonlinear Dynamics**	16-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room B
SD-13	**Limit Cycle Oscillations (LCO) & Aircraft Flutter**	16-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room C
SD-14	**Rotorcraft**	16-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room C
SD-15	**Nonlinear Dynamics and Flapping Flight**	17-Jan	0800 hrs	1100 hrs	Chesapeake Conference Room C
SD-16	**Space & Launch Vehicle Dynamics**	17-Jan	0800 hrs	1100 hrs	Chesapeake Conference Room B

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Systems Engineering				
SE-1	**Systems Engineering**	14-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 14
	Software Systems				
SOF-1	**Cybersecurity in Space Systems Panel**	14-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 2
SOF-3	**Software Systems**	15-Jan	1400 hrs	1730 hrs	National Harbor Conference Room 14
	Space Resources				
SRE-1	**In-Situ Resources: Identification and Manipulation**	13-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 14
SRE-2	**Resource Enabled Mission Concepts**	14-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 14
SRE-3	**Environmental Factors in Extraterrestrial Systems**	14-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 4
	Structures				
STR-1	**Composite Micromechanics**	13-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room D
STR-2	**Beams & Plates**	13-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room F
STR-3	**Buckling and Structural Instability**	13-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room E
STR-4	**Aeroelastic Analysis**	13-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room E
STR-5	**Special Session on Open Source Software**	13-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room D
STR-6	**Space Structures**	13-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room F
STR-7	**Sandwich Structures**	14-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room F
STR-8	**Application of Viscoelasticity and Viscoelastic Materials**	14-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room E
STR-9	**Impact Mechanics and Structural Survivability**	14-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room F
STR-10	**Structures Under Thermal Environment**	14-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room E
STR-11	**Shell Bucking-Charles Rankin Special Session I**	15-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room E
STR-12	**Advances in Design and Analysis of Structures**	15-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room F
STR-13	**Shell Bucking-Charles Rankin Special Session II**	15-Jan	1400 hrs	1730 hrs	Chesapeake Conference Room E
STR-14	**Advances in Fatigue Analysis**	15-Jan	1400 hrs	1730 hrs	Chesapeake Conference Room B
STR-15	**Advanced Structures**	15-Jan	1400 hrs	1730 hrs	Chesapeake Conference Room F
STR-16	**Composite Mechanics Under Dynamic Load**	16-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room E
STR-17	**Load Analysis and Design Process**	16-Jan	1000 hrs	1230 hrs	Chesapeake Conference Room F
STR-18	**Special Session - Composite Laminate Optimization**	16-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room E
STR-19	**Advances in Fracture Mechanics**	16-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room F
STR-20	**Damage Mechanics/Damage Tolerance**	17-Jan	0800 hrs	1100 hrs	Chesapeake Conference Room F
STR-21	**Structural Joints**	17-Jan	0800 hrs	1100 hrs	Chesapeake Conference Room E
	Survivability				
SUR-1	**Air and Space Survivability**	13-Jan	1430 hrs	1730 hrs	Chesapeake Conference Room A
	Terrestrial Energy				
TES-1	**Cutting Edge Energy Systems and Fuels**	15-Jan	1000 hrs	1230 hrs	Azalea 2
TES-2	**Advances in Renewable Energy and Efficiency**	15-Jan	1400 hrs	1730 hrs	Maryland Ballroom B
TES-3	**Applications of Nanomaterials for Energy Storage**	16-Jan	1000 hrs	1230 hrs	Maryland Ballroom A
TES-4	**Advances in Combustion I**	16-Jan	1430 hrs	1730 hrs	Maryland Ballroom B
TES-5	**Advances in Combustion II**	17-Jan	0800 hrs	1200 hrs	Maryland Ballroom B

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Thermophysics				
TP-1	**Aerothermodynamics I**	14-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 11
TP-2	**Thermal Protection Systems I**	14-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 10
TP-3	**Direct Simulation Monte Carlo Methods I**	14-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 11
TP-4	**Thermal Protection Systems II**	14-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 10
TP-6	**Heat Transfer**	15-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 11
TP-7	**Non-Equilibrium Flows I**	15-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 10
TP-8	**Cryogenics**	15-Jan	1400 hrs	1730 hrs	National Harbor Conference Room 11
TP-9	**Non-Equilibrium Flows II**	15-Jan	1400 hrs	1730 hrs	National Harbor Conference Room 10
TP-10	**Ablation I**	16-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 11
TP-11	**Direct Simulation Monte Carlo Methods II**	16-Jan	1000 hrs	1230 hrs	National Harbor Conference Room 10
TP-12	**Ablation II**	16-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 11
TP-13	**Aerothermodynamics II**	16-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 10
	Wind Energy				
WE-1	**Wind Turbine Airfoil Design and Analysis**	13-Jan	1000 hrs	1230 hrs	Woodrow Wilson C
WE-2	**Wind Turbine Blade Materials and Manufacturing**	13-Jan	1000 hrs	1230 hrs	Woodrow Wilson B
WE-3	**Blade and Turbine Design I**	13-Jan	1430 hrs	1730 hrs	National Harbor Conference Room 2
WE-4	**Offshore Wind Energy Systems**	13-Jan	1430 hrs	1730 hrs	Woodrow Wilson B
WE-5	**Wind Turbine Aeroelasticity and Structural Dynamics I**	14-Jan	1000 hrs	1230 hrs	Woodrow Wilson C
WE-6	**Wind Farm and Turbine-Wake Interaction I**	14-Jan	1430 hrs	1730 hrs	Woodrow Wilson B
WE-7	**Wind Turbine Aeroelasticity and Structural Dynamics II**	14-Jan	1430 hrs	1730 hrs	Woodrow Wilson C
WE-8	**Atmospheric Physics and Inflow**	15-Jan	1000 hrs	1230 hrs	Woodrow Wilson C
WE-9	**Wind Turbine Loads, Dynamics, and Control I**	15-Jan	1000 hrs	1230 hrs	Woodrow Wilson B
WE-10	**Blade and Turbine Design II**	15-Jan	1400 hrs	1730 hrs	Woodrow Wilson B
WE-11	**Wind Farm and Turbine-Wake Interaction II**	15-Jan	1400 hrs	1730 hrs	Woodrow Wilson C
WE-12	**Wind Turbine Aeroelastics**	16-Jan	1000 hrs	1230 hrs	Woodrow Wilson B
WE-13	**Wind Turbine Loads, Dynamics, and Control II**	16-Jan	1000 hrs	1230 hrs	Woodrow Wilson C
WE-14	**Wind Turbine Monitoring and Performance**	16-Jan	1430 hrs	1730 hrs	Woodrow Wilson C

Monday, 13 January 2014		
1-SB-1 0730 - 0800 hrs	Monday Morning Speakers' Briefing	Session Rooms

Monday, 13 January 2014		
2-PLNRY-1 0800 - 0930 hrs	Monday Morning Opening Keynote and Plenary Panel	Potomac Ballroom A&B

Keynote

The Societal Importance of Federal R&D Investments

The Honorable Chaka Fattah
Congressman, 2nd District, Pennsylvania
U.S. House of Representatives

Plenary Panel: R&D Policy Implications and Investments

Moderator: Robert Braun, David and Andrew Lewis Professor of Space Technology, Georgia Institute of Technology

Panelists:

Dr. Michael Griffin
Chairman and CEO
Schafer Corporation
AIAA President

Dr. Michael Gazarik
Associate Administrator, Space Technology Mission Directorate
NASA Headquarters

Dr. Arati Prabhakar
Director
DARPA

Monday, 13 January 2014							
3-ISC-1	International Student Conference - Master's Division						National Harbor Conf Rm 6
Chaired by: J. CORBETS							
0930 hrs AIAA-2014-0005 **Wireless Magneto-Elastic Torque Sensor System** G. Raghunath, A. Flatau, University of Maryland, College Park, College Park, MD	1000 hrs AIAA-2014-0006 **Improved Mean Flow Solution for Solid Rocket Motors** A. Fist, J. Majdalani, University of Tennessee Space Institute, Tullahoma, TN	1030 hrs AIAA-2014-0007 **The Development of a Hardware-in-the-Loop Attitude Determination and Control Simulator for IlliniSat-2** P. Haddox, University of Illinois, Urbana-Champaign, Urbana, IL	1100 hrs AIAA-2014-0008 **Two-Dimensional Weight Function Development Using ZFEM** A. Baines, H. Millwater, University of Texas, San Antonio, San Antonio, TX	1130 hrs AIAA-2014-0009 **Wing-flapping and abdomen actuation optimization for hovering in the butterfly Idea leuconoe** T. Wilson, R. Albertani, Oregon State University, Corvallis, OR	1200 hrs AIAA-2014-0010 **Guaranteed Globally Optimal continuous Reinforcement Learning** H. Bijl, E. Van Kampen, Q. Chu, J. Mulder, Delft University of Technology, Delft, The Netherlands	1230 hrs Oral Presentation **YPSE Exhibition - Forward Flight Capability of a 500-gram Cycloidal-Rotor Micro Air Vehicle** E. Shrestha, University of Maryland, College Park, College Park, MD	

Monday, 13 January 2014							
4-ISC-2	International Student Conference - Undergraduate Division						National Harbor Conf Rm 2
Chaired by: C. TAVARES, The Boeing Company							
0930 hrs AIAA-2014-0011 **Graphene-Silicon Composite Lithium-Ion Batteries for Micro Air Vehicles** S. Wingate, University of Maryland, College Park, College Park, MD	1000 hrs AIAA-2014-0012 **A Preliminary Study of Three-Dimensional Turbulent Flow over Vortex Generators with a Plenoptic Camera** L. McManus, Auburn University, Auburn, AL	1030 hrs AIAA-2014-0013 **Exploration of Emissions Modeling for a General Aviation Airport** D. Katsaduros, M. Prall, M. Johnson, Purdue University, West Lafayette, IN	1100 hrs AIAA-2014-0014 **High Fidelity Simulation of a Nonlinear Aircraft** A. Azocar, J. Valasek, Texas A&M University, College Station, TX	1130 hrs AIAA-2014-0015 **Thermophoretic Force Measurements using a nano-Newton Thrust Stand** A. Ventura, University of Colorado, Colorado Springs, Colorado Springs, CO	1200 hrs AIAA-2014-0016 **A Hybrid Tricopter/Flying-Wing VTOL UAV** S. Carlson, Brigham Young University, Provo, UT	1230 hrs AIAA-2014-0017 **Experimental Characterization of a Fuel Cell Hybrid Electrical UAV Propulsion System** A. Gong, University of Sydney, Sydney, Australia	

Monday, 13 January 2014		
5-NW-1 0930 - 1000 hrs	Monday Morning Networking Coffee Break	Foyer

Monday, 13 January 2014							
6-AA-1	Airframe Noise and Sound Propagation						Azalea 3
Chaired by: C. BURLEY, NASA-Langley Research Center							
1000 hrs AIAA-2014-0018 **Identification and Localization of Airfoil Noise Sources at Low Angles of Attack** M. Jiang, X. Li, W. Tong, Beihang University, Beijing, China	1030 hrs AIAA-2014-0019 **Morphing Flap Concept to Reduce the Flap Side Edge Noise for Aircraft Wing Slotted Flaps** Y. Tani, Y. Yamashita, K. Miyazaki, S. Aso, Kyushu University, Fukuoka, Japan; H. Ura, T. Ito, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1100 hrs AIAA-2014-0020 **Experimental aeroacoustics of a two-strut, two-wheel landing gear in a propeller wake** R. Chekiri, P. Lavoie, University of Toronto, Toronto, Canada; W. Richarz, Aercoustics Engineering, Ltd., Toronto, Canada	1130 hrs AIAA-2014-0021 **Comparison of Aerodynamic Noise Propagation Techniques** M. Rumpfkeil, University of Dayton, Dayton, OH; D. Robertson, University of Dayton Research Institute, Dayton, OH	1200 hrs AIAA-2014-0022 **A Time-Domain Simulation for Comparison with the ANSI Impedance Measurement** G. Ke, Z. Zheng, University of Kansas, Lawrence, Lawrence, KS			

Monday, 13 January 2014							
7-ACD-1	Aircraft Design Methodologies						Azalea 1
Chaired by: H. JIMENEZ, Georgia Institute of Technology							
1000 hrs AIAA-2014-0023 **Conceptual Wing Design Methodology for Aircraft with Hybrid Laminar Flow Control** K. Risse, E. Stumpf, RWTH Aachen University, Aachen, Germany; G. Schrauf, Airbus, Bremen, Germany	1030 hrs AIAA-2014-0024 **Allocating Section Thickness and Camber for Transonic Wing Design** C. Kady, T. Takahashi, Arizona State University, Tempe, AZ	1100 hrs AIAA-2014-0025 **Aeroelastic Modeling of the X-56A Using a Rapid Model Generator for Conceptual Design** D. Bryson, E. Alyanak, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2014-0026 **A Semi-Analytical Weight Estimation Method for Oval Fuselages in Conventional and Novel Aircraft** K. Schmidt, R. Vos, Delft University of Technology, Delft, The Netherlands				

Monday, 13 January 2014							
8-ACD-2	Aircraft Design Studies						Azalea 2
Chaired by: W. ANEMAAT, DARcorporation							
1000 hrs AIAA-2014-0027 **Preliminary Design of a Heavy Short- and Medium-Haul Turboprop-Powered Passenger Aircraft** M. Iwanizki, N. Randt, S. Sartorius, Technical University of Munich, Munich, Germany	1030 hrs AIAA-2014-0028 **Conceptual Design Study on LH2 Fueled Supersonic Transport considering Performance and Environmental Impacts** T. Yuhara, K. Rinoie, University of Tokyo, Tokyo, Japan; Y. Makino, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1100 hrs AIAA-2014-0029 **Lighter-Than-Air Stationary Platform Concept** C. Bil, J. Karnadi, RMIT University, Melbourne, Australia	1130 hrs AIAA-2014-0030 **Conceptual Design of a N+1 Transonic Executive Jet** N. Mora, N. Heitzman, S. Scoville, T. Takahashi, Arizona State University, Tempe, AZ	1200 hrs AIAA-2014-0031 **Take-off and landing using ground based power - landing simulations using multibody dynamics** P. Wu, M. Voskuijl, M. Van Tooren, Delft University of Technology, Delft, The Netherlands			

Monday, 13 January 2014							
9-AFM-1	Flight Dynamics and Handling Qualities I						National Harbor Conf Rm 12
Chaired by: T. LAVIN, Sandia National Laboratories and M. BOLENDER, AFRL/RBCA							
1000 hrs AIAA-2014-0032 **Flight Testing of a Subscale Aeroservoelastic Aircraft** J. Ouellette, M. Patil, C. Woolsey, Virginia Polytechnic Institute and State University, Blacksburg, VA	1030 hrs AIAA-2014-0033 **Flight Testing Small UAVs for Aerodynamic Parameter Estimation** A. Chase, R. McDonald, California Polytechnic State University, San Luis Obispo, CA	1100 hrs AIAA-2014-0034 **Autonomous vertical landing on a marine vessel** P. Nuthi, K. Subbarao, University of Texas, Arlington, Arlington, TX					

Monday, 13 January 2014							
10-AFM-2	LOC Prevention and Recovery (Invited)						National Harbor Conf Rm 13
Chaired by: K. SHWEYK, Boeing Engineering Operations & Technology							
1000 hrs AIAA-2014-0035 **Advanced Modeling and Uncertainty Quantification for Flight Dynamics (VSST1-7) Interim Results and Challenges** D. Hyde, F. Brown, K. Shweyk, The Boeing Company, Huntington Beach, CA; G. Shah, NASA Langley Research Center, Hampton, VA	1030 hrs Oral Presentation (Invited) **Integrated High-Fidelity Modeling and Simulation Development for LOC Research** G. Shah, K. Cunningham, J. Foster, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2014-0036 **Piloted Simulation Evaluation of a Model-Predictive Automatic Recovery System to Prevent Vehicle Loss of Control on Approach** J. Litt, NASA Glenn Research Center, Cleveland, OH; Y. Liu, N&R Engineering, Inc., Parma Heights, OH; T. Sowers, Vantage Partners, LLC, Cleveland, OH; A. Owen, Self, Middleburg Heights, OH; T. Guo, NASA Glenn Research Center, Cleveland, OH	1130 hrs AIAA-2014-0037 **Flight Test of Adaptive RHO Controller for Flying Qualities Specification/Protection and SAFE-Cue Integration** N. Richards, R. Adams, Barron Associates, Inc., Charlottesville, VA; D. Klyde, Systems Technology, Inc., Hawthorne, CA; B. Cogan, NASA Dryden Flight Research Center, Edwards, CA			

Monday, 13 January 2014							
11-APA-1	Low Speed Low Reynolds Number Aerodynamics I						National Harbor Conf Rm 3
Chaired by: A. JONES, University of Maryland and M. CHANG, Lockheed Martin Aeronautics							
1000 hrs AIAA-2014-0038 **Wake Characteristics of a 2D Spanwise Tensioned Membrane with Aerodynamic Loading** Z. Zhang, A. Wrist, J. Hubner, University of Alabama, Tuscaloosa, Tuscaloosa, AL; L. Ukeiley, University of Florida, Gainesville, Gainesville, FL	1030 hrs AIAA-2014-0039 **Comparison of Computational Approaches for Rapid Aerodynamic Assessment of Small UAVs** T. Shafer, Naval Air Systems Command, Patuxent River, MD; S. Viken, N. Favaregh, NASA Langley Research Center, Hampton, VA; C. Zeune, Air Force Research Laboratory, Wright-Patterson AFB, OH; N. Williams, Defence Technology Agency, Auckland, New Zealand; J. Dansie, Australian National University, Melbourne, Australia	1100 hrs AIAA-2014-0040 **Analysis of the Flow past Airfoils with Gurney Flaps at Low Reynolds Numbers** D. Mateescu, A. Panahi, V. Roy, McGill University, Montréal, Canada					

Monday, 13 January 2014							
12-APA-2	Simulation of Rotor in Hover (Invited) I						Maryland Ballroom D
Chaired by: N. HARIHARAN, CREATE-AV and T. EGOLF, Sikorsky Aircraft Corporation							
1000 hrs AIAA-2014-0041 **Simulation of Rotor in Hover: Current State, Challenges and Standardized Evaluation** N. Hariharan, HPCMP CREATE-AV, Lorton, VA; T. Egolf, Sikorsky Aircraft Corporation, Stratford, CT; L. Sankar, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2014-0042 **Assessment of Rotor Aerodynamic Performances in Hover Using an Unstructured Mixed Mesh Method** M. Jung, J. Hwang, O. Kwon, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1100 hrs AIAA-2014-0043 **Evaluating Tail Rotor Tip Shapes using Computational Fluid Dynamics** G. Barakos, University of Liverpool, Liverpool, United Kingdom	1130 hrs AIAA-2014-0044 **S-76 Rotor Hover Prediction Using U2NCLE Solver** C. Sheng, Q. Zhao, J. Wang, University of Toledo, Toledo, OH	1200 hrs AIAA-2014-0045 **OVERTURNS Simulation of S-76 Rotor in Hover** J. Baeder, S. Medida, T. Kalra, University of Maryland, College Park, College Park, MD			

Monday, 13 January 2014							
13-APA-3	**Unsteady Aerodynamics I**						**Maryland Ballroom 3**
Chaired by: J. DEBONIS, NASA Glenn Research Center and M. OL, Air Force Reseach Laboratory							
1000 hrs AIAA-2014-0046 **On the use of Zonal Immersed Boundary Conditions on a high Reynolds number afterbody flow with a serrated skirt using ZDES** L. Mochel, P. Weiss, S. Deck, ONERA, Meudon, France	1030 hrs AIAA-2014-0047 **Sampling Strategies for Reduced-Order Modeling of Nonlinear and Unsteady Aerodynamics** M. Ghoreyshi, R. Cummings, A. Lofthouse, U.S. Air Force Academy, Colorado Springs, CO	1100 hrs AIAA-2014-0048 **Validation of CFD Models For Simulating a Maneuvering X-31 with Flight Test Data** M. Ghoreyshi, A. Jirasek, R. Cummings, U.S. Air Force Academy, Colorado Springs, CO	1130 hrs AIAA-2014-0049 **Unsteady Aerodynamic Characteristics of Cambered Four-digit NACA Airfoils at Low Reynolds Number** T. Ikeda, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; D. Fujimoto, A. Inasawa, M. Asai, Tokyo Metropolitan University, Hino, Japan				

Monday, 13 January 2014							
14-APA-4	**Vortical/Vortex Flow**						**Maryland Ballroom B**
Chaired by: A. MCCOMAS, TLG Aerospace							
1000 hrs AIAA-2014-0050 **Experimental results for vortex dominated flow at a Lambda-wing with a round leading edge in steady flow** S. Wiggen, German Aerospace Center (DLR), Göttingen, Germany	1030 hrs AIAA-2014-0051 **Experimental Investigation of Vortex Asymmetry on a Conical Forebody at High Angles of Incidence** J. Taligoski, E. Fernandez, R. Kumar, Florida State University, Tallahassee, FL	1100 hrs AIAA-2014-0052 **Simulations of Vortex Asymmetry on a Conical Forebody at High Angles of Incidence** J. Taligoski, A. Uzun, R. Kumar, Florida State University, Tallahassee, FL	1130 hrs AIAA-2014-0053 **An Analysis of the Unsteady Wake Behind a Circular Cylinder using Lagrangian Coherent Structures** M. Rockwood, J. Morrida, M. Green, Syracuse University, Syracuse, NY	1200 hrs AIAA-2014-0054 **Virtual Force Measurement of POD Modes for A Flat Plate in Low Reynolds Number Flows** Z. Liang, H. Dong, University of Virginia, Charlottesville, Charlottesville, VA			

Monday, 13 January 2014							
15-APA-5	**Weapons Aerodynamics and Store Separation I**						**Maryland Ballroom A**
Chaired by: C. ROSEMA, US Army AMRDEC and B. MCGRATH, JHU/Applied Physics Laboratory							
1000 hrs AIAA-2014-0055 **Nonlinear Aerodynamic Predictions of Aircraft and Missiles Employing Trailing-Edge Flaps** D. Lesieutre, Nielsen Engineering & Research, Inc., Santa Clara, CA	1030 hrs AIAA-2014-0056 **Fluidic control of a 155 mm spin-stabilized projectile using Coanda effect** M. Zeidler, Nexter Munitions, Bourges, France; E. Garnier, ONERA, Meudon, France; R. Cayzac, Nexter Munitions, Bourges, France; A. Merlen, ONERA, Palaiseau, France	1100 hrs AIAA-2014-0057 **Unsteady Aerodynamic Simulations of a Finned Projectile at a Supersonic Speed with Jet Interaction** J. Sahu, Army Research Laboratory, Aberdeen Proving Ground, MD	1130 hrs AIAA-2014-0058 **Turbulence Model Effects on Cold-Gas Lateral Jet Interaction in a Supersonic Crossflow** J. DeSpirito, Army Research Laboratory, Aberdeen Proving Ground, MD	1200 hrs AIAA-2014-0059 **Numerical Experiments on Finned Bodies** S. Silton, Army Research Laboratory, Aberdeen Proving Ground, MD			

Monday, 13 January 2014							
16-DE-1	**Design Engineering - Design Education**						**Chesapeake Conf Rm 6**
Chaired by: H. BRIGGS, ATA Engineering, Inc. and F. KAHLEN, University of Cape Town Libraries-Electr Jnls Only							
1000 hrs AIAA-2014-0060 **Design Project for Aerospace Specialization and Student Research on the Combustion of Bio-Derived Rocket Fuels** V. Naoumov, N. Al Masoud, P. Sansevero, L. Guadagnoli, A. Moni, D. Loukides, Central Connecticut State University, New Britain, CT	1030 hrs AIAA-2014-0061 **Satellite Technology & Applications: Course Development and Implementation** C. Cain, J. Jantzen, G. Schaffner, University of Cincinnati, Cincinnati, OH	1100 hrs AIAA-2014-0062 **Teaching Aircraft Systems Engineering as a Fundamental Principle of Design - University of Texas Approach** A. Chaput, H. Mark, University of Texas, Austin, Austin, TX	1130 hrs AIAA-2014-0063 **An Aircraft Design Competition for High School STEM Improvement** S. Smith, J. Hoagg, S. Bailey, University of Kentucky, Lexington, Lexington, KY				

Monday, 13 January 2014							
17-EDU-1	Advancing Aerospace Education I						National Harbor Conf Rm 5
Chaired by: R. LEBEAU, Saint Louis University							
1000 hrs AIAA-2014-0064 **A Viable and Comprehensive Process for Assessment and Continuous Improvement towards Successful Accreditation** S. Karunamoorthy, Saint Louis University, St. Louis, MO	1030 hrs AIAA-2014-0065 **Implementation of Active Cooperative Learning and Problem-based Learning in an Undergraduate Astrodynamics Course** S. Jayaram, Saint Louis University, St. Louis, MO	1100 hrs AIAA-2014-0066 **Implementation of a Tiger Team into the NCSU Capstone Senior Aircraft Design Program** C. Hall, North Carolina State University, Raleigh, NC	1130 hrs Oral Presentation **Collegiate UAS Education** T. Beneigh, Embry-Riddle Aeronautical University, Daytona Beach, FL	1200 hrs Oral Presentation **Graduate UAS Education** D. Fisher, R. Gaeta, J. Jacob, J. Kidd, Oklahoma State University, Stillwater, OK			

Monday, 13 January 2014							
18-FD-1	Applications of CFD I						Maryland Ballroom 5
Chaired by: H. YANG, CFD Research Corporation and C. KIRIS							
1000 hrs AIAA-2014-0067 **Modeling Slip at Triple Contact Point in a Two Phase Flow** J. Thalakkottor, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1030 hrs AIAA-2014-0068 **Discontinuous Galerkin Discretization of Chemically Reacting Flows** A. Papoutsakis, Foundation for Research and Technology Hellas (FORTH), Heraklion, Greece; I. Nompelis, University of Minnesota, Minneapolis, Minneapolis, MN; J. Ekaterinaris, Embry-Riddle Aeronautical University, Daytona Beach, FL	1100 hrs AIAA-2014-0069 **A Comparative Study of Gradient Reconstruction Methods for Unstructured Meshes with Application to Turbomachinery Flows** K. Becker, G. Ashcroft, German Aerospace Center (DLR), Cologne, Germany	1130 hrs AIAA-2014-0070 **The LAVA Computational Fluid Dynamics Solver** C. Kiris, M. Barad, J. Housman, NASA Ames Research Center, Moffett Field, CA; E. Sozer, C. Brehm, S. Moini-Yekta, Science and Technology Corporation, Moffett Field, CA				

Monday, 13 January 2014							
19-FD-2	Bioinspired Aerodynamics: Experimental						Woodrow Wilson A
Chaired by: K. TAIRA, Florida State University and M. RINGUETTE, University at Buffalo							
1000 hrs AIAA-2014-0071 **Vorticity Generation and Transport on a Plunging Wing** J. Buchholz, A. Eslam Panah, J. Akkala, K. Wabick, C. Wojcik, University of Iowa, Iowa City, Iowa City, IA	1030 hrs AIAA-2014-0072 **The roles of fish's superficial and canal lateral lines in the sensing of an approaching wall** Z. Ren, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1100 hrs AIAA-2014-0073 **Parameter Studies on Translating Rigid and Flexible Wings** P. Mancini, A. Jones, University of Maryland, College Park, College Park, MD; M. Ol, K. Granlund, Air Force Research Laboratory, Wright-Patterson AFB, OH					

Monday, 13 January 2014							
20-FD-3	Hypersonic Boundary Layer Transition I						Chesapeake Conf Rm 8
Chaired by: X. ZHONG, University of California Los Angeles and S. SCHNEIDER, Purdue University							
1000 hrs AIAA-2014-0074 **Transition and Instability Measurements in a Mach 6 Quiet Wind Tunnel** R. Henderson, B. Chynoweth, A. Abney, C. Ward, S. Schneider, R. Greenwood, Purdue University, West Lafayette, IN; et al.	1030 hrs AIAA-2014-0075 **Traveling global instabilities on the HIFiRE-5 elliptic cone model flow** P. Paredes, V. Theofilis, Technical University of Madrid, Madrid, Spain	1100 hrs AIAA-2014-0076 **HIFiRE-5 Flight Test Heating Analysis** T. Juliano, D. Adamczak, R. Kimmel, Air Force Research Laboratory, Wright-Patterson AFB, OH					

Monday, 13 January 2014							
21-FD-4	Mesh Adaptation						Chesapeake Conf Rm I
Chaired by: K. FIDKOWSKI, University of Michigan and J. SITARAMAN, University of WY							
1000 hrs AIAA-2014-0077 **Adaptive Mesh Refinement with High-Order Scheme for an Unstructured Pressure-Based Solver** H. Yang, Z. Chen, A. Przekwas, CFD Research Corporation (CFDRC), Huntsville, AL; J. Dudley, Air Force Research Laboratory, Eglin AFB, FL	1030 hrs AIAA-2014-0078 **Error Estimation and Adaptation in Hybridized Discontinous Galerkin Methods** J. Dahm, K. Fidkowski, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2014-0079 **Solution Algorithm For Unstructured Grids Using Quadrilateral Subdivision and Hamiltonian Paths** J. Sitaraman, B. Roget, University of Wyoming, Laramie, Laramie, WY					

Monday, 13 January 2014							
22-FD-5	Solver Technology for Turbulent Flows I						Chesapeake Conf Rm 7
Chaired by: B. DISKIN, National Institute of Aerospace and N. KROLL, DLR - German Aerospace Center							
1000 hrs AIAA-2014-0080 **The DLR Flow Solver TAU - Status and Recent Algorithmic Developments** N. Kroll, S. Langer, A. Schwöppe, German Aerospace Center (DLR), Braunschweig, Germany	1030 hrs Oral Presentation (Invited) **Convergence Enhancements for an Unstructured Grid Flow Solver** A. Cary, A. Dorgan, M. Mani, The Boeing Company, St. Louis, MO	1100 hrs AIAA-2014-0081 **Unstructured Mesh Solution Techniques using the NSU3D Solver** D. Mavriplis, K. Mani, University of Wyoming, Laramie, Laramie, WY	1130 hrs AIAA-2014-0082 **Evaluation of multigrid solutions for turbulent flows** B. Diskin, H. Nishikawa, National Institute of Aerospace, Hampton, VA	1200 hrs AIAA-2014-0083 **Turbulent Flow Validation in the Helios Strand Solver** O. Tong, A. Katz, Utah State University, Logan, UT; A. Wissink, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA			

Monday, 13 January 2014							
23-GNC-1	Adaptive Control						National Harbor Conf Rm 8
Chaired by: M. BALAS, University of Wyoming and D. ALAZARD, Institut Supérieur de l'Aéronautique et de l'Espace							
1000 hrs AIAA-2014-0084 **Exploring Adaptive Incremental Backstepping using Immersion and Invariance for an F-16 aircraft** A. Ait Haddou Ali, Q. Chu, E. Van Kampen, C. de Visser, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2014-0085 **Simple Adaptive Control in the Delta Domain Using a Linear Matrix Inequality** A. Cano Martinez, K. Sobel, City College of New York, New York, NY	1100 hrs AIAA-2014-0086 **Adaptive Control of a Flapping Wing Robot Inspired by Bat Flight** S. Dadashi, J. Gregory, Y. Lei, A. Kurdila, J. Bayandor, R. Mueller, Virginia Polytechnic Institute and State University, Blacksburg, VA	1130 hrs AIAA-2014-0087 **Real-Time Model Identification using Simplex B-splines Towards Modular Adaptive Control of a Civil Aircraft** L. Sun, Delft University of Technology, Delft, The Netherlands				

Monday, 13 January 2014							
24-GNC-2	Spacecraft Rendezvous and Proximity Operations						National Harbor Conf Rm 7
Chaired by: S. STARIN, NASA-Goddard Space Flight Center and J. LIU, Boeing Defense, Space & Security							
1000 hrs AIAA-2014-0088 **Guidance for Autonomous Precision Landing on Atmosphereless Bodies** I. Gerth, E. Mooij, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2014-0089 **Pose Estimation Using a Flash Lidar** T. Lim, A. Toombs, Naval Air Systems Command, Annapolis, MD	1100 hrs AIAA-2014-0090 **Spacecraft Rendezvous in Elliptical Orbit using Nonlinear Model Predictive Control** P. Felisiak, K. Sibilski, W. Wroblewski, Wroclaw University of Technology, Wroclaw, Poland; J. Sasiadek, Carleton University, Ottawa, Canada	1130 hrs AIAA-2014-0091 **Control Algorithms for Satellite Rendezvous Maneuver in Elliptical Orbit** K. Sibilski, W. Wroblewski, P. Felisiak, Wroclaw University of Technology, Wroclaw, Poland; J. Sasiadek, Carleton University, Ottawa, Canada	1200 hrs AIAA-2014-0092 **Development of a Robotic Simulation Platform for Spacecraft Proximity Operations and Contact Dynamics Experiments** A. Probe, J. Junkins, Texas A&M University, College Station, TX		

Monday, 13 January 2014							
25-GT-1	**Experimental Uncertainty in Ground Test Facilities**						**National Harbor Conf Rm 10**
Chaired by: J. KEGELMAN, NASA and R. DANFORTH, AERO Systems Engineering, Inc.							
1000 hrs AIAA-2014-0093 **Impact of Load Schedule Design on the Quality of a Strain Gage Balance Calibration** R. DeLoach, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2014-0094 **Comparison of Pressures Driven by Repetitive Nanosecond Pulses to AC Result** Q. Chen, X. Meng, Y. Wang, Northwestern Polytechnical University, Xi'an, China; F. Liu, S. Luo, University of California, Irvine, Irvine, CA	1100 hrs AIAA-2014-0095 **An Alternative Strain Gage Balance Calibration Response Model Formulation** R. DeLoach, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2014-0096 **Repeatability Modeling for Wind-Tunnel Measurements: Results for Three Langley Facilities** M. Hemsch, Self, Williamsburg, VA; H. Houlden, ViGYAN, Inc., Hampton, VA	1200 hrs AIAA-2014-0097 **Within- and Between-Tunnel Variations in Pressure Data for Three Transonic Wind Tunnels** R. DeLoach, NASA Langley Research Center, Hampton, VA			

Monday, 13 January 2014							
26-GTE-1	**Turbomachinery I**						**Woodrow Wilson D**
Chaired by: G. WELCH, NASA Glenn Research Center							
1000 hrs AIAA-2014-0098 **Dynamic Response Characteristics of Dual Flow-Path Integrally Bladed Rotors** J. Beck, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Slater, Wright State University, Dayton, OH; J. Brown, C. Cross, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2014-0099 **The Experimental Foundation Used to Validate a Reduced Order Model for Mistuned Rotors** G. Cox, A. Palazotto, Air Force Institute of Technology, Wright-Patterson AFB, OH; J. Beck, J. Brown, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2014-0100 **Next Generation Traveling Wave Excitation System for Integrally Bladed Rotors** J. Beck, J. Justice, O. Scott-Emuakpor, T. George, Air Force Research Laboratory, Wright-Patterson AFB, OH					

Monday, 13 January 2014		
27-HIS-1 **1000 - 1230 hrs**	**Aerospace Archives: All is NOT Lost - Keepers of the Right Stuff**	**National Harbor Conf Rm 15**
Chaired by: T. CROUCH, National Air & Space Museum and C. MARTIN, NASA-Dryden Flight Research Center		

The AIAA History Technical Committee works to highlight the record of aerospace advances and recognize their impacts on modern society. To help dispel the myth that all the legacy materials of people and institutions have been lost, this session will provide a basic overview of what exists, where it is, and how it may be accessed. During this panel discussion,experts will talk about "best practices" and the individual and institutional responsibilities for preserving records.

Panelists:

Ms. Dawne Dewey
Head of Archives and Special Collections
Wright State University

Dr. Deborah Douglas
Curator of Science & Technology
MIT

Ms. Marilyn Graskowiak
Archivist
National Air & Space Museum

Ms. Jane Odom
Chief Archivist
NASA

Monday, 13 January 2014							
28-ISC-3	**International Student Conference - Team Division**						**National Harbor Conf Rm 4**
Chaired by: L. HANSEN, HRP Systems, Inc.							
1000 hrs AIAA-2014-0101 **Autonomous Unmanned Aerial Vehicle** S. Ericson, M. Kelly, N. Marshall, R. Navarro, C. Newton, J. Parkhurst, Daniel Webster College, Nashua, NH; et al.	1030 hrs AIAA-2014-0102 **ATeP-UAV Sensor Testing Platform** B. Finney, A. Fowler, I. Lin, J. Thomas, University of Alabama, Huntsville, Huntsville, AL	1100 hrs AIAA-2014-0103 **LEOPARD: Low Earth Orbit Project for the Acquisition and Recovery of Debris** C. Welch, K. Williamson, J. Wu, University of Colorado, Boulder, Boulder, CO	1130 hrs AIAA-2014-0104 **When Do Endplates Work?** A. Vaidyanathan, D. Kingman, T. Kurth, University of Southern California, Los Angeles, CA				

Monday, 13 January 2014								
29-MAT-1	**Nanostructured Materials I**							**Chesapeake Conf Rm A**
Chaired by: G. ODEGARD; B. WARDLE, Massachusettes Institute of Technology and S. ROY, The University of Alabama								
1000 hrs AIAA-2014-0105 **Actuation of Bistable Laminates by Conductive Polymer Nanocomposites for use in Thermal-Mechanical Aerosurface De-icing Systems** C. Brampton, C. Bowen, University of Bath, Bath, United Kingdom; S. Buschhorn, J. Lee, Massachusetts Institute of Technology, Cambridge, MA; S. Pickering, University of Bath, Bath, United Kingdom; B. Wardle, Massachusetts Institute of Technology, Cambridge, MA; et al.	1030 hrs AIAA-2014-0106 **Multi-scale Modeling of Failure in Nano-Particle Reinforced Polymers Using the Atomistic J-Integral** S. Roy, A. Akepati, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1100 hrs AIAA-2014-0107 **Fracture Toughness of Aligned Carbon Nanotube Polymer Nanocomposites for the Reinforcement of Hierarchical Composite Materials** S. Wicks, B. Wardle, Massachusetts Institute of Technology, Cambridge, MA	1130 hrs AIAA-2014-0108 **New architecture and processes for hierarchical composites of aligned carbon nanotubes and continuous carbon fibers** R. Guzman de Villoria, B. Wardle, N. Yamamoto, Massachusetts Institute of Technology, Cambridge, MA	1200 hrs AIAA-2014-0109 **Monitoring Strain Rate Effects on Nanocomposites using Piezospectroscopy** E. Durnberg, A. Jones, J. Rosas, University of Central Florida, Orlando, FL; G. Sunny, Air Force Research Laboratory, Eglin AFB, FL; S. Raghavan, University of Central Florida, Orlando, FL			

Monday, 13 January 2014								
30-MDO-1	**Optimization Methods and Algorithms I**							**Chesapeake Conf Rm 4**
Chaired by: G. MODGIL, Rolls-Royce Corporation and A. KO, Phoenix Integration, Inc.								
1000 hrs AIAA-2014-0110 **Revisiting Individual Discipline Feasible using matrix-free Inexact-Newton-Krylov** A. Dener, J. Hicken, Rensselaer Polytechnic Institute, Troy, NY	1030 hrs AIAA-2014-0111 **Reduced Order Techniques for Sensitivity Analysis and Design Optimization of Aerospace Systems** J. Parrish, M. Rais-Rohani, J. Janus, Mississippi State University, Starkville, MS	1100 hrs AIAA-2014-0112 **Dimensionality Reduction In Aerodynamic Design Using Principal Component Analysis With Gradient Information** S. Berguin, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1130 hrs AIAA-2014-0113 **Continuum Sensitivity Analysis for Structural Shape Design Variables Using Finite Volume Approach** K. Gobal, R. Grandhi, Wright State University, Dayton, OH	1200 hrs AIAA-2014-0114 **Metric-Based Mathematical Derivation of Aerofoil Design Variables** D. Poole, C. Allen, T. Rendall, University of Bristol, Bristol, United Kingdom			

Monday, 13 January 2014								
31-MVC-1	**Meshing Technology and Application**							**Chesapeake Conf Rm 9**
Chaired by: B. SEKAR, USAF AFRL/RZTC and J. MASTERS, Aerospace Testing Alliance (ATA)								
1000 hrs AIAA-2014-0115 **Specialized CFD Grid Generation Methods for Near-Field Sonic Boom Prediction** M. Park, R. Campbell, A. Elmiligui, NASA Langley Research Center, Hampton, VA; S. Cliff, NASA Ames Research Center, Moffett Field, CA; S. Nayani, Analytical Services and Materials, Inc., Hampton, VA	1030 hrs AIAA-2014-0116 **Multi-Block Hierarchical Unstructured Grid Generation With Adaptation** S. Karman, University of Tennessee, Chattanooga, Chattanooga, TN	1100 hrs AIAA-2014-0117 **Anisotropic Boundary Layer Adaptivity of Multi-Element Wings** K. Chitale, University of Colorado, Boulder, Boulder, CO; M. Rasquin, Argonne National Laboratory, Argonne, IL; O. Sahni, M. Shephard, Rensselaer Polytechnic Institute, Troy, NY; K. Jansen, University of Colorado, Boulder, Boulder, CO	1130 hrs AIAA-2014-0118 **Automated Tetrahedral Mesh Generation for CFD Analysis of Aircraft in Conceptual Design** I. Ordaz, W. Li, R. Campbell, NASA Langley Research Center, Hampton, VA	1200 hrs AIAA-2014-0119 **Practical and Reliable Mesh Generation for Complex, Real-World Geometries** A. Demargne, R. Evans, P. Tiller, Cambridge Flow Solutions, Ltd., Cambridge, United Kingdom; W. Dawes, Cambridge University, Cambridge, United Kingdom			

Monday, 13 January 2014							
32-NDA-1	**Model Validation and Uncertainty Quantification**						**Chesapeake Conf Rm 5**
Chaired by: B. THACKER, Southwest Research Institue and J. PEPIN, Los Alamos National Laboratory							
1000 hrs AIAA-2014-0120 **Evaluation of Model Validation Techniques in the Presence of Uncertainty** I. Voyles, C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA	1030 hrs AIAA-2014-0121 **A Simple Probabilistic Validation Metric for the Comparison of Uncertain Model and Test Results** B. Thacker, Southwest Research Institute, San Antonio, TX; T. Paez, Thomas Paez Consulting, Sedona, AZ	1100 hrs AIAA-2014-0122 **Options for the inclusion of model discrepancy in Bayesian calibration** Y. Ling, J. Mullins, S. Mahadevan, Vanderbilt University, Nashville, TN	1130 hrs AIAA-2014-0123 **Bayesian Calibration of Coupled Aerothermal Models Using Time-Dependent Data** E. DeCarlo, S. Mahadevan, Vanderbilt University, Nashville, TN; B. Smarslok, Air Force Research Laboratory, Wright-Patterson AFB, OH	1200 hrs AIAA-2014-0124 **Uncertainty Quantification and Output Prediction in Multi-level Problems** C. Li, S. Mahadevan, Vanderbilt University, Nashville, TN			

Monday, 13 January 2014		
33-PANEL-1 **1000 - 1230 hrs**	**Analysis and Perspectives from the Complex Aerospace System Exchange (CASE) 2013**	**Potomac Ballroom C**

1000 - 1025 hrs — Characteristics of the Design and Development of Complex Aerospace Systems

Anna-Maria Rivas McGowan
Senior Aerospace Technologist, NASA Langley Research Center

Peter Parker
Senior Aerospace Technologist, NASA Langley Research Center

1025 - 1050 hrs — Leadership in Pursuit of Systems Thinking for Individuals and Organizations

Kurt Detweiler
Deputy Center Chief Engineer, NASA Langley Research Center

David Dress
Deputy, Space Technology Projects Office, NASA Langley Research Center

1050 - 1115 hrs — The Future May Not Be Where We Are Looking Today

Kennie Jones
Senior Aerospace Technologist, NASA Langley Research Center

William Kimmel
Chief Technologist for Systems Analysis and Concepts Directorate, NASA Langley Research Center

1115 - 1230 hrs — Insights from the CASE 2013 Conference Organizers

Moderator: Anna-Maria Rivas McGowan, Senior Aerospace Technologist, NASA Langley Research Center

Panelists:

Allen Arrington
Engineering Manager, Sierra Lobo

Sophia Bright
Executive Assistant
Boeing Global Support & Services Engineering
Boeing

David Dress
Deputy, Space Technology Projects Office
NASA Langley Research Center

Laura McGill
Deputy Vice President of Engineering
Raytheon

Monday, 13 January 2014							
34-PC-1	**Fuels and Combustion Kinetics**						**Chesapeake Conf Rm G**
Chaired by: H. CURRAN, National University of Ireland and X. YANG, Princeton University							
1000 hrs AIAA-2014-0126 **Kinetic Surrogate Model for GTL Kerosene** N. Slavinskaya, E. Saibov, U. Riedel, J. Herzler, C. Naumann, German Aerospace Center (DLR), Stuttgart, Germany; L. Thomas, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	1030 hrs AIAA-2014-0127 **Autoignition Behavior of Synthetic Alternative Jet Fuels and Blends in a Rapid Compression Machine** D. Valco, University of Illinois, Urbana-Champaign, Urbana, IL; G. Gentz, Michigan State University, East Lansing, MI; M. Colket, United Technologies Corporation, East Hartford, CT; E. Toulson, Michigan State University, East Lansing, MI; T. Lee, University of Illinois, Urbana-Champaign, Urbana, IL	1100 hrs AIAA-2014-0128 **The Influence of Non-Uniform Initial Conditions on Temperature Field Development in Rapid Compression Machine Experiments** J. Neuman, C. Allen, Marquette University, Milwaukee, WI	1130 hrs AIAA-2014-0129 **Experimental and Kinetic Studies of Acetylene Flames at Elevated Pressures** X. Shen, X. Yang, J. Santner, Princeton University, Princeton, NJ; J. Sun, University of Science and Technology of China, Hefei, China; Y. Ju, Princeton University, Princeton, NJ				

Monday, 13 January 2014							
35-PC-2	**Gas Turbine Combustion**						**Chesapeake Conf Rm H**
Chaired by: T. LIEUWEN, Georgia Institute of Technology							
1000 hrs AIAA-2014-0130 **Development and Validation of an Optically Accessible High Power Gas Turbine Combustion Experiment** A. Pratt, C. Slabaugh, R. Lucht, S. Meyer, Purdue University, West Lafayette, IN	1030 hrs AIAA-2014-0131 **Large-Eddy Simulation of a High-Pressure, Single-Element Lean Direct-Injected Gas-Turbine Combustor** S. Kim, S. Menon, J. Darin, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2014-0132 **Numerical simulations of soot and NOx distributions in a full scale aero-engine combustor at two different flight altitudes** C. Eberle, T. Blacha, German Aerospace Center (DLR), Stuttgart, Germany; P. Gerlinger, University of Stuttgart, Stuttgart, Germany; M. Aigner, German Aerospace Center (DLR), Stuttgart, Germany	1130 hrs AIAA-2014-0133 **A Parametric Study of Combustion Dynamics in a Single-Element Lean Direct Injection Gas Turbine Combustor: Part II: Experimental Investigation** R. Gejji, C. Yoon, Purdue University, West Lafayette, IN; V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA; W. Anderson, Purdue University, West Lafayette, IN				

Monday, 13 January 2014							
36-PC-3	**Rockets and Airbreathing Propulsion I**						**Maryland Ballroom 6**
Chaired by: J. OEFELEIN, Sandia National Laboratories and T. OMBRELLO, Air Force Research Laboratory							
1000 hrs AIAA-2014-0134 **Propellant Feed System Influence on Rocket Engine Combustion Instability** P. Popov, A. Sideris, W. Sirignano, University of California, Irvine, Irvine, CA	1030 hrs AIAA-2014-0135 **Instability Analysis of Liquid Films of Liquefying Hybrid Rocket Fuels under Supercritical Operating Condition** M. Adachi, University of Tokyo, Tokyo, Japan; T. Shimada, Japan Aerospace Exploration Agency (JAXA), Kanagawa, Japan	1100 hrs AIAA-2014-0136 **Numerical Study of Cryogenic Coaxial Jet under Supercritical Condition** D. Muto, N. Tsuboi, Kyushu Institute of Technology, Kitakyushu, Japan; H. Terashima, University of Tokyo, Bunkyo, Japan	1130 hrs AIAA-2014-0137 **Development of a Facility for Combustion Stability Experiments at Supercritical Pressure** J. Wegener, University of California, Los Angeles, Los Angeles, CA; I. Leyva, Air Force Research Laboratory, Edwards AFB, CA; D. Forliti, Sierra Lobo, Inc., Edwards AFB, CA; D. Talley, Air Force Research Laboratory, Edwards AFB, CA	1200 hrs AIAA-2014-0138 **Large Eddy Simulation of Supercritical Mixing and Combustion for Rocket Applications** J. Hickey, M. Ihme, Stanford University, Stanford, CA			

Monday, 13 January 2014							
37-PDL-1	Electric Propulsion/Laser Applications of Plasmas						Maryland Ballroom 4
Chaired by: R. SEDWICK, University of Maryland							
1000 hrs AIAA-2014-0139 **Comparison of Ion Thruster Plumes Generated in the SPPL-1 Facility with DSMC Simulations using AMR** B. Korkut, Pennsylvania State University, University Park, PA; J. Young, University of Maryland, College Park, College Park, MD; D. Levin, Pennsylvania State University, University Park, PA; R. Sedwick, University of Maryland, College Park, College Park, MD	1030 hrs AIAA-2014-0140 **Detection of Plume-Mode Transition for NEXT Neutralizer Cathode** M. Crofton, W. Cox, J. Young, K. Diamant, E. Beiting, The Aerospace Corporation, El Segundo, CA; M. Patterson, NASA Glenn Research Center, Cleveland, OH; et al.	1100 hrs AIAA-2014-0141 **Performance of a Helicon Thruster using Helium, Argon, and Water Vapor** A. Faust, R. Sedwick, University of Maryland, College Park, College Park, MD	1130 hrs AIAA-2014-0142 **Development of a Chemical Carbon Monoxide Laser** K. Frederickson, Y. Ivanou, S. Leonov, J. Rich, W. Lempert, I. Adamovich, Ohio State University, Columbus, OH	1200 hrs AIAA-2014-0143 **Simultaneous Temperature, Density and Velocity Measurements in Laser-Generated Plasmas by Rayleigh and Filtered Rayleigh Scattering** C. Limbach, R. Miles, Princeton University, Princeton, NJ			

Monday, 13 January 2014							
38-PDL-2	Plasma-Actuators and Flow Control I						Maryland Ballroom 1
Chaired by: D. ASHPIS, NASA Glenn Research Center							
1000 hrs AIAA-2014-0144 **Dielectric Barrier Discharge Control and Thrust Enhancement by Diode Surface** A. Starikovskiy, M. Post, N. Tkach, R. Miles, Princeton University, Princeton, NJ	1030 hrs AIAA-2014-0145 **Electrical and optical characteristics of pulsed dielectric barrier discharges as a function of altitude conditions** N. Benard, D. Pai, A. Aba'a Ndong, E. Bayoda, N. Zouzou, E. Moreau, National Center for Scientific Research (CNRS), Poitiers, France	1100 hrs AIAA-2014-0146 **Improving Plasma Actuator Thrust at Low Pressure Through Geometric Variation** P. Friz, J. Rovey, Missouri University of Science and Technology, Rolla, MO	1130 hrs AIAA-2014-0147 **Parametric Study of Particle Size for Plasma Actuator PIV Measurements** A. Masati, R. Sedwick, University of Maryland, College Park, College Park, MD				

Monday, 13 January 2014							
39-SD-1	Computational Aeroelasticity ROM I						Chesapeake Conf Rm C
Chaired by: J. COOPER, University of Bristol and N. FALKIEWICZ, Boeing Research & Technology							
1000 hrs AIAA-2014-0148 **Response of a Panel to Shock Impingement: Modeling and Comparison with Experiments** B. Miller, A. Crowell, R. Deshmukh, A. Gogulapati, J. McNamara, Ohio State University, Columbus, OH; V. Vyas, Arizona State University, Tempe, AZ; et al.	1030 hrs AIAA-2014-0149 **Aerothermoelastic Simulation of Air-Breathing Hypersonic Vehicles** R. Klock, C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2014-0150 **Modeling Crack Propagation within a Reduced- Order Model Framework** P. O'Hara, United Technologies Corporation, Dayton, OH; J. Hollkamp, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2014-0151 **Reduced Order Modeling for the Nonlinear Geometric Response of Some Joined Wings** G. Phlipot, X. Wang, M. Mignolet, Arizona State University, Tempe, AZ; L. Demasi, R. Cavallaro, San Diego State University, San Diego, CA				

Monday, 13 January 2014							
40-SD-2	**Energy Harvesting, Damping and Vibration Suppression**						**Chesapeake Conf Rm B**
Chaired by: W. WELSH, Sikorsky Aircraft Corporation and Y. YIU, Lockheed Martin Space Systems							
1000 hrs AIAA-2014-0152 **Investigation on the Effectiveness of a Nonlinear Energy Sink on an Aeroelastic System** Y. Bichiou, H. Taha, M. Hajj, Virginia Polytechnic Institute and State University, Blacksburg, VA	1030 hrs AIAA-2014-0153 **Nonlinear Dynamics Characterization of Piezoelectric Energy Harvesters from Hybrid Vibrations** Z. Yan, A. Abdelkefi, M. Hajj, Virginia Polytechnic Institute and State University, Blacksburg, VA	1100 hrs AIAA-2014-0154 **Modelling the Dynamic Response of Bistable Composite Plates for Piezoelectric Energy Harvesting** D. Betts, University of Bath, Bath, United Kingdom; R. Guyer, University of Nevada, Reno, Reno, NV; P. Le Bas, Los Alamos National Laboratory, Los Alamos, NM; C. Bowen, University of Bath, Bath, United Kingdom; D. Inman, University of Bristol, Bristol, United Kingdom; H. Kim, University of Bath, Bath, United Kingdom					

Monday, 13 January 2014							
41-STR-1	**Composite Micromechanics**						**Chesapeake Conf Rm D**
Chaired by: M. HYER, Virginia Tech and T. AOKI, University of Tokyo							
1000 hrs AIAA-2014-0155 **Micromechanics Model to Link Microstructural Variability to Fiber Reinforced Composite Behavior** L. Borkowski, K. Liu, A. Chattopadhyay, Arizona State University, Tempe, AZ	1030 hrs AIAA-2014-0156 **Analysis of Space Structures Subject to Hypervelocity Impact** A. Thurber, J. Bayandor, Virginia Polytechnic Institute and State University, Blacksburg, VA	1100 hrs AIAA-2014-0157 **Progressive Failure Analysis on Textile Composites** D. Zhang, A. Waas, University of Michigan, Ann Arbor, Ann Arbor, MI; C. Yen, Army Research Laboratory, Aberdeen Proving Ground, MD	1130 hrs AIAA-2014-0158 **Fast Life Prediction Model for Composites Based on Multiple Temporal Scale Homogenization** R. Crouch, C. Oskay, Vanderbilt University, Nashville, TN; S. Clay, Air Force Research Laboratory, Wright-Patterson AFB, OH	1200 hrs AIAA-2014-0159 **Optical Stress-sensing Alumina Nanocomposite Coatings for Aerospace Structures** G. Freihofer, A. Van Newkirk, A. Gupta, S. Seal, S. Raghavan, University of Central Florida, Orlando, FL			

Monday, 13 January 2014							
42-STR-2	**Beams & Plates**						**Chesapeake Conf Rm F**
Chaired by: L. DEMASI and W. YU, Purdue University							
1000 hrs AIAA-2014-0160 **Informal Numerical Methods for Generalized Beam-Column Problems** S. Russell, Triumph Group, Inc., Dallas, TX	1030 hrs AIAA-2014-0161 **The effect of the order of asymptotic stress field in a strain energy transformation for beams and plates** J. Kim, Kumoh National Institute of Technology, Gumi, South Korea	1100 hrs AIAA-2014-0162 **A thin shell finite element for textile composite structures** W. Xu, A. Waas, University of Michigan, Ann Arbor, Ann Arbor, MI	1130 hrs AIAA-2014-0163 **Cross-sectional modelling of thin-walled composite beams** E. Ferede, M. Abdalla, Delft University of Technology, Delft, The Netherlands				

Monday, 13 January 2014							
43-STR-3	**Buckling and Structural Instability**						**Chesapeake Conf Rm E**
Chaired by: C. BISAGNI, Politecnico Di Milano and R. TAYLOR, Optimal Structures, LLC.							
1000 hrs AIAA-2014-0164 **Buckling and Post-Buckling Behavior of Unitized, Stiffened Tri-Axially Braided Composite Textile Plates** C. Kosztowny, A. Waas, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2014-0165 **Buckling Analysis of Curvilinearly Stiffened Composite Panels with Cracks** M. Jrad, A. Khan, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1100 hrs AIAA-2014-0166 **Probabilistic Buckling Analysis of Composite and Sandwich Cylindrical Shells** M. Alfano, C. Bisagni, Technical University of Milan, Milan, Italy	1130 hrs AIAA-2014-0167 **Local Buckling of Blade Stiffened Variable Angle Tow Panels** B. Coburn, Z. Wu, P. Weaver, University of Bristol, Bristol, United Kingdom				

Monday, 13 January 2014							
44-WE-1	Wind Turbine Airfoil Design and Analysis						Woodrow Wilson C
Chaired by: D. MANIACI, Sandia National Laboratories and C. VAN DAM							
1000 hrs AIAA-2014-0168 **modeling and effects of base drag on thick airfoils design** F. Grasso, Energy Research Center of the Netherlands, Petten, The Netherlands	1030 hrs AIAA-2014-0169 **The Flow Field of a Dynamically Pitching Finite Span S809 Blade and its Control** K. Taylor, C. Leong, M. Amitay, Rensselaer Polytechnic Institute, Troy, NY	1100 hrs AIAA-2014-0170 **Influence of 2D Steps and Distributed Roughness on Transition on a NACA 63(3)-418** R. Ehrmann, E. White, Texas A&M University, College Station, TX	1130 hrs AIAA-2014-0171 **Experimental And Numerical Investigation Of An Optimized Airfoil For Vertical Axis Wind Turbines** D. Ragni, C. Simao Ferreira, Delft University of Technology, Delft, The Netherlands; M. Barone, Sandia National Laboratories, Albuquerque, NM				

Monday, 13 January 2014							
45-WE-2	Wind Turbine Blade Materials and Manufacturing						Woodrow Wilson B
Chaired by: D. MILLER, Mechanical and Industrial Engineering							
1000 hrs AIAA-2014-0172 **Creep/Fatigue Response of Resin Infused Biaxial Glass Fabric Laminates in Reversed Loading** D. Samborsky, J. Mandell, D. Miller, Montana State University, Bozeman, MT	1030 hrs AIAA-2014-0173 **A New Fatigue Analysis Procedure for Composite Wind Turbine Blades** W. Hu, O. Zhupanska, J. Buchholz, K. Choi, University of Iowa, Iowa City, Iowa City, IA	1100 hrs AIAA-2014-0174 **Effects of Tensile Stresses on the Moisture Diffusion Characteristics of Epoxy Glass Composites** M. Stoffels, D. Miller, D. Samborsky, J. Mandell, Montana State University, Bozeman, MT	1130 hrs AIAA-2014-0175 **Optimal Design of Sandwich Core for Wind Turbine Blade Buckling Resistance** F. Stoll, Milliken & Company, Spartanburg, SC				

Monday, 13 January 2014		
46-LECT-1 1230 - 1400 hrs	Durand Lectureship and Luncheon: American Space Strategy: Choose to Steer, Not Drift	Potomac Ballroom A&B
Scott Pace Director, Space Policy Institute, Elliott School of International Affairs George Washington University		

Monday, 13 January 2014		
47-NW-2 1400 - 1430 hrs	Monday Afternoon Networking Coffee Break	Foyer

Monday, 13 January 2014		
48-SB-2 1400 - 1430 hrs	Monday Afternoon Speakers' Briefing	Session Rooms

Monday, 13 January 2014							
49-AA-2	Jet Noise I						Woodrow Wilson C
Chaired by: N. MURRAY, The University of Mississippi							
1430 hrs AIAA-2014-0176 **Analysis of a Shock-Associated Noise Prediction Model Using Measured Jet Far-Field Noise Data** M. Dahl, NASA Glenn Research Center, Cleveland, OH; J. Sharpe, Saginaw Valley State University, University Center, MI	1500 hrs AIAA-2014-0177 **Hybrid RANS-NLES of Real Geometry Hot Jets: Flow and Noise Prediction** M. Mahak, J. Tyacke, P. Tucker, University of Cambridge, Cambridge, United Kingdom	1530 hrs AIAA-2014-0178 **Computational Study of the Impact of Chevrons on Noise Characteristics of Imperfectly Expanded Jet Flows** J. Liu, A. Corrigan, K. Kailasanath, Naval Research Laboratory, Washington, DC; N. Heeb, D. Munday, E. Gutmark, University of Cincinnati, Cincinnati, OH	1600 hrs AIAA-2014-0179 **Acoustic Source Localization of Rectangular Jets using Large Eddy Simulation with Numerical Phased Arrays** J. Erwin, P. Panickar, P. Vogel, N. Sinha, Combustion Research and Flow Technology, Inc., Pipersville, PA	1630 hrs AIAA-2014-0180 **Equilibrium Wall Model for Large Eddy Simulations of Jets for Aeroacoustics** K. Aikens, N. Dhamankar, C. Martha, Y. Situ, G. Blaisdell, Purdue University, West Lafayette, IN; A. Lyrintzis, Embry-Riddle Aeronautical University, Daytona Beach, FL; et al.			

Monday, 13 January 2014							
50-ACD-3	Aircraft Design Issues						Azalea 1
Chaired by: R. BARRETT-GONZALEZ, The University of Kansas							
1430 hrs AIAA-2014-0181 **Fuel-Burn Impact of Re-Designing Future Aircraft with Changes in Mission Specifications** A. Variyar, T. Lukaczyk, M. Colonno, J. Alonso, Stanford University, Stanford, CA	1500 hrs AIAA-2014-0182 **Liquefied Natural Gas Aircraft: A Life Cycle Costing Perspective** T. Conroy, K. Lim Ee Wei, C. Bil, G. Dorrington, RMIT University, Melbourne, Australia	1530 hrs AIAA-2014-0183 **Influences on Safety of Flight of WIG craft** N. Kornev, A. Gross, University of Rostock, Rostock, Germany	1600 hrs AIAA-2014-0184 **Extensions to aircraft pre-design for supersonic aircraft** M. Schuermann, P. Horst, Technical University of Braunschweig, Braunschweig, Germany; M. Gaffuri, German Aerospace Center (DLR), Braunschweig, Germany				

Monday, 13 January 2014							
51-ACD-4	Aircraft Design Optimization						Azalea 2
Chaired by: W. CROSSLEY, Purdue University							
1430 hrs AIAA-2014-0185 **Wing Configuration Impact on Design Optimums for a Subsonic Passenger Transport** D. Wells, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2014-0186 **Multidisciplinary Design Optimization of Subsonic Strut-Braced Wing Aircraft** R. Gupta, W. Mallik, R. Kapania, J. Schetz, Virginia Polytechnic Institute and State University, Blacksburg, VA	1530 hrs AIAA-2014-0187 **Conceptual Design Optimization of an Augmented Stability Aircraft Incorporating Dynamic Response and Actuator Constraints** J. Welstead, G. Crouse, Auburn University, Auburn, AL	1600 hrs AIAA-2014-0188 **Computational Geometry for Multi-fidelity and Multi-disciplinary Analysis and Optimization** N. Bhagat, Universal Technology Corporation, Fairborn, OH; E. Alyanak, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2014-0189 **Applications of multi-block CST method for quasi-waverider design** C. Liu, Y. Duan, J. Cai, G. Yang, Northwestern Polytechnical University, Xi'an, China			

Monday, 13 January 2014							
52-AFM-3	Flight Dynamics and Handling Qualities II						National Harbor Conf Rm 13
Chaired by: K. CUNNINGHAM, NASA-Langley Research Center and P. WILLIAMS-HAYES, NASA Dryden Flight Research Center							
1430 hrs AIAA-2014-0190 **Trajectory Analysis of Basket Engagement during Aerial Refueling** J. Masud, O. Khan, Air University, Islamabad, Pakistan	1500 hrs AIAA-2014-0191 **Dynamic Analysis of the Meridian Unmanned Aerial Vehicle** N. Smith, L. Toledo, D. Kennedy, A. Sizemore, University of Kansas, Lawrence, Lawrence, KS	1530 hrs AIAA-2014-0192 **Trimming Mass-Actuated Airplane in Turns with Zero Side Slip Angle** A. Dogan, S. Erturk, University of Texas, Arlington, Arlington, TX	1600 hrs AIAA-2014-0193 **Lower Stratospheric Deployment Testing of a Ram-Air Parafoil System** T. Fields, University of Missouri, Kansas City, Kansas City, MO; O. Yakimenko, Naval Postgraduate School, Monterey, CA; J. LaCombe, E. Wang, University of Nevada, Reno, Reno, NV	1630 hrs AIAA-2014-0194 **Development of a Flight Data System and Experimental Determination of Aerodynamic Loads on a Wing Spar** S. Abraham-Doman, C. Merrett, Carleton University, Ottawa, Canada			

Monday, 13 January 2014							
53-APA-6	**Active and Passive Flow Control I**						**Maryland Ballroom A**
Chaired by: C. TILMANN, Air Force Reseach Laboratory and T. MCLAUGHLIN, US Air Force Academy							
1430 hrs AIAA-2014-0195 **Pitching Airfoil Performance Enhancement Using Co-Flow Jet Flow Control at High Mach Number}** A. Lefebvre, G. Zha, University of Miami, Coral Gables, FL	1500 hrs AIAA-2014-0196 **Investigation of an Improved Design for a Dielectric Barrier Discharge Plasma Actuator for Flight Control of an Inflatable Wing** J. Laten, R. LeBeau, Saint Louis University, St. Louis, MO	1530 hrs AIAA-2014-0197 **Roll-modes generated in turbulent boundary layers with passive surface modifications** B. Nugroho, University of Melbourne, Melbourne, Australia; E. Gnanamanickam, Embry-Riddle Aeronautical University, Daytona Beach, FL; K. Kevin, J. Monty, N. Hutchins, University of Melbourne, Melbourne, Australia	1600 hrs AIAA-2014-0198 **Enhancement of High-Lift System Flap Performance using Active Flow Control** M. Desalvo, Georgia Institute of Technology, Atlanta, GA; E. Whalen, The Boeing Company, St. Louis, MO; A. Glezer, Georgia Institute of Technology, Atlanta, GA	1630 hrs AIAA-2014-0199 **Numerical Study of the Active Control of Underexpanded Jets** K. Goparaju, D. Gaitonde, M. Zhuang, Ohio State University, Columbus, OH	1700 hrs AIAA-2014-0200 **Establishment of Mapping Relationship between Plasma Actuator Parameters and Body Force based on Neural Networks** B. Wu, C. Gao, Y. Wang, Y. Wang, B. Zheng, Northwestern Polytechnical University, Xi'an, China; F. Liu, University of California, Irvine, Irvine, CA; et al.		

Monday, 13 January 2014							
54-APA-7	**Best Practices for CFD Validation - Validation of Numerical Models Discussion Group (Invited)**						**Maryland Ballroom 4**
Chaired by: P. MORGAN, Ohio Aerospace Institute							
1430 hrs AIAA-2014-0201 **Turbulence Modeling Verification and Validation (Invited)** C. Rumsey, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2014-0202 **Observations on CFD Verification and Validation from the AIAA Drag Prediction Workshops** J. Morrison, W. Kleb, NASA Langley Research Center, Hampton, VA; J. Vassberg, The Boeing Company, Huntington Beach, CA	1530 hrs AIAA-2014-0203 **Unsteady aerodynamic validation experiences from the Aeroelastic Prediction Workshop** J. Heeg, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2014-0204 **Lessons learned and best practices for fluid dynamic validation experiments** J. Benek, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2014-0205 **Assessment Criteria for Computational Fluid Dynamics Validation Benchmark Experiments** W. Oberkampf, W. L. Oberkampf Consulting, Austin, TX; B. Smith, Utah State University, Logan, UT	1700 hrs Oral Presentation (Invited) **Hypersonic Laminar-Turbulent Transition: Suggestions for Development and Validation of Numerical Models** S. Schneider, Purdue University, West Lafayette, IN		

Monday, 13 January 2014							
55-APA-8	**Simulation of Rotor in Hover (Invited) II**						**Maryland Ballroom 3**
Chaired by: N. HARIHARAN, CREATE-AV and T. EGOLF, Sikorsky Aircraft Corporation							
1430 hrs AIAA-2014-0206 **Numerical Simulations of Rotors in Shipboard Environment** C. Crozon, R. Steijl, G. Barakos, University of Liverpool, Liverpool, United Kingdom	1500 hrs AIAA-2014-0207 **Hover Predictions on the Sikorsky S-76 Rotor using Helios** M. Potsdam, R. Jain, U.S. Army, Moffett Field, CA; N. Hariharan, CREATE AV Team, Patuxent River, MD	1530 hrs AIAA-2014-0208 **OVERFLOW Simulation of Rotors in Hover: The Boeing Company** R. Narducci, The Boeing Company, Philadelphia, PA	1600 hrs AIAA-2014-0209 **Helios Simulation of Rotors in Hover: The Boeing Company** H. Tadghighi, The Boeing Company, Mesa, AZ	1630 hrs AIAA-2014-0210 **Analysis of a Rotor in Hover using Hybrid Methodology** R. Marpu, L. Sankar, Georgia Institute of Technology, Atlanta, GA; T. Egolf, Sikorsky Aircraft Corporation, Stratford, CT; N. Hariharan, HPCMP CREATE-AV, Lorton, VA			

Monday, 13 January 2014							
56-APA-9	**Weapons Aerodynamics and Store Separation II**						**National Harbor Conf Rm 11**
Chaired by: K. BREKKE, Sandia National Labs and J. DESPIRITO, US Army Research Laboratory							
1430 hrs AIAA-2014-0211 **Comparison of CFD-Based Simulation of External Fuel Tank Separation to Flight Test** D. Finley, T. Messina, K. Chankaya, E. Blosch, Lockheed Martin Corporation, Fort Worth, TX; J. Dreese, Pointwise, Inc., Fort Worth, TX	1500 hrs AIAA-2014-0212 **Solution-Adaptive Method for Prediction of Aerodynamic Interaction in Multiple-Body High-Speed Air-Delivered Systems** R. Harris, C. Talley, P. Liever, CFD Research Corporation (CFDRC), Huntsville, AL; E. Luke, Mississippi State University, Mississippi State, MS; J. Dudley, Air Force Research Laboratory, Eglin AFB, FL	1530 hrs AIAA-2014-0213 **Studies of Vortex Interference Associated with Missile Configurations** D. Lesieutre, O. Quijano, Nielsen Engineering & Research, Inc., Santa Clara, CA	1600 hrs AIAA-2014-0214 **Aerodynamics of Transonic and Supersonic Projectiles in Ground Effect** G. Doig, S. Wang, University of New South Wales, Sydney, Australia; J. Young, H. Kleine, University of New South Wales at the Australian Defence Force Academy, Canberra, Australia	1630 hrs AIAA-2014-0215 **Investigation of Aerodynamics and Flight Mechanics Characteristics of Ground Effect Missile** F. Li, China Academy of Aerospace Aerodynamics, Beijing, China			

Monday, 13 January 2014							
57-DE-2	**Design Engineering - Design Process**						**Chesapeake Conf Rm 6**
Chaired by: S. ROWE, NASA Marshall Space Flight Center and D. STAGGERS, Raytheon Missile Systems							
1430 hrs No Presentations		1530 hrs AIAA-2014-0216 **Tracking Design Evolution in Aircraft Structural Modeling** H. Briggs, ATA Engineering, Inc., San Diego, CA	1600 hrs AIAA-2014-0217 **Applying Model-Based Development (MBD) to embedded systems** K. Tsujimoto, M. Shimoura, Y. Morita, H. Oyori, IHI Corporation, Tomioka, Japan	1630 hrs AIAA-2014-0218 **Surrogate Modeling Based Uncertainty Quantification In Subject Matter Expert Systems** F. Akram, National University of Sciences and Technology, Islamabad, Pakistan; D. Mavris, Georgia Institute of Technology, Atlanta, GA	1700 hrs AIAA-2014-0219 **Thinking inside the Box (Bringing Back Touch and Feel to Structures Design Instruction)** L. Gonzalez-Linero, Embry-Riddle Aeronautical University, Daytona Beach, FL		

Monday, 13 January 2014							
58-EDU-2 **1430 - 1730 hrs**	**Advancing Aerospace Education II: Best practices in Teaching CFD in Undergraduate Aerospace Education**						**National Harbor Conf Rm 5**
Chaired by: K. RAVINDRA, Parks College of Engineering, Aviation & Technology							
Moderator: Dr. K. Ravindra, Associate Dean, Saint Louis University Panelists: **Dr. Andrew Cary**, Senior Technical Fellow, The Boeing Company **Dr. Brian Smith**, Lockheed Martin Fellow, Lockheed Martin Corporation **Dr. Russ Cummings**, Professor of Aerospace Engineering, United States Air Force Academy **Dr. Raymond LeBeau**, Department of Aerospace and Mechanical Engineering, Saint Louis University							

Monday, 13 January 2014							
59-FD-7	**Bioinspired Aerodynamics: Numerical**						**Maryland Ballroom 5**
Chaired by: H. LUO, Vanderbilt University and M. GREEN, Syracuse University							
1430 hrs AIAA-2014-0220 **Climbing Flight of a Fruit Bat Deconstructed** K. Viswanath, K. Nagendra, D. Tafti, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2014-0221 **Nonlinear Aeroelastic Analysis of Highly Flexible Flapping Wings Using an ALE Formulation of Embedded Boundary Method** V. Lakshminarayan, C. Farhat, Stanford University, Stanford, CA	1530 hrs AIAA-2014-0222 **Global model reduction for flows with moving boundary** H. Gao, M. Wei, New Mexico State University, Las Cruces, NM	1600 hrs AIAA-2014-0223 **Aerodynamic Force Modeling for Unsteady Wing Maneuvers** R. Jantzen, K. Taira, Florida State University, Tallahassee, FL; K. Granlund, M. Ol, Air Force Research Laboratory, Wright-Patterson AFB, OH				

Monday, 13 January 2014							
60-FD-8	**CFD for Turbulent Flows**						**Maryland Ballroom D**
Chaired by: C. GROTH, University of Toronto and Y. XIA, North Carolina State University							
1430 hrs AIAA-2014-0224 **Implicit Large Eddy Simulation of Turbulent Flows by a Reconstructed Discontinuous Galerkin Method** Y. Xia, H. Luo, North Carolina State University, Raleigh, NC	1500 hrs AIAA-2014-0225 **Hybrid RANS-LES Modeling Using a Low-Reynolds-Number k-ω Based Model** S. Arvidson, Saab, Linköping, Sweden; L. Davidson, Chalmers University of Technology, Göteborg, Sweden; S. Peng, Swedish Defense Research Agency (FOI), Stockholm, Sweden	1530 hrs AIAA-2014-0226 **Development of a coupled compressible pressure-based solver** P. Kambrath, A. Cary, The Boeing Company, St. Louis, MO	1600 hrs AIAA-2014-0227 **Evolving Solutions: Distributed computing and cutback trailing edges** R. Watson, P. Tucker, University of Cambridge, Cambridge, United Kingdom	1630 hrs AIAA-2014-0228 **High Reynolds Number Steady State Flow Simulation using Immersed Boundary Method** Y. Takahashi, T. Imamura, University of Tokyo, Tokyo, Japan	1700 hrs AIAA-2014-0229 **Numerical Prediction of Three-Dimensional Non-Equilibrium Flows Using the Regularized Gaussian Moment Closure** C. Lam, C. Groth, University of Toronto, Toronto, Canada		

Monday, 13 January 2014							
61-FD-9	**Jet Flows**						**Maryland Ballroom 6**
Chaired by: L. FUCHS, Lund University and R. BAURLE, NASA Langley Research Center							
1430 hrs AIAA-2014-0230 **Structural and Stability Characteristics of Jets in Crossflow** L. Gevorkyan, D. Getsinger, O. Smith, A. Karagozian, University of California, Los Angeles, Los Angeles, CA	1500 hrs AIAA-2014-0231 **Vibrational Non-equilibrium Effects in Supersonic Jet Mixing** H. Reising, U. Kc, S. Voelkel, N. Clemens, V. Raman, P. Varghese, University of Texas, Austin, Austin, TX; et al.	1530 hrs AIAA-2014-0232 **Wedge Shock and Nozzle Exhaust Plume Interaction in a Supersonic Jet Flow** R. Castner, K. Zaman, A. Fagan, C. Heath, NASA Glenn Research Center, Cleveland, OH					

Monday, 13 January 2014							
62-FD-10	**Roughness-Influenced Boundary Layer Transition I**						**National Harbor Conf Rm 4**
Chaired by: E. WHITE, Texas A&M University and M. KEGERISE, NASA-Langley Research Center							
1430 hrs AIAA-2014-0233 **The Effect of Particle Lag on Supersonic Turbulent Boundary Layer Statistics** K. Lowe, G. Byun, R. Simpson, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2014-0234 **A Computational Approach to Simulating the Effects of Realistic Surface Roughness on Boundary Layer Transition** C. Langel, R. Chow, C. Van Dam, University of California, Davis, Davis, CA; M. Rumsey, D. Maniaci, Sandia National Laboratories, Albuquerque, NM; R. Ehrmann, Texas A&M University, College Station, TX; et al.	1530 hrs AIAA-2014-0235 **Evolution of disturbances due to distributed surface roughness in laminar boundary layers** A. Sharma, S. Drews, University of Texas, Austin, Austin, TX; M. Kuester, Texas A&M University, College Station, TX; D. Goldstein, University of Texas, Austin, Austin, TX; E. White, Texas A&M University, College Station, TX	1600 hrs AIAA-2014-0236 **Comparing Experiment and Computation of Hypersonic Laminar Boundary Layers with Isolated Roughness** B. Bathel, NASA Langley Research Center, Hampton, VA; P. Iyer, University of Minnesota, Minneapolis, Minneapolis, MN; P. Danehy, J. Inman, S. Jones, NASA Langley Research Center, Hampton, VA; K. Mahesh, University of Minnesota, Minneapolis, Minneapolis, MN; et al.	1630 hrs AIAA-2014-0237 **Direct Numerical Simulation of Hypersonic Transition Induced by Ramp Roughness Elements** Z. Duan, Z. Xiao, S. Fu, Tsinghua University, Beijing, China	1700 hrs AIAA-2014-0238 **Distributed Roughness Effects on Blunt-Body Transition and Turbulent Heating** B. Hollis, NASA Langley Research Center, Hampton, VA		

Monday, 13 January 2014							
63-FD-11	Solver Technology for Turbulent Flows II						National Harbor Conf Rm 3
Chaired by: W. ANDERSON, SimCenter at University of Tennessee at Chattanooga and E. SHIMA, Japan Aerospace Exploration Agency							
1430 hrs Oral Presentation (Invited) **Numerical and Modeling Issues in Steady Reynolds-averaged Navier-Stokes Equations** J. Bussoletti, D. Kamenetskiy, The Boeing Company, Seattle, WA; F. Johnson, Self, Seattle, WA; L. Wigton, V. Venkatakrishnan, The Boeing Company, Seattle, WA	1500 hrs AIAA-2014-0239 **Verification and validation of the Onera elsA flow solver on RANS benchmarks** L. Cambier, V. Gleize, M. Julien, ONERA, Châtillon, France	1530 hrs AIAA-2014-0240 **Turbulent Flow Solver Validation of FaSTAR and UPACS** A. Hashimoto, M. Murayama, K. Yamamoto, T. Aoyama, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; K. Tanaka, Ryoyu Systems Company, Ltd., Nagoya, Japan	1600 hrs AIAA-2014-0241 **Assessment of an Unstructured CFD Solver for RANS Simulation on Body-Fitted Cartesian Grids** T. Haga, K. Kuzuu, R. Takaki, E. Shima, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1630 hrs AIAA-2014-0242 **Steady three-dimensional turbulent flow computations with a parallel Newton-Krylov-Schur algorithm** M. Osusky, D. Zingg, University of Toronto, Toronto, Canada	1700 hrs AIAA-2014-0243 **Stanford University Unstructured (SU2): Analysis and Design Technology for Turbulent Flows** F. Palacios, Stanford University, Stanford, CA; K. Duraisamy, University of Michigan, Ann Arbor, Ann Arbor, MI; A. Aranake, S. Copeland, T. Economon, A. Lonkar, Stanford University, Stanford, CA; et al.		

Monday, 13 January 2014							
64-FD-12	Turbulence I: Jets and Wakes						Chesapeake Conf Rm 8
Chaired by: M. PLESNIAK, George Washington University and P. SHEA, Syracuse University							
1430 hrs AIAA-2014-0244 **Dynamics of Conserved Scalar Mixing and Transport in Gas-Phase Turbulent Jets** M. Papageorge, F. Fuest, J. Sutton, Ohio State University, Columbus, OH	1500 hrs AIAA-2014-0245 **Low-Dimensional Modeling of a Mach 0.6 Axisymmetric Jet** P. Shea, Z. Berger, M. Berry, M. Glauser, Syracuse University, Syracuse, NY; S. Gogineni, Spectral Energies, LLC, Dayton, OH	1530 hrs AIAA-2014-0246 **Numerical Simulations of a Particle-Laden Rectangular Supersonic Jet Impinging on a Solid Wall** K. Akhtar, S. Ragab, Virginia Polytechnic Institute and State University, Blacksburg, VA	1600 hrs AIAA-2014-0247 **Wing Performance Insight from the Self-Preserved Turbulent Wake** S. Gunasekaran, A. Altman, University of Dayton, Dayton, OH	1630 hrs AIAA-2014-0248 **Flow Phenomena in the Very Near Wake of a Flat Plate with a Circular Trailing Edge** M. Rai, NASA Ames Research Center, Moffett Field, CA	1700 hrs AIAA-2014-0249 **Unsteady Numerical Simulations of HTV-R Reentry Capsule by Using Detached-Eddy Simulation** K. Takii, M. Kanazaki, Tokyo Metropolitan University, Tokyo, Japan; K. Ishiko, A. Hashimoto, T. Aoyama, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan		

Monday, 13 January 2014							
65-FD-13	Wing Aerodynamics						Maryland Ballroom 2
Chaired by: C. KIRIS and D. KESSLER, Naval Research Laboratory							
1430 hrs AIAA-2014-0250 **Transitional Flow over a SD7003 Wing Using Flux Reconstruction Scheme** V. Skarolek, K. Miyaji, Yokohama National University, Yokohama, Japan	1500 hrs AIAA-2014-0251 **Inclusion of Aeroelastic Twist into the CFD Analysis of the Twin-Engine NASA Common Research Model** K. Benedict, L. Hedges, A. Robinson, Stark-AMI, Redmond, WA; P. Peddiraju, A. Papadopoulos, BETA CAE Systems, Farmington Hills, MI; V. Skaperdas, BETA CAE Systems, Thessaloniki, Greece; et al.	1530 hrs AIAA-2014-0252 **Characterization of the flow field over a NACA 0015 airfoil using Stochastic estimation based surface pressure and hot film measurements** E. Caraballo, T. Sullivan, R. You, Miami University, Oxford, OH; J. Little, University of Arizona, Tucson, Tucson, AZ	1600 hrs AIAA-2014-0253 **Linear Stability Analysis of Laminar Separation Bubble over NACA0012 airfoil at Low Reynolds Numbers** E. Jeyapandian, Infotech Enterprises, Ltd., Bangalore, India; R. Mukherjee, Indian Institute of Technology Madras, Chennai, India	1630 hrs AIAA-2014-0254 **Modeling low-Reynolds-number flow over rough airfoils** D. Kessler, A. Corrigan, S. Qidwai, J. Thomas, Naval Research Laboratory, Washington, DC	1700 hrs AIAA-2014-0255 **Curvature Effects of a Cycloidally Rotating Airfoil** C. Fagley, C. Porter, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO		

Monday, 13 January 2014							
66-GEPC-1	**Progress in NASA's Environmentally Responsible Aviation Project**						**Woodrow Wilson A**
Chaired by: F. COLLIER, NASA-Langley Research Center							
1430 hrs Oral Presentation (Invited) **Status of the Environmentally Responsible Aviation Project** F. Collier, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2014-0256 **Hybrid Wing Body Shielding Studies using an Ultrasonic Configurable Fan Artificial Noise Source Generating Typical Turbofan Modes** D. Sutliff, C. Brown, NASA Glenn Research Center, Cleveland, OH; B. Walker, Channel Islands Acoustics, Camarillo, CA	1530 hrs AIAA-2014-0257 **Noise and Fuel Burn Reduction Potential of an Innovative Subsonic Transport Configuration** Y. Guo, The Boeing Company, Huntington Beach, CA; C. Nickol, C. Burley, R. Thomas, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2014-0258 **System Noise Assessment and the Potential for Low Noise Hybrid Wing Body Aircraft with Open Rotor Propulsion** R. Thomas, C. Burley, L. Lopes, C. Bahr, F. Gern, NASA Langley Research Center, Hampton, VA; D. Van Zante, NASA Glenn Research Center, Cleveland, OH	1630 hrs Oral Presentation (Invited) **An Overview of Flap and Landing Gear Noise Reduction** M. Khorrami, NASA Langley Research Center, Hampton, VA	1700 hrs AIAA-2014-0259 **PRSEUS Structural Concept Development** A. Velicki, The Boeing Company, Huntington Beach, CA; D. Jegley, NASA Langley Research Center, Hampton, VA		

Monday, 13 January 2014							
67-GNC-3	**Mini/Micro Air Vehicles I**						**National Harbor Conf Rm 7**
Chaired by: J. LANGELAAN, Pennsylvania State University and E. FREW, University of Colorado Boulder							
1430 hrs AIAA-2014-0260 **Improving Autonomous Soaring via Energy State Estimation and Extremum Seeking Control** S. Daugherty, J. Langelaan, Pennsylvania State University, University Park, PA	1500 hrs AIAA-2014-0261 **Optimal Persistent Surveillance using Coordinated Soaring** D. Makovkin, J. Langelaan, Pennsylvania State University, University Park, PA	1530 hrs AIAA-2014-0262 **Efficient Trajectory Development for UAS Dynamic Soaring Applications** W. Shaw-Cortez, E. Frew, University of Colorado, Boulder, Boulder, CO	1600 hrs AIAA-2014-0263 **Closing the Loop in Dynamic Soaring** J. Bird, J. Langelaan, Pennsylvania State University, University Park, PA; C. Montella, J. Spletzer, J. Grenestedt, Lehigh University, Bethlehem, PA	1630 hrs AIAA-2014-0264 **Indoor Simulation Platform for Forest Fire Detection and Surveillance** H. Zhu, H. Liu, University of Toronto, Toronto, Canada			

Monday, 13 January 2014							
68-GNC-4	**Onboard Systems Technologies for LOC Prevention & Recovery - Improved Situational Awareness, Guidance, and Control, Session (Invited) I**						**National Harbor Conf Rm 12**
Chaired by: D. CRIDER, National Transportation Safety Board and E. XARGAY							
1430 hrs AIAA-2014-0265 **Initial Evaluations of Loss-of-Control (LOC) Prediction Algorithms using the NASA Ames Vertical Motion Simulator** K. Krishnakumar, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2014-0266 **An Adaptive Unknown Input Observer for Fault Detection and Isolation of Aircraft Actuator Faults** H. Lee, S. Snyder, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL	1530 hrs AIAA-2014-0267 **Estimation of Airspeed Using Continuous Polynomial Adaptive Estimator** H. Felemban, J. Che, C. Cao, University of Connecticut, Storrs, Storrs, CT; N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL; I. Gregory, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2014-0268 **An Adaptive Nonlinear Aircraft Maneuvering Envelope Estimation Approach for Online Applications** S. Schuet, NASA Ames Research Center, Moffett Field, CA; T. Lombaerts, German Aerospace Center (DLR), Wessling, Germany; D. Acosta, K. Wheeler, J. Kaneshige, NASA Ames Research Center, Moffett Field, CA	1630 hrs AIAA-2014-0269 **Flight Envelope Protection for NASA's Transport Class Model** N. Tekles, F. Holzapfel, Technical University of Munich, Garching, Germany; E. Xargay, R. Choe, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL; I. Gregory, NASA Langley Research Center, Hampton, VA	1700 hrs AIAA-2014-0270 **Detection of the Impact of Ice Crystal Accretion in an Aircraft Engine Compression System During Dynamic Operation** R. May, Vantage Partners, LLC, Cleveland, OH; T. Guo, D. Simon, NASA Glenn Research Center, Cleveland, OH		

Monday, 13 January 2014							
69-GNC-5	**Space Exploration and Transportation**						**National Harbor Conf Rm 6**
Chaired by: J. REED, United Launch Alliance							
1430 hrs AIAA-2014-0271 **LPV techniques for the control of an airborne micro-launcher** J. Bordeneuve-Guibé, D. Alazard, University of Toulouse, Toulouse, France; J. Desmariaux, French Space Agency (CNES), Evry, France	1500 hrs AIAA-2014-0272 **Stereo Vision Algorithm for Hazard Detection during Planetary Landings** S. Woicke, E. Mooij, Delft University of Technology, Delft, The Netherlands	1530 hrs AIAA-2014-0273 **Development of an Eddy-Current Actuator Test Bed** B. Reinhardt, M. Peck, B. Hencey, Cornell University, Ithaca, NY	1600 hrs AIAA-2014-0274 **Stationkeeping Strategy and Possible Lunar Halo Orbits for Long-Term Space Station** Y. Ulybyshev, RSC Energia, Korolev, Russia				

Monday, 13 January 2014							
70-GT-2	**NASA's ATP National Force Measurement Project Update (Invited)**						**Maryland Ballroom B**
Chaired by: R. RHEW, NASA-Langley Research Center and K. LYNN, NASA Langley Research Center							
1430 hrs Oral Presentation (Invited) **Partnership for the Revitalization of National Wind Tunnel Force Measurement Capability (Revisited)** K. Lynn, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2014-0275 **High-Reynolds Number Active Blowing Semi-Span Force Measurement System Development (Revisited)** K. Lynn, NASA Langley Research Center, Hampton, VA	1530 hrs Oral Presentation (Invited) **AFRL/AEDC on un-start Loads at High Incidence Angles** R. Guyton, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2014-0276 **Experimental Design Considerations for Calibration of Semi Span Force Measurement Systems** S. Commo, NASA Langley Research Center, Hampton, VA	1630 hrs AIAA-2014-0277 **Strain Gage Load Calibration of the Wing Interface Fittings for the Adaptive Compliant Trailing Edge Flap Flight Test** E. Miller, A. Holguin, J. Cruz, W. Lokos, NASA Dryden Flight Research Center, Edwards, CA	1700 hrs AIAA-2014-0278 **Rotating Balances used for Fluid Pump Testing** S. Skelley, NASA Marshall Space Flight Center, Huntsville, AL		

Monday, 13 January 2014							
71-GT-3	**Rapid Prototyping Applications in Ground Testing**						**National Harbor Conf Rm 10**
Chaired by: T. WAYMAN, Gulfstream Aerospace Corporation							
1430 hrs Oral Presentation (Invited) **Rapid Prototyping Methods for Wind Tunnel Testing at Lockheed Martin** W. Baker, Lockheed Martin Corporation, Fort Worth, TX	1500 hrs Oral Presentation (Invited) **Rapid Prototype Use in Wind Tunnel Models - The Boeing Company** D. Belter, The Boeing Company, Seattle, WA	1530 hrs Oral Presentation (Invited) **Rapid Prototyping Methods for Wind Tunnel Testing at NASA Langley** C. Laws, NASA Langley Research Center, Hampton, VA	1600 hrs Panel Discussion				

Monday, 13 January 2014							
72-GTE-2	**Film Cooling**						**Woodrow Wilson D**
Chaired by: D. BLUNCK, Air Force Reseach Laboratory and G. PANIAGUA, von Karman Institute							
1430 hrs AIAA-2014-0279 **Predicting Film Cooling Performance of Trailing-Edge Cutback Turbine Blades by Detached-eddy Simulation** M. Effendy, Kingston University, London, United Kingdom; Y. Yao, University of the West of England, Bristol, United Kingdom; J. Yao, University of Lincoln, Lincoln, United Kingdom; D. Marchant, Kingston University, London, United Kingdom	1500 hrs AIAA-2014-0280 **An Experimental Study of Momentum-Preserving Shaped Holes for Film Cooling Using PSP and PIV** W. Zhou, B. Johnson, H. Hu, Iowa State University, Ames, IA						

Monday, 13 January 2014							
73-HIS-2	**History Session: Pioneering Contributions to Aeronautics**						**National Harbor Conf Rm 15**
Chaired by: C. MARTIN, NASA-Dryden Flight Research Center							
1430 hrs Oral Presentation (Invited) **Aeronautics - NASA's First 'A' & STOL Research 1960s - 1970s** R. Ferguson, Historian of Technology & Ramsey Fellow	1500 hrs AIAA-2014-0281 **The Public Domain, The National Interest and The Fate of the NASA Technical Reports Server** T. Takahashi, Arizona State University, Tempe, AZ	1530 hrs AIAA-2014-0282 **Father Bartholomeu Lourenço de Gusmão: a Charlatan or the First Practical Pioneer of Aeronautics in History** J. Melo De Sousa, Technical University of Lisbon, Lisbon, Portugal	1600 hrs AIAA-2014-0283 **The Navy's Aerodynamics Laboratory - 100 years of Experimental Aerodynamics from A-1 to DDG-1000** D. Haas, E. Silberg, K. Kimmel, Naval Surface Warfare Center, West Bethesda, MD				

Monday, 13 January 2014							
74-HSABP-1	**Pressure Gain Combustion I**						**Chesapeake Conf Rm 7**
Chaired by: T. O'BRIEN, Aerojet Rocketdyne and V. TANGIRALA, General Electric							
1430 hrs AIAA-2014-0284 **Numerical Analysis of a Rotating Detonation Engine in the Relative Reference Frame** D. Paxson, NASA Glenn Research Center, Cleveland, OH	1500 hrs AIAA-2014-0285 **Comparative Numerical Study of RDE Injection Designs** W. Stoddard, E. Gutmark, University of Cincinnati, Cincinnati, OH	1530 hrs AIAA-2014-0286 **Cavity Ignition in Supersonic Flow by Pulse Detonation** T. Ombrello, C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH; C. Tam, Taitech, Inc., Dayton, OH; K. Hsu, Innovative Scientific Solutions, Inc., Dayton, OH	1600 hrs AIAA-2014-0287 **Rotating Detonation Engine Interaction with an Annular Ejector** A. Naples, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2014-0288 **Rapid Mixing of a Wall Injectant in a Mach 2 Cross Flow Using a Pulse Detonator** W. Haw, P. King, Air Force Institute of Technology, Wright-Patterson AFB, OH; T. Ombrello, C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH			

Monday, 13 January 2014							
75-ISC-4	**International Student Conference - Community Outreach Division**						**Potomac Ballroom 3**
Chaired by: C. BLOMBERG							
1430 hrs Oral Presentation (Invited) **Atmospheric Teaching Experiment at Virginia Tech Outreach** K. Mosier, J. Jenkins, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs Oral Presentation (Invited) **MSU Space Cowboy's Community Outreach 2012-2013** A. Sanford, D. Brown, Mississippi State University, Mississippi State, MS	1530 hrs Oral Presentation (Invited) **University of Illinois at Chicago Student Branch Community Outreach 2012-2013** O. Wingfield, University of Illinois, Chicago, Chicago, IL	1600 hrs Oral Presentation (Invited) **Texas A&M Sigma Gamma Tau Community Outreach** S. De Hoog, M. Pierce, A. Probe, Texas A&M University, College Station, TX	1630 hrs Oral Presentation (Invited) **Miners in Space Microgravity Research Outreach** E. Nickel, Missouri University of Science and Technology, St. Louis, MO	1700 hrs Oral Presentation (Invited) **ASU/NASA Space Grant Outreach Program** R. Gomez, D. Ixtabalan, Arizona State University, Tempe, AZ		

Monday, 13 January 2014		
76-LECT-2 **1430 - 1530 hrs**	**MDO Special Session: MDAO - A Chief Engineer's Perspective on this Key Development Capability**	**Maryland Ballroom C**
William Carrier Vice President of Engineering Boeing		

Monday, 13 January 2014							
77-MDO-2	**Aerodynamic and Aircraft Optimization**						**Chesapeake Conf Rm 4**
Chaired by: S. RALLABHANDI, National Institute of Aerospace and J. HICKEN, Rensselaer Polytechnic Institute							
1430 hrs No Presentations		1530 hrs AIAA-2014-0289 **Multi-objective Airfoil Design Using Variable-Fidelity CFD Simulations and Response Surface Surrogates** S. Koziel, L. Leifsson, Reykjavik University, Reykjavik, Iceland	1600 hrs AIAA-2014-0290 **Multi-point Adjoint-Based Design of Tilt-Rotors in a Noninertial Reference Frame** W. Jones, E. Nielsen, E. Lee-Rausch, NASA Langley Research Center, Hampton, VA; C. Acree, NASA Ames Research Center, Moffett Field, CA	1630 hrs AIAA-2014-0291 **Aerodynamic Optimization of High-Wing Configuration for Near Future Aircraft** A. Hashimoto, S. Obayashi, Tohoku University, Sendai, Japan; S. Jeong, Kyunghee University, Yongin, South Korea			

Monday, 13 January 2014							
78-MVC-2	**Integrated Computational Environments**						**Chesapeake Conf Rm 9**
Chaired by: N. TAYLOR, MBDA UK Limited and C. BRUNER, Sandia National Laboratories							
1430 hrs AIAA-2014-0292 **Compression of Finite-Element Node Maps with Sub-Zone Load-On-Demand** S. Imlay, C. Mackey, Tecplot, Inc., Bellevue, WA	1500 hrs AIAA-2014-0293 **FD-CADRE 2.0: A Flexible, MPI-based Framework for Moving Body and Multi-Disciplinary Simulations** G. Power, C. Robinson, Aerospace Testing Alliance, Arnold AFB, TN	1530 hrs AIAA-2014-0294 **Conservative Fitting for Multi-Disciplinary Analysis** J. Dannenhoffer, Syracuse University, Syracuse, NY; R. Haimes, Massachusetts Institute of Technology, Cambridge, MA	1600 hrs AIAA-2014-0295 **Developing an Integrated Computational Environment for the Detailed Design of a Mixing Impeller** B. Sloan, K. Bryden, S. Suram, Ames Laboratory, Ames, IA	1630 hrs AIAA-2014-0296 **Evolutionary Optimization of Multiscale Systems within an Integrated Computational Design Environment** Z. Reinhart, K. Bryden, Ames Laboratory, Ames, IA	1700 hrs AIAA-2014-0297 **A Purposed Model Coupling Framework for the Rapid Assembly of Complex System Simulations within an Integrated Computational Environment** G. McNunn, K. Bryden, Ames Laboratory, Ames, IA		

Monday, 13 January 2014							
79-NDA-2	**Uncertainty Quantification Methods**						**Chesapeake Conf Rm 5**
Chaired by: S. MAHADEVAN, Vanderbilt University and S. VENKATARAMAN, San Diego State University							
1430 hrs No Presentations		1530 hrs AIAA-2014-0298 **A Mixed Uncertainty Quantification Approach with Evidence Theory and Stochastic Expansions** H. Shah, S. Hosder, Missouri University of Science and Technology, Rolla, MO; T. Winter, M4 Engineering, Inc., Long Beach, CA	1600 hrs AIAA-2014-0299 **Uncertainty Propagation with Monotonicity Preserving Robustness** J. Witteveen, Center for Mathematics and Computer Science (CWI), Amsterdam, The Netherlands; G. Iaccarino, Stanford University, Palo Alto, CA	1630 hrs AIAA-2014-0300 **Quantification of Margins and Mixed Uncertainties Using Evidence Theory and Stochastic Expansions** H. Shah, S. Hosder, Missouri University of Science and Technology, Rolla, MO; T. Winter, M4 Engineering, Inc., Long Beach, CA			

Monday, 13 January 2014							
80-OPS-1	**Space Operations & Support**						**National Harbor Conf Rm 8**
Chaired by: L. BRYANT, Jet Propulsion Laboratory							
1430 hrs AIAA-2014-0301 **Debris Removal to Reduce Risk** D. Finkleman, International Association for the Advancement of Space Safety, Noordwijk, The Netherlands	1500 hrs AIAA-2014-0302 **Soft Factors and Space Mission Failures: Quantifying the Effects of Management Decisions** L. Bryant, L. Meshkat, B. Waggoner, R. Thomas, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1530 hrs AIAA-2014-0303 **Interplanetary Nuclear Thermal Propulsion Shuttle** G. Falcone, S. Olcmen, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1600 hrs AIAA-2014-0304 **Range Safety Assessment Tool (RSAT): An analysis environment for safety assessment of launch and reentry vehicles** F. Capristan, J. Alonso, Stanford University, Stanford, CA	1630 hrs AIAA-2014-0305 **Earth-to-Moon Low-Energy Transfers by Using Spatial Transit Orbits** Y. Ren, J. Shan, York University, Toronto, Canada			

Monday, 13 January 2014		
81-PANEL-2 **1430 - 1630 hrs**	**Aeronautics R&D Policy and the Strategic Direction of NASA's Aeronautics Research Panel**	**Potomac Ballroom C**

Moderator: Robert Pearce, Director – Strategy, Architecture & Analysis, NASA Aeronautics Research Mission Directorate

Panelists:

Marion Blakey
President and Chief Executive Officer
Aerospace Industries Association

Alan Epstein
Vice-President, Technology and Environment
Pratt & Whitney

Les Lyles
Consultant
The Lyles Group

Jaiwon Shin
Associate Administrator for Aeronautics Research Mission Directorate
NASA Headquarters

Monday, 13 January 2014							
82-PC-4	**Jet Fuel Surrogate Models and Kinetics (Invited)**						**Chesapeake Conf Rm I**
Chaired by: C. LI, Air Force Office of Scientific Research and Y. JU, Princeton University							
1430 hrs Oral Presentation (Invited) **Challenges and Uncertainties in Use of Surrogate Fuels for Emulating Combustor Performance** M. Colket, United Technologies Corporation, New Haven, CT	1500 hrs Oral Presentation (Invited) **Jet Fuel Combustion Kinetics - From Detailed Modeling to Lumping** H. Wang, Stanford University, Stanford, CA	1530 hrs Oral Presentation (Invited) **Developing a detailed chemical kinetic mechanism for large jet-fuels: A focus on propene chemistry** H. Curran, National University of Ireland, Galway, Ireland	1600 hrs AIAA-2014-0306 **Recent advances in chemical kinetics of jet fuels** C. Westbrook, Lawrence Livermore National Laboratory, Livermore, CA	1630 hrs Oral Presentation (Invited) **Development of Detailed and Reduced Kinetic Models for Real Jet Fuels: Challenges and Opportunities** S. Won, Princeton University, Princeton, NJ; S. Dooley, University of Limerick, Limerick, Ireland; T. Farouk, University of South Carolina, Columbia, Columbia, SC; F. Dryer, Y. Ju, Princeton University, Princeton, NJ	1700 hrs Oral Presentation (Invited) **Uncertainty in A Priori Kinetics Predictions** S. Klippenstein, Argonne National Laboratory, Argonne, IL		

Monday, 13 January 2014							
83-PC-5	**Rockets and Airbreathing Propulsion II**						**Chesapeake Conf Rm G**
Chaired by: Z. JIANG and J. OEFELEIN, Sandia National Laboratories							
1430 hrs AIAA-2014-0307 **Numerical study on mixing characteristics of coaxial cryogenic N2/H2 injection under supercritical pressure** H. Terashima, M. Koshi, University of Tokyo, Tokyo, Japan	1500 hrs AIAA-2014-0308 **Large Eddy Simulation of CH_4/O_2 Combustion of a Swirl-Coaxial Injector** S. Matsuyama, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1530 hrs AIAA-2014-0309 **Research on the Combustion of Bio-Derived Fuels in Hybrid Propellant Rocket Engine** V. Naoumov, N. Knochenhauer, P. Sansevero, G. Adam, C. Freeto, T. Kimiecik, Central Connecticut State University, New Britain, CT; et al.	1600 hrs AIAA-2014-0310 **Numerical Simulations of Combustive Flows in a Swirling-Oxidizer-Flow-Type Hybrid Rocket** M. Motoe, University of Tokyo, Bunkyo, Japan; T. Shimada, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1630 hrs AIAA-2014-0311 **Large-Eddy Simulation of a Supersonic Burner** G. Ribert, L. Bouheraoua, P. Domingo, National Center for Scientific Research (CNRS), St-Étienne-du-Rouvray, France	1700 hrs AIAA-2014-0312 **On the Stochastic Modeling of Subcritical Primary Atomization in Liquid Rocket Engines** M. Kumar, Y. Sun, S. Thakur, University of Florida, Gainesville, Gainesville, FL		

Monday, 13 January 2014							
84-PC-6	**Turbulent Flames I**						**Chesapeake Conf Rm H**
Chaired by: M. IHME and L. SMITH, United Technologies Research Center							
1430 hrs AIAA-2014-0313 **Detailed Characterization of Low Temperature Chemistry and Turbulence Interaction in Reactor-Assisted Turbulent Premixed Flames** B. Windom, S. Won, B. Jiang, Y. Ju, Princeton University, Princeton, NJ	1500 hrs AIAA-2014-0314 **Experimental Investigation of Premixed Turbulent Combustion in High Reynolds Number Regimes using PLIF** J. Temme, A. Skiba, T. Wabel, J. Driscoll, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2014-0315 **OH PLIF Laser Diagnostics of Turbulent, Compressible, Premixed, Freely Propagating Flame Kernels** N. Grady, R. Pitz, Vanderbilt University, Nashville, TN; S. Menon, B. Ochs, T. Slais, J. Berlette, Georgia Institute of Technology, Atlanta, GA; et al.	1600 hrs AIAA-2014-0316 **Investigation of Turbulent Lifted Planar Jet Flames Using Highspeed Laser Imaging Diagnostics** I. Boxx, German Aerospace Center (DLR), Stuttgart, Germany; C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH; W. Meier, German Aerospace Center (DLR), Stuttgart, Germany	1630 hrs AIAA-2014-0317 **Multi-Point and Multi-Time Statistics of Temperature within Turbulent Non-Premixed Jet Flames Using High-Speed Planar Rayleigh Scattering** T. McManus, M. Papageorge, F. Fuest, J. Sutton, Ohio State University, Columbus, OH	1700 hrs AIAA-2014-0318 **Experimental Investigation on Flow Characteristics of the Flash Swirl Spray** H. Kim, W. Yoon, Yonsei University, Seoul, South Korea		

Monday, 13 January 2014							
85-PDL-3	**AeroOptics**						**Azalea 3**
Chaired by: M. VISBAL, USAF AFRL/RBAC							
1430 hrs AIAA-2014-0319 **Estimation of Aero-Optical Wavefronts Using Optical and Non-Optical Measurements** R. Burns, S. Gordeyev, E. Jumper, University of Notre Dame, Notre Dame, IN; S. Gogineni, Spectral Energies, LLC, Dayton, OH; M. Paul, D. Wittich, Air Force Research Laboratory, Kirtland AFB, NM	1500 hrs AIAA-2014-0320 **Numerical Simulation of aero-optical aberrations in shock/boundary layer interactions (SBLIs)** M. White, Ohio Aerospace Institute, Dayton, OH; M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2014-0321 **Aero-Optical Mitigation of Turbulent Boundary Layers Using Large-Eddy Break-Up Devices** A. Smith, S. Gordeyev, University of Notre Dame, Notre Dame, IN	1600 hrs AIAA-2014-0322 **Effect of Surface Unsteady Pressure Field on Global Beam Jitter for a Hemisphere-on-Cylinder Turret** N. De Lucca, S. Gordeyev, E. Jumper, University of Notre Dame, Notre Dame, IN	1630 hrs AIAA-2014-0323 **LES Analysis of Hemisphere-on-Cylinder Turret Aero-Optics** E. Mathews, K. Wang, M. Wang, E. Jumper, University of Notre Dame, Notre Dame, IN			

Monday, 13 January 2014							
86-PDL-4	**Plasma-Actuators and Flow Control II**						**Maryland Ballroom 1**
Chaired by: S. ROY, University of Florida							
1430 hrs AIAA-2014-0324 **Modeling surface plasma actuator for flow control** J. Shang, G. Huang, Wright State University, Dayton, OH	1500 hrs AIAA-2014-0325 **NS-DBD plasma actuation on a backward facing step** G. Correale, T. Michelis, M. Kotsonis, Delft University of Technology, Delft, The Netherlands	1530 hrs AIAA-2014-0326 **Evaluating Force Field induced by a Plasma Actuator using the Reynolds-Averaged Navier Stokes Equation** S. Grundmann, K. Barckmann, I. Maden, Technical University of Darmstadt, Darmstadt, Germany; J. Kriegseis, Karlsruhe Institute of Technology, Karlsruhe, Germany	1600 hrs AIAA-2014-0327 **Comparison of Velocities Driven by Repetitive Nanosecond Pulses vs AC Result** J. Li, J. Wang, X. Meng, Northwestern Polytechnical University, Xi'an, China; F. Liu, S. Luo, University of California, Irvine, Irvine, CA	1630 hrs AIAA-2014-0328 **Thrust produced by corona discharge - Application to electrohydrodynamic propulsion** E. Moreau, N. Benard, University of Poitiers, Futuroscope, France; J. Lan Sun Luk, J. Chabriat, University of La Réunion, Saint Denis, France	1700 hrs AIAA-2014-0329 **Dielectric Barrier Discharge Development and Thrust Generation at Low and High Pressure Conditions** S. Gordon, M. Post, A. Starikovskiy, R. Miles, Princeton University, Princeton, NJ		

Monday, 13 January 2014							
87-SD-3	**Aircraft Dynamics and Vibration**						**Chesapeake Conf Rm B**
Chaired by: W. SCHNEIDER, Lockheed Martin Aeronautics and E. MCDONALD, Dynamic Concepts, Inc.							
1430 hrs No Presentations		1530 hrs AIAA-2014-0330 **In-Flight Wing Deformation Measurement System for Small Unmanned Aerial Vehicles** Z. Pang, C. Cesnik, E. Atkins, University of Michigan, Ann Arbor, Ann Arbor, MI	1600 hrs AIAA-2014-0331 **Deformation Tracking of a Flexible Fence** J. Seidel, G. Womack, U.S. Air Force Academy, Colorado Springs, CO	1630 hrs AIAA-2014-0333 **Validation of an UAV F.E. Model Using Operational Data** G. Coppotelli, M. Arras, C. Grappasonni, University of Rome "La Sapienza", Rome, Italy; P. Marzocca, D. Valyou, J. Miller, Clarkson University, Potsdam, NY			

Monday, 13 January 2014							
88-SD-4	**Computational Aeroelasticity I**						**Chesapeake Conf Rm C**
Chaired by: B. GLAZ, U. S. Army Research Laboratory (APG) and D. PITT, Boeing Engineering Operations & Technology							
1430 hrs No Presentations		1530 hrs AIAA-2014-0334 **Aeroelastic Response of Bird-Damaged Fan Blades Using a Coupled CFD/CSD Framework** E. Muir, P. Friedmann, University of Michigan, Ann Arbor, Ann Arbor, MI	1600 hrs AIAA-2014-0335 **Nonlinear Aeroelastic Analysis of a Truss Based Wing Aircraft** J. Coggin, R. Kapania, J. Schetz, H. Vijayakumari, Virginia Polytechnic Institute and State University, Blacksburg, VA; W. Zhao, University of Surrey, Guilford, United Kingdom	1630 hrs AIAA-2014-0336 **Higher-Order Transonic Flutter Solutions** M. Bhatia, P. Beran, Air Force Research Laboratory, Wright-Patterson AFB, OH	1700 hrs AIAA-2014-0337 **Efficient Time-Marching of Fluid-Thermal-Structural Interactions** B. Miller, J. McNamara, Ohio State University, Columbus, OH		

Monday, 13 January 2014							
89-SRE-1	In-Situ Resources: Identification and Manipulation						National Harbor Conf Rm 14
Chaired by: D. LINNE, NASA Glenn Research Center and S. SCHMIDT, Northern Centre for Advanced Technology Inc							
1430 hrs AIAA-2014-0338 **Prospecting for Native Metals in Lunar Polar Craters** D. Boucher, NORCAT, Sudbury, Canada; W. Platts, Groundhog Geoscience, Pinedale, WY	1500 hrs AIAA-2014-0339 **Wells for In-situ Extraction of Frozen Volatiles from Subsurface Lunar (or Planetary) Regolith** O. Walton, Grainflow Dynamics, Inc., Livermore, CA	1530 hrs AIAA-2014-0340 **Production of Aerospace Fuels from Non-Petroleum Raw Materials: Technical Challenges and Technology Opportunities** A. Hepp, M. Kulis, NASA Glenn Research Center, Cleveland, OH; M. Timko, Worcester Polytechnic Institute, Worcester, MA; P. Psarras, D. Ball, Cleveland State University, Cleveland, OH; H. Wong, Aerodyne Research, Inc., Billerica, MA; et al.	1600 hrs AIAA-2014-0341 **Electrostatic Particle-Size Classification of Lunar Regolith for In-Situ Resource Utilization** H. Kawamoto, Waseda University, Tokyo, Japan	1630 hrs AIAA-2014-0342 **Flexible Mechanical Conveying of Regolith Under Micro-Gravity** O. Walton, H. Vollmer, B. Vollmer, L. Figueroa, Grainflow Dynamics, Inc., Livermore, CA; A. Abdel-Hadi, Auburn University, Auburn, AL			

Monday, 13 January 2014							
90-STR-4	Aeroelastic Analysis						Chesapeake Conf Rm E
Chaired by: K. GRIFFIN, Southwest Research Institute and Z. SOTOUDEH, Rensselaer Polytechnic Institute							
1430 hrs No Presentations		1530 hrs AIAA-2014-0343 **Optimisation of Tow-Steered Composite Wing Laminates for Aeroelastic Tailoring** O. Stodieck, J. Cooper, P. Weaver, University of Bristol, Bristol, United Kingdom; P. Kealy, Airbus, Bristol, United Kingdom	1600 hrs AIAA-2014-0344 **Aeroelastic Tailoring of a Plate Wing with Functionally Graded Materials** P. Dunning, National Institute of Aerospace, Hampton, VA; B. Stanford, NASA Langley Research Center, Hampton, VA; H. Kim, University of Bath, Bath, United Kingdom; C. Jutte, Craig Technologies, Inc., Cape Canaveral, FL	1630 hrs AIAA-2014-0345 **A Nonlinear Controller for Flutter Suppression: from Simulation to Wind Tunnel Testing** A. Da Ronch, University of Southampton, Southampton, United Kingdom; N. Tantaroudas, K. Badcock, J. Mottershead, University of Liverpool, Liverpool, United Kingdom			

Monday, 13 January 2014							
91-STR-5	Special Session on Open Source Software						Chesapeake Conf Rm D
Chaired by: P. GUSTAFSON, Western Michigan University and A. NAJAFI, ANSYS, Inc.							
1430 hrs No Presentations		1530 hrs AIAA-2014-0346 **Implementation of the CUDA Cusp and CHOLMOD Solvers in CalculiX** P. Gustafson, J. Kapenga, Western Michigan University, Kalamazoo, MI	1600 hrs AIAA-2014-0347 **Where Open Source FEA Fits in the CAE Ecosystem and What to Know Before Adopting** J. Baylor, Convergent Mechanical Solutions, Seattle, WA	1630 hrs AIAA-2014-0348 **Open Source Software for Monte Carlo/DSMC Applications** E. de Doncker, J. Kapenga, Western Michigan University, Kalamazoo, MI	1700 hrs AIAA-2014-0349 **R: an opensource system for statistics and data exploration** J. Kapenga, J. McKean, Western Michigan University, Kalamazoo, MI		

Monday, 13 January 2014							
92-STR-6	Space Structures						Chesapeake Conf Rm F
Chaired by: J. DOMBER, Ball Aerospace & Technologies Corporation and J. ZIPAY, NASA-Johnson Space Center							
1430 hrs No Presentations		1530 hrs AIAA-2014-0350 **Preliminary Development of a Multifunctional Hot Structure Heat Shield** S. Walker, K. Daryabeigi, J. Samareh, S. Armand, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2014-0351 **Analysis of Reusable Integrated Thermal Protection Panel Elements with Various Insulating Core Options** F. Jiang, Z. Ye, W. Yu, Utah State University, Logan, UT; R. Kerans, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2014-0352 **Long Term Displacement Data of Woven Fabric Webbings under Constant Load for Inflatable Structures** S. Kenner, NASA Langley Research Center, Hampton, VA	1700 hrs AIAA-2014-0353 **Photogrammetry Analysis of a Hypersonic Inflatable Aerodynamic Decelerator Structural Test Article** L. Li, R. Braun, Georgia Institute of Technology, Atlanta, GA; A. Cassell, NASA Ames Research Center, Moffett Field, CA		

Monday, 13 January 2014							
93-SUR-1	Air and Space Survivability						Chesapeake Conf Rm A
Chaired by: S. POROSEVA, The University of New Mexico and J. RIMOLI, Georgia Institute of Technology							
1430 hrs No Presentations		1530 hrs AIAA-2014-0354 **An Approach for Evaluating Potential Aircraft Casualties from Combat Threats** J. Williamsen, J. Rhoads, M. Couch, Institute for Defense Analyses, Alexandria, VA	1600 hrs AIAA-2014-0355 **Analysis of Aircraft Survivability Against Fragmenting Warhead Threat** H. Konokman, Scientific and Technological Research Council of Turkey (TÜBITAK), Ankara, Turkey; A. Kayran, Middle East Technical University, Ankara, Turkey; M. Kaya, University of Turkish Aeronautical Association, Ankara, Turkey	1630 hrs AIAA-2014-0356 **Application of the "Selfish" Algorithm for the Survivability Analysis of Systems with Multiple Loads** S. Poroseva, J. Lowe, B. Kaiser, University of New Mexico, Albuquerque, Albuquerque, NM			

Monday, 13 January 2014							
94-WE-3	Blade and Turbine Design I						National Harbor Conf Rm 2
Chaired by: F. GRASSO and D. GRIFFITH							
1430 hrs AIAA-2014-0357 **Definition of the National Rotor Testbed: An Aeroelastically Relevant Research-Scale Wind Turbine Rotor** B. Resor, D. Maniaci, Sandia National Laboratories, Albuquerque, NM	1500 hrs AIAA-2014-0358 **On Calibration of Simpler Alternatives to Statistical Load Extrapolation for Wind Turbine Design** H. Nguyen, L. Manuel, University of Texas, Austin, Austin, TX; M. Barone, Sandia National Laboratories, Albuquerque, NM	1530 hrs AIAA-2014-0359 **Comprehensive Aerodynamic Analysis of a 10 MW Wind Turbine Rotor Using 3D CFD** F. Zahle, C. Bak, N. Sørensen, S. Guntur, N. Troldborg, Technical University of Denmark, Roskilde, Denmark	1600 hrs AIAA-2014-0360 **Structural Efficiency Analysis of the Sandia 100 m Wind Turbine Blade** N. Buckney, A. Pirrera, P. Weaver, University of Bristol, Bristol, United Kingdom; D. Griffith, Sandia National Laboratories, Albuquerque, NM				

Monday, 13 January 2014							
95-WE-4	**Offshore Wind Energy Systems**						**Woodrow Wilson B**
Chaired by: J. JONKMAN, National Renewable Energy Laboratory and J. BAKER, Frontier Wind							
1430 hrs AIAA-2014-0361 **Effects of Second-Order Hydrodynamic Forces on Floating Offshore Wind Turbines** T. Duarte, A. Sarmento, Technical University of Lisbon, Lisbon, Portugal; J. Jonkman, National Renewable Energy Laboratory, Golden, CO	1500 hrs AIAA-2014-0362 **Development of a Maintenance Option Model to Optimize Offshore Wind Farm Sustainment** P. Sandborn, G. Haddad, A. Kashani-Pour, University of Maryland, College Park, College Park, MD	1530 hrs AIAA-2014-0363 **Wind/Wave Misalignment in the Loads Analysis of a Floating Offshore Wind Turbine** L. Bari, Pennsylvania State University, University Park, PA; J. Jonkman, A. Robertson, National Renewable Energy Laboratory, Golden, CO; G. Stewart, M. Lackner, University of Massachusetts, Amherst, Amherst, MA; L. Haid, University of Stuttgart, Stuttgart, Germany; et al.	1600 hrs AIAA-2014-0364 **Active Horizontal Vane Control for Stabilizing Platform Pitch Motion of Floating Offshore Turbines** Y. Li, University of Texas, Dallas, Richardson, TX; Z. Yang, Exa Corporation, Livonia, MI; J. Seem, Johnson Controls, Milwaukee, WI			

Monday, 13 January 2014		
96-LECT-3 **1730 - 1830 hrs**	**Dryden Lectureship: Taking the Hype Out of Hypersonics: Research Contributions to Operational High-Speed-Systems**	**Potomac Ballroom C**

Mark J. Lewis
Director
The Science and Technology Policy Institute, Institute for Defense Analyses

Tuesday

Tuesday, 14 January 2014		
97-NW-3 **0700 - 0800 hrs**	**Tuesday Morning Networking Breakfast**	**Exhibit Hall**

Tuesday, 14 January 2014		
98-SB-3 **0730 - 0800 hrs**	**Tuesday Morning Speakers' Briefing**	**Session Rooms**

Tuesday, 14 January 2014		
99-PLNRY-2 **0800 - 0930 hrs**	**Tuesday Morning Keynote and Plenary Panel**	**Potomac Ballroom A&B**

Keynote

Innovating for an Era of Affordability: The Future of the Space Industry
Rick Ambrose
Executive Vice President
Lockheed Martin Space Systems Company

Plenary Panel: AIAA's Role in Defining the Future of Aerospace

Moderator: Jim Albaugh, President, The Boeing Company (Retired); AIAA President-Elect

Panelists:

David Hills
Director of Research & Technology
Airbus Americas

Ray Johnson
Senior Vice President, Chief Technology Officer
Lockheed Martin Corporation

Michael Ryschkewitsch
Head of the Space Sector of
Johns Hopkins University, Applied Physics Laboratory

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

Tuesday, 14 January 2014		
100-LECT-4 0930 - 1230 hrs	National Space Technology Strategy Workshop & Public Listening Session	National Harbor Conf Rm 7
Chair: Dr. Mark Lewis; Director, Science and Technology Policy Institute		

Tuesday, 14 January 2014		
101-NW-4 0930 - 1000 hrs	Tuesday Morning Networking Coffee Break	Exhibit Hall

Tuesday, 14 January 2014							
102-AA-3	Community Noise and Sonic Boom						Woodrow Wilson B
Chaired by: A. PILON, Lockheed Martin Aeronautics							
1000 hrs AIAA-2014-0365 **On Noise Assessment for Blended Wing Body Aircraft** Y. Guo, The Boeing Company, Huntington Beach, CA; C. Burley, R. Thomas, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2014-0366 **Turbofan and Propeller Aircraft Taxi Operating State Noise Power Distance and Spectral Class Database Development Process for AEDT** J. Page, Wyle, Arlington, VA	1100 hrs AIAA-2014-0367 **Open Rotor Tone Shielding Methods for System Noise Assessments Using Multiple Databases** C. Bahr, R. Thomas, L. Lopes, C. Burley, NASA Langley Research Center, Hampton, VA; D. Van Zante, NASA Glenn Research Center, Cleveland, OH	1130 hrs AIAA-2014-0368 **Sonic Boom Estimation using the Multipole Method for Free-Flight Experiments** Y. Saito, T. Ukai, K. Miyakoshi, K. Ohtani, S. Obayashi, Tohoku University, Sendai, Japan	1200 hrs AIAA-2014-0369 **Effect of Low-Boom Waveform on Focus Boom Using Lossy Nonlinear Tricomi Equation Analysis** M. Kanamori, A. Hashimoto, T. Aoyama, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; M. Yamamoto, Research Center of Computational Mechanics, Inc., Shinagawa, Japan			

Tuesday, 14 January 2014							
103-ABPSI-1	Group for Aeronautical Research and Technology in EURope (GARTEUR) I						Chesapeake Conf Rm 7
Chaired by: T. BERENS, EADS Deutschland GmbH/Cassidian and A. DELOT, ONERA							
1000 hrs AIAA-2014-0370 **An Overview of the Group for Aeronautical Research and Technology in EURope (GARTEUR)** H. Consigny, O. Vasseur, ONERA, Palaiseau, France; A. Delot, ONERA, Meudon, France	1030 hrs AIAA-2014-0371 **Numerical Simulations for High Offset Intake Diffuser Flows** T. Berens, Cassidian, Manching, Germany; A. Delot, ONERA, Meudon, France; M. Chevalier, Swedish Defense Research Agency (FOI), Stockholm, Sweden; J. van Muijden, National Aerospace Laboratory (NLR), Amsterdam, The Netherlands	1100 hrs AIAA-2014-0372 **Numerical Simulations of Wind Tunnel Effects on Intake Flow of a UAV Configuration** D. Funes-Sebastian, L. Ruiz-Calavera, Airbus, Getafe, Spain	1130 hrs AIAA-2014-0373 **Experimental Investigations on the Influence of Ingesting Boundary Layers into a Diverterless S-Duct Intake** M. Rein, S. Koch, M. Ruetten, German Aerospace Center (DLR), Göttingen, Germany				

Tuesday, 14 January 2014							
104-ACD-5	Aircraft Design Education						Azalea 1
Chaired by: R. MCDONALD, California Polytechnic State University-San Luis Obispo							
1000 hrs AIAA-2014-0374 **Incorporating Stakeholder Considerations in the Aircraft Design Process: A Focus on Aircraft Design Education** A. Coso, A. Pritchett, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2014-0375 **Constrained Design and Iteration of a New Aircraft Design Course at TU Munich** S. Sartorius, Technical University of Munich, Garching, Germany	1100 hrs AIAA-2014-0376 **Attitude Determination Experiment for Aerospace Design Education** M. Anderson, University of California, San Diego, La Jolla, CA	1130 hrs Oral Presentation AIAA Undergraduate Individual Aircraft Design Competition Winner - Raphael Klein, TU Delft University of Technology	1200 hrs Oral Presentation AIAA Undergraduate Team Aircraft Design Competition Winner - California Polytechnic State University, San Luis Obispo Speaker: Trevor Goehring			

Tuesday, 14 January 2014							
105-ACD-6	Electric Systems for Aircraft Design						Azalea 2
Chaired by: C. BIL, RMIT University							
1000 hrs AIAA-2014-0377 **All Electric System Architecture for Aircraft and Propulsion** N. Morioka, IHI Corporation, Tokyo, Japan; H. Oyori, IHI Corporation, Gunma, Japan	1030 hrs AIAA-2014-0378 **Conceptual Design of a Battery-Powered High Lift System for Single-Aisle Aircraft** T. Lammering, A. Sauterleute, B. Hauber, T. Schneider, Liebherr Aerospace, Lindenberg, Germany; J. Becker, C. Schaeper, RWTH Aachen University, Aachen, Germany; et al.	1100 hrs AIAA-2014-0379 **High-voltage DC power grid system for the More Electric Architecture** H. Oyori, IHI Corporation, Tomioka, Japan; N. Morioka, IHI Corporation, Mizuho, Japan; Y. Ota, K. Onishi, Y. Shimomura, Sinfonia Technology Company, Ltd., Ise, Japan	1130 hrs AIAA-2014-0380 **Design of a Safe and Reliable Li-ion Battery System for Applications in Airborne System** J. Becker, C. Schaeper, J. Muennix, D. Sauer, RWTH Aachen University, Aachen, Germany; T. Lammering, A. Sauterleute, Liebherr Aerospace, Lindenberg, Germany; et al.	1200 hrs AIAA-2014-0381 **A System and Mission Level Analysis of Electrically Actuated Flight Control Surfaces using Pacelab SysArc** I. Chakraborty, D. Mavris, Georgia Institute of Technology, Atlanta, GA; M. Emeneth, A. Schneegans, PACE America, Inc., Seattle, WA			

Tuesday, 14 January 2014							
106-AFM-4	Flight Dynamics and Handling Qualities III						National Harbor Conf Rm 12
Chaired by: S. KOMADINA, Northrop Grumman Aerospace Systems and A. GOPALARATHNAM, North Carolina State University							
1000 hrs AIAA-2014-0382 **Fully-coupled 6 DoF Model for Unmanned Version of the SA160 General Aviation Aircraft** M. Cardinal, P. Masson, Sherbrooke University, Sherbrooke, Canada	1030 hrs AIAA-2014-0383 **Numerical analysis for an aerial deployment motion of a folded-wing airplane** K. Fujita, Tohoku University, Sendai, Japan; T. Motoda, Japan Aerospace Exploration Agency (JAXA), Mitaka, Japan; H. Nagai, Tohoku University, Sendai, Japan	1100 hrs AIAA-2014-0384 **Dynamic Ground Effect on the Longitudinal Stability of Airplanes during the Landing** P. Gonzalez, P. Boschetti, E. Cardenas, M. Celi, Simón Bolívar University, Naiguata, Venezuela, Bolivarian Republic of					

Tuesday, 14 January 2014							
107-AFM-5	Planetary Reentry I						National Harbor Conf Rm 13
Chaired by: M. GRANT, Purdue University							
1000 hrs AIAA-2014-0385 **Statistical Entry, Descent, and Landing Performance Reconstruction of the Mars Science Laboratory** S. Dutta, R. Braun, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2014-0386 **Supersonic Propulsive Divert Maneuvers for Future Robotic and Human Mars Missions** A. Mandalia, R. Braun, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2014-0387 **Potential for Integrating Entry Guidance into the Multi-Disciplinary Entry Vehicle Optimization Environment** S. D'Souza, D. Kinney, J. Garcia, NASA Ames Research Center, Moffett Field, CA; N. Sarigul-Klijn, University of California, Davis, Davis, CA	1130 hrs AIAA-2014-0388 **Statistical Entry, Descent, and Landing Flight Reconstruction with Flush Air Data System Observations using Inertial Navigation and Monte Carlo Techniques** R. Lugo, R. Tolson, North Carolina State University, Raleigh, NC; R. Blanchard, National Institute of Aerospace, Hampton, VA				

Tuesday, 14 January 2014							
108-AMT-1	Absorption and Emission Spectroscopy						Maryland Ballroom 1
Chaired by: S. ZAIDI, Agilent Technologies and Z. ZHANG, University of Tennessee							
1000 hrs AIAA-2014-0389 **Hypersonic scramjet testing via TDLAS measurements of temperature and column density in a reflected shock tunnel** I. Schultz, C. Goldenstein, C. Strand, J. Jeffries, R. Hanson, Stanford University, Stanford, CA; C. Goyne, University of Virginia, Charlottesville, Charlottesville, VA	1030 hrs AIAA-2014-0390 **Mid-infrared Absorption Sensor for Measurements of CO and CO2 in Propulsion Flows** R. Spearrin, J. Jeffries, R. Hanson, Stanford University, Stanford, CA	1100 hrs AIAA-2014-0391 **Exhaust Gas Analysis of a Rotating Detonation Engine using Tunable Diode Laser Absorption Spectroscopy** C. McGahan, B. Tom, Air Force Institute of Technology, Wright-Patterson AFB, OH; A. Caswell, Spectral Energies, LLC, Dayton, OH; J. Gord, F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH	1130 hrs AIAA-2014-0392 **Investigation of LTE Condition inside a Microwave Induced Nitrogen Plasma Torch** S. Zaidi, M. Denning, R. Urdahl, Agilent Technologies, Santa Clara, CA	1200 hrs AIAA-2014-0393 **Characterization of a High-Power Microwave Induced Plasma inside an MP Torch using Emission Spectroscopy** S. Zaidi, M. Vahidpour, J. Duimstra, G. Owen, R. Urdahl, Agilent Technologies, Santa Clara, CA			

Tuesday, 14 January 2014							
109-AMT-2	Volumetric Measurement Techniques						Maryland Ballroom 2
Chaired by: B. THUROW, Auburn University and L. MA, Virginia Tech							
1000 hrs AIAA-2014-0394 **Practical aspects of three-dimensional flame imaging using tomographic chemiluminescence** W. Cai, X. Li, Y. Cao, J. Wang, L. Ma, Virginia Polytechnic Institute and State University, Blacksburg, VA	1030 hrs AIAA-2014-0395 **Experimental methods to quantify particle positional and displacement uncertainty along the depth direction in digital in-line holography** D. Guildenbecher, P. Reu, M. Nemer, Sandia National Laboratories, Albuquerque, NM; J. Gao, J. Chen, Purdue University, West Lafayette, IN	1100 hrs AIAA-2014-0396 **Calibration of a Microlens Array for a Plenoptic Camera** C. Thomason, B. Thurow, T. Fahringer, Auburn University, Auburn, AL	1130 hrs AIAA-2014-0397 **Calibration of Fiber Bundles for Flow and Combustion Measurements** M. Kang, X. Li, L. Ma, Virginia Polytechnic Institute and State University, Blacksburg, VA	1200 hrs AIAA-2014-0398 **3D Particle Position Reconstruction Accuracy in Plenoptic PIV** T. Fahringer, B. Thurow, Auburn University, Auburn, AL			

Tuesday, 14 January 2014							
110-APA-10	Active and Passive Flow Control II						Chesapeake Conf Rm I
Chaired by: J. FARNSWORTH, US Air Force Academy and G. GATLIN							
1000 hrs AIAA-2014-0399 **Suppression of Vortex Shedding from a Circular Cylinder by using a Traveling Wave Wall** W. Chen, Y. Liu, Iowa State University, Ames, IA; F. Xu, Harbin Institute of Technology, Shenzhen, China; H. Li, Harbin Institute of Technology, Harbin, China; H. Hu, Iowa State University, Ames, IA	1030 hrs AIAA-2014-0400 **Experimental Investigation of High-Frequency-Actuation Synthetic Jet Flow Control** M. Bottomley, A. Packwood, University of Surrey, Guildford, United Kingdom	1100 hrs AIAA-2014-0401 **Influence of Geometry Variations on the Boundary Layer Control with a Passively Moving Wall** H. Koch, D. Kozulovic, Technical University of Braunschweig, Braunschweig, Germany	1130 hrs AIAA-2014-0402 **Study of shock and induced flow dynamics by pulsed nanosecond DBD plasma actuators** Z. Zhao, J. Li, J. Zheng, Y. Cui, B. Khoo, National University of Singapore, Singapore, Singapore	1200 hrs AIAA-2014-0403 **Experimental Study on Bluff Body Drag Reduction with Fluidic Oscillators** R. Woszidlo, T. Stumper, C. Nayeri, C. Paschereit, Technical University of Berlin, Berlin, Germany			

Tuesday, 14 January 2014							
111-APA-11	High Angle of Attack and High Lift Aerodynamics						Maryland Ballroom 5
Chaired by: D. LACY, Boeing Commercial Airplanes and G. ZHA							
1000 hrs AIAA-2014-0404 **NASA Trapezoidal Wing Simulation using Stress-w and One-and Two-Equation Turbulence Model** J. Rodio, North Carolina State University, Raleigh, NC; X. Xiao, Corvid Technologies, Inc., Mooresville, NC; H. Hassan, North Carolina State University, Raleigh, NC; C. Rumsey, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2014-0405 **Delaying the Onset of Stall by Blade Shape Optimization** V. Ahuja, C. Kannepalli, A. Zambon, H. Naiman, Combustion Research and Flow Technology, Inc., Pipersville, PA	1100 hrs AIAA-2014-0406 **A Detailed Aerodynamic Analysis of the Cyclorotor Using Dynamic Mesh in CFD** J. Tang, Y. Hu, B. Song, Northwestern Polytechnical University, Xi'an, China	1130 hrs AIAA-2014-0407 **Aerodynamic effects of propeller slipstream on a wing with circulation control by internally blown flaps** N. Beck, R. Radespiel, Technical University of Braunschweig, Braunschweig, Germany; C. Lenfers, German Aerospace Center (DLR), Braunschweig, Germany; J. Friedrichs, Technical University of Braunschweig, Braunschweig, Germany; A. Rezaeian, German Aerospace Center (DLR), Göttingen, Germany				

Tuesday, 14 January 2014							
112-APA-12	Propeller/Rotorcraft Aerodynamics I						Maryland Ballroom 4
Chaired by: M. CALVERT, U.S. Army AMRDEC							
1000 hrs AIAA-2014-0408 **CFD Analysis of Open Rotor Engines Using an Actuator Disk Model** B. Farrar, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1030 hrs AIAA-2014-0409 **Effective Blade Twist and Shape in Servo-Flap Rotor Performance Design** F. Wei, A. Gates, Central Connecticut State University, New Britain, CT	1100 hrs AIAA-2014-0410 **High- and Low-Fidelity Investigations of Flexible Propeller Blades** J. Sodja, R. De Breuker, Delft University of Technology, Delft, The Netherlands; D. Nozak, R. Drazumeric, University of Ljubljana, Ljubljana, Slovenia; P. Marzocca, Clarkson University, Potsdam, NY	1130 hrs AIAA-2014-0411 **A Time Domain Analysis of Compressible Dynamic Stall by Implementation of Chirp Signal Pitch Excursions** D. Coleman, K. Heintz, F. Thomas, T. Corke, University of Notre Dame, Notre Dame, IN				

Tuesday, 14 January 2014							
113-APA-13	Special Session: Aerodynamic Design Optimization: Current Trends and Future Direction I						Maryland Ballroom D
Chaired by: S. NADARAJAH and S. LEDOUX, Boeing Engineering Operations & Technology							
1000 hrs Oral Presentation (Invited) **Case Studies in Aerodynamic Design Optimization** J. Vassberg, S. Ledoux, The Boeing Company, Huntington Beach, CA; J. Coder, Pennsylvania State University, University Park, PA	1030 hrs AIAA-2014-0412 **Adjoint-Based Aerodynamic Optimization Framework** F. Bisson, S. Nadarajah, McGill University, Montréal, Canada	1100 hrs AIAA-2014-0413 **Application of Control Point-Based Aerodynamic Shape Optimization to Two-Dimensional Drag Minimization** D. Poole, C. Allen, T. Rendall, University of Bristol, Bristol, United Kingdom	1130 hrs AIAA-2014-0414 **Hybrid feedback design for subsonic and transonic airfoils and wings** M. Zhang, C. Wang, A. Rizzi, Royal Institute of Technology (KTH), Stockholm, Sweden; R. Nangia, Bristol University, Bristol, United Kingdom				

Tuesday, 14 January 2014							
114-APA-14	Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-Up Air Vehicles I						Woodrow Wilson A
Chaired by: N. HARIHARAN, CREATE-AV							
1000 hrs Oral Presentation (Invited) **Kestrel Current Capabilities and Future Direction for Fixed Wing Aircraft Simulations** S. Morton, D. McDaniel, CREATE Kestrel Team, Eglin AFB, FL	1030 hrs AIAA-2014-0415 **Multiple Bodies, Motion, and Mash-Ups: Handling Complex Use-Cases with Kestrel** D. McDaniel, University of Alabama, Birmingham, Birmingham, AL; T. Tuckey, 96 RNCS, Eglin AFB, FL	1100 hrs AIAA-2014-0416 **Validation of 3D RANS-SA Calculations on Strand/ Cartesian Meshes** A. Wissink, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA; A. Katz, Utah State University, Logan, UT; J. Sitaraman, University of Wyoming, Laramie, Laramie, WY	1130 hrs AIAA-2014-0417 **Advances in Numerical Methods for CREATE-AV Analysis Tools** N. Burgess, Science and Technology Corporation, Moffett Field, CA	1200 hrs AIAA-2014-0418 **Advanced Navy Applications Using CREATE-AV Kestrel** T. Shafer, B. Green, B. Hallissy, D. Hine, Naval Air Systems Command, Patuxent River, MD			

Tuesday, 14 January 2014							
115-APA-15	Special Session: 2nd Cranked Arrow Wing Aerodynamic Project International (CAWAPI) I						Maryland Ballroom B
Chaired by: K. ABDOL-HAMID, NASA Langley Research Center and J. PINIER, NASA-Langley Research Center							
1000 hrs AIAA-2014-0419 **Toward Improved CFD Predictions of Slender Airframe Aerodynamics Using the F-16XL Aircraft (CAWAPI-2)** J. Luckring, NASA Langley Research Center, Hampton, VA; A. Rizzi, Royal Institute of Technology (KTH), Stockholm, Sweden	1030 hrs AIAA-2014-0420 **Factors Influencing Accurate Shock Vortex Interaction Prediction on F-16XL Aircraft** M. Tomac, A. Jirasek, A. Rizzi, Royal Institute of Technology (KTH), Stockholm, Sweden	1100 hrs AIAA-2014-0421 **Aeroelastic Analysis of the CAWAPI F-16XL Configuration at Transonic Speeds** A. Jirasek, Royal Institute of Technology (KTH), Stockholm, Sweden; L. Cavagna, L. Riccobene, S. Ricci, Technical University of Milan, Milan, Italy; A. Rizzi, Royal Institute of Technology (KTH), Stockholm, Sweden	1130 hrs AIAA-2014-0422 **Improved Predictions for high Angle of Attack Flow around the F-16XL Aircraft** A. Jirasek, M. Tomac, A. Rizzi, Royal Institute of Technology (KTH), Stockholm, Sweden				

Tuesday, 14 January 2014							
116-FD-15	Higher-Order Methods I						Chesapeake Conf Rm 8
Chaired by: K. FIDKOWSKI, University of Michigan and J. POGGIE, USAF AFRL/RBAC							
1000 hrs AIAA-2014-0423 **Implicit Large-Eddy-Simulation of Compressible Flow** J. Poggie, N. Bisek, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2014-0424 **Large Eddy Simulations using High order Flux Reconstruction method on Hybrid Unstructured meshes** Y. LU, W. Dawes, University of Cambridge, Cambridge, United Kingdom	1100 hrs AIAA-2014-0425 **Detached Eddy Simulation of Flow over NACA0012 Airfoil at High Angle of Attack with Spectral Difference Method** J. Gao, X. Li, Beihang University, Beijing, China	1130 hrs AIAA-2014-0426 **Numerical Simulation of High-Speed Flows Over Complex Geometries with a High-Order Multi-Zone Cut-Cell Method** P. Greene, J. Eldredge, X. Zhong, J. Kim, University of California, Los Angeles, Los Angeles, CA				

Tuesday, 14 January 2014							
117-FD-16	**Hypersonic Boundary Layer Transition II**						**Maryland Ballroom 6**
Chaired by: T. JULIANO, US Air Force Research Laboratory and K. CASPER, Sandia National Laboratories							
1000 hrs AIAA-2014-0427 **Transition Statistics Measured on a 7-Degree Hypersonic Cone for Turbulent Spot Modeling** K. Casper, S. Beresh, J. Henfling, R. Spillers, Sandia National Laboratories, Albuquerque, NM	1030 hrs AIAA-2014-0428 **Laminar to turbulent transition on the HIFiRE-1 cone at Mach 7 and high angle of attack** S. Willems, A. Guelhan, German Aerospace Center (DLR), Cologne, Germany; T. Juliano, National Research Council, Beavercreek, OH; S. Schneider, Purdue University, West Lafayette, IN	1100 hrs AIAA-2014-0429 **HIFiRE-1 Surface Pressure Fluctuations from High Reynolds, High Angle Ground Test** T. Juliano, R. Kimmel, Air Force Research Laboratory, Wright-Patterson AFB, OH; S. Willems, A. Guelhan, German Aerospace Center (DLR), Cologne, Germany; S. Schneider, Purdue University, West Lafayette, IN	1130 hrs AIAA-2014-0430 **Linearized Navier-Stokes Simulation of the Spatial Stability of a Hypersonic Boundary Layer in a Sharp Cone with High Temperature Effects: The Caltech T5 Test Shot T2718** L. Salemi, H. Fasel, A. Gross, University of Arizona, Tucson, Tucson, AZ				

Tuesday, 14 January 2014							
118-FD-17	**Roughness-Influenced Boundary Layer Transition II**						**Chesapeake Conf Rm H**
Chaired by: H. JOHNSON, University of Minnesota and M. MALIK, NASA-Langley Research Center							
1000 hrs AIAA-2014-0431 **Boundary Layer Tripping for a Simplified Landing Gear Model** G. Feltham, P. McCarthy, A. Ekmekci, University of Toronto, Toronto, Canada	1030 hrs AIAA-2014-0432 **Roughness-Induced Transient Growth on a Hypersonic Blunt Cone** N. Sharp, E. White, Texas A&M University, College Station, TX	1100 hrs AIAA-2014-0433 **High Fidelity Computational Study of the HIFiRE-1 Boundary Layer Trip** J. Gronvall, Ohio Aerospace Institute, Dayton, OH; N. Bisek, J. Poggie, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2014-0434 **Aeroheating measurement of Apollo shaped capsule with boundary layer trip in the free-piston shock tunnel HIEST** H. Tanno, T. Komuro, K. Sato, K. Itoh, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan; R. Lillard, NASA Johnson Space Center, Houston, TX; J. Olejniczak, NASA Ames Research Center, Moffett Field, CA; et al.				

Tuesday, 14 January 2014							
119-FD-18	**Shock Boundary Layer Interactions I**						**National Harbor Conf Rm 4**
Chaired by: J. EDWARDS and R. BAURLE, NASA Langley Research Center							
1000 hrs AIAA-2014-0435 **Flow Interactions of Small Cylindrical Protuberances and the Supersonic Turbulent Boundary Layer on a Flat Plate** E. Stephen, S. Morell, R. Decker, D. Hope, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1030 hrs AIAA-2014-0436 **Conditional Analysis of the Unsteadiness in Shock Wave and Turbulent Boundary Layer Interactions** J. Li, S. Priebe, P. Martin, University of Maryland, College Park, College Park, MD	1100 hrs AIAA-2014-0437 **LES for Separated Supersonic Turbulent Boundary Layer and Shock Interaction** S. Chern, G. Lobser, M. Schoonmaker, United Launch Alliance, Denver, CO; C. Liu, University of Texas, Arlington, Arlington, TX	1130 hrs AIAA-2014-0438 **Investigation of Shock Wave - Boundary Layer Interactions in a 3.57 Aspect Ratio Tunnel** S. Warning, M. Turlin, P. Ligrani, M. McQuilling, Saint Louis University, St. Louis, MO	1200 hrs AIAA-2014-0439 **Study of transonic shock wave/boundary layer interactions subject to unsteady forcing** J. Threadgill, P. Bruce, Imperial College London, London, United Kingdom			

Tuesday, 14 January 2014							
120-FD-19	**Thermal Environment**						**Chesapeake Conf Rm G**
Chaired by: Y. LIAN, University of Louisville and C. BOURASSA, GE Aviation							
1000 hrs AIAA-2014-0440 **Computational Fluid Dynamics Uncertainty Analysis for Payload Fairing Spacecraft Environmental Control Systems** C. Groves, NASA Kennedy Space Center, Cape Canaveral, FL; M. Ilie, University of Central Florida, Orlando, FL; P. Schallhorn, NASA Kennedy Space Center, Cape Canaveral, FL	1030 hrs AIAA-2014-0441 **Computational Analysis and Characterization of Cockpit Environmental Control System of a Fighter Aircraft** J. Masud, M. Ayyaz, Air University, Islamabad, Pakistan	1100 hrs AIAA-2014-0442 **Cavitation Modeling for Cryogenic Flows Using a Rule-Based Framework** S. Thakur, J. Wright, Streamline Numerics, Inc., Gainesville, FL					

Tuesday, 14 January 2014							
121-GNC-6	**Onboard Systems Technologies for LOC Prevention & Recovery - Improved Situational Awareness, Guidance, and Control, Session (Invited) II**						**National Harbor Conf Rm 8**
Chaired by: D. CRIDER, National Transportation Safety Board and K. FEIGH, Georgia Institute of Technology							
1000 hrs AIAA-2014-0443 **Perceptual Modeling as a Tool to Prevent Aircraft Upset Associated with Spatial Disorientation** M. Newman, Environmental Tectonics Corporation, Southampton, PA; B. Lawson, Army Aeromedical Research Laboratory, Fort Rucker, AL; B. McGrath, QinetiQ, Canberra, Australia; A. Rupert, Army Aeromedical Research Laboratory, Fort Rucker, AL	1030 hrs AIAA-2014-0444 **Simulator Evaluation of an In-Cockpit Cueing System for Upset Recovery** N. Gandhi, N. Richards, A. Bateman, Barron Associates, Inc., Charlottesville, VA	1100 hrs AIAA-2014-0445 **A Materiel Solution to Aircraft Upset** A. Kelley, Self, Arlington, VA; R. Newman, Crew Systems, Seattle, WA; B. Lawson, A. Rupert, Army Aeromedical Research Laboratory, Fort Rucker, AL	1130 hrs AIAA-2014-0446 **Relaxation of Stability Requirements for Extended Kalman Filter Stability within GPS/INS Attitude Estimation** M. Rhudy, Y. Gu, M. Napolitano, West Virginia University, Morgantown, WV	1200 hrs AIAA-2014-0447 **Flight Test Evaluation of the SAFE-Cue System for Loss of Control Mitigation** D. Klyde, A. Lampton, D. Alvarez, Systems Technology, Inc., Hawthorne, CA; N. Richards, Barron Associates, Inc., Charlottesville, VA; B. Cogan, NASA Dryden Flight Research Center, Edwards, CA			

Tuesday, 14 January 2014							
122-GNC-7	**Spacecraft Navigation**						**National Harbor Conf Rm 5**
Chaired by: J. LIU, Boeing Defense, Space & Security							
1000 hrs AIAA-2014-0448 **Finite-Time Control of Satellites in Elliptic Orbits Despite Uncertainties Using Solar Radiation Pressure** L. Srinivasan, University of Nevada, Las Vegas, Las Vegas, NV; K. Lee, Kwandong University, Gangwon, South Korea; S. Singh, University of Nevada, Las Vegas, Las Vegas, NV	1030 hrs AIAA-2014-0449 **Dual-purpose Resonate Actuators for Electromagnetic Formation Flight and Wireless Power Transfer** A. Porter, D. Alinger, R. Sedwick, University of Maryland, College Park, College Park, MD; J. Merk, R. Opperman, Aurora Flight Sciences, Cambridge, MA; A. Buck, Massachusetts Institute of Technology, Cambridge, MA; et al.	1100 hrs AIAA-2014-0450 **Computing an optimized trajectory between Earth and an EML2 halo orbit** P. Kokou, B. Le Bihan, J. Receveur, S. Lizy-Destrez, University of Toulouse, Toulouse, France	1130 hrs AIAA-2014-0451 **Orbit Design and Control of Technology Validation Mission for Refractive Space Telescope in Formation Flying** S. Park, Yonsei University, Seoul, South Korea				

Tuesday, 14 January 2014							
123-GNC-8	Control of Uncertain Systems						National Harbor Conf Rm 3
Chaired by: D. ALAZARD, Institut Supérieur de l'Aéronautique et de l'Espace and N. NGUYEN, NASA-Ames Research Center							
1000 hrs AIAA-2014-0452 **Eco-Inspired Robust Control Design Algorithms For Linear Systems with Real Parameter Uncertainty** R. Yedavalli, N. Devarakonda, R. Chandavarkar, P. Sar, Ohio State University, Columbus, OH	1030 hrs AIAA-2014-0453 **L1 Adaptive Control Augmentation Configuration for a Hypersonic Glider in the Presence of Uncertainties** S. Banerjee, M. Creagh, R. Boyce, University of Queensland, Brisbane, Australia	1100 hrs AIAA-2014-0454 **Multi-Objective Optimal Control Modification Adaptive Control Method for Systems with Input and Unmatched Uncertainties** N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2014-0455 **Robust Nonlinear H∞ Output-Feedback for Spacecraft Attitude Control** A. Capua, A. Shapiro, Ben-Gurion University of the Negev, Beer Sheva, Israel; D. Choukroun, Delft University of Technology, Delft, The Netherlands				

Tuesday, 14 January 2014							
124-GTE-3	Gas Turbine Combustor I						Woodrow Wilson D
Chaired by: C. GROTH, University of Toronto							
1000 hrs AIAA-2014-0456 **Characterizing Thermal Exit Conditions for an Ultra Compact Combustor** C. Damele, M. Polanka, J. Wilson, J. Rutledge, Air Force Institute of Technology, Wright-Patterson AFB, OH	1030 hrs AIAA-2014-0457 **Characterization of Inverse Diffusion Flames in High Temperature Cross-flow** D. Richardson, Air Force Research Laboratory, Wright-Patterson AFB, OH; N. Jiang, A. Caswell, S. Roy, Spectral Energies, LLC, Dayton, OH; D. Blunck, A. Lynch, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	1100 hrs AIAA-2014-0458 **The Use of an Ultra-Compact Combustor as an Inter-Turbine Burner for Improved Engine Performance** J. Miranda, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH	1130 hrs AIAA-2014-0459 **Hydroxyl Radical Distribution under Colorless Distributed Combustion Conditions** A. Khalil Hasan, A. Gupta, University of Maryland, College Park, College Park, MD				

Tuesday, 14 January 2014							
125-MAT-2	Integrated Computational Materials Engineering I						Chesapeake Conf Rm D
Chaired by: J. MATLIK, Rolls-Royce Corporation; S. ARNOLD and M. SANGID, Purdue University							
1000 hrs AIAA-2014-0460 **Robust Informatics Infrastructure Required for ICME** S. Arnold, F. Holland, B. Bednarcyk, NASA Glenn Research Center, Cleveland, OH	1030 hrs AIAA-2014-0461 **Achieving ICME with Multiscale Modeling: The Effects of Constituent Properties and Processing on the Performance of Laminated Polymer Matrix Composite Structures** E. Pineda, B. Bednarcyk, S. Arnold, NASA Glenn Research Center, Cleveland, OH	1100 hrs AIAA-2014-0462 **Validation of Microstructure-Based Materials Modeling** M. Sangid, S. Yeratapally, A. Rovinelli, Purdue University, West Lafayette, IN	1130 hrs AIAA-2014-0463 **Application of a Risk Quantification Approach to Aerospace Manufacturing Using Bayesian Networks** G. Hahn, M. Thomas, L. Pado, S. Liguore, S. Tyahla, The Boeing Company, St. Louis, MO				

Tuesday, 14 January 2014							
126-MAT-3	**Nanostructured Materials II**						**Chesapeake Conf Rm A**
Chaired by: B. WARDLE, Massachusettes Institute of Technology; G. ODEGARD and S. ROY, The University of Alabama							
1000 hrs AIAA-2014-0464 **Influence of crosslink ratio on the thermomechanical properties of polymer nanocomposites and interphase: a molecular dynamics simulation** B. Kim, J. Choi, S. Yu, Seoul National University, Seoul, South Korea; S. Yang, Dong-A University, Busan, South Korea; M. Cho, Seoul National University, Seoul, South Korea	1030 hrs AIAA-2014-0465 **Self-sensing of Strain in Carbon Nanotube Modified Carbon Fibre Reinforced Composites** W. Liu, P. Hubert, McGill University, Montréal, Canada	1100 hrs AIAA-2014-0466 **Variation in Interlaminar Tension and Shear Strengths due to Carbon Nanotube Reinforcement in VARTM Manufactured, Polymer-Matrix, Laminated Composites** B. Martins, J. Kosmatka, University of California, San Diego, San Diego, CA	1130 hrs AIAA-2014-0467 **Predicting Thermo-Mechanical Response of Crosslinked Epoxy using ReaxFF** G. Odegard, B. Jensen, Michigan Technological University, Houghton, MI; J. Wu, J. He, Z. Zhang, Norwegian University of Science and Technology, Trondheim, Norway	1200 hrs AIAA-2014-0468 **Hybrid Carbon/Epoxy Composites with Interlocking Properties: The Graphene Nanostructure Morphology Investigation** A. Avila, C. Goncalves, G. Carley, Federal University of Minas Gerais, Belo Horizonte, Brazil			

Tuesday, 14 January 2014							
127-MDO-3	**Aeroelastic and Aero-Structures Optimization**						**Chesapeake Conf Rm 4**
Chaired by: H. KIM, University of Bath and F. ENGELSEN, The Boeing Company							
1000 hrs AIAA-2014-0469 **Aeroelastic Shape Optimization of a Flapping Wing** E. Stewart, M. Patil, R. Canfield, Virginia Polytechnic Institute and State University, Blacksburg, VA; R. Snyder, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2014-0470 **Integration of Geometric Sensitivity and Spatial Gradient Reconstruction for Aeroelastic Shape Optimization** M. Kulkarni, R. Canfield, M. Patil, Virginia Polytechnic Institute and State University, Blacksburg, VA	1100 hrs AIAA-2014-0471 **Global/Local Multidisciplinary Design Optimization of Subsonic Wing** Q. Liu, S. Mulani, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA					

Tuesday, 14 January 2014							
128-MST-1	**Applications of Modeling and Simulation**						**National Harbor Conf Rm 6**
Chaired by: J. SCHMOLL, Lockheed Martin Corporation							
1000 hrs AIAA-2014-0472 **Frequency-Domain Method for Automated Simulation Updates based on Flight Data** E. Morelli, Sunflyte Enterprises, Williamsburg, VA; J. Cooper, Barron Associates, Inc., Charlottesville, VA	1030 hrs AIAA-2014-0473 **Physics-based Multi-fidelity Surrogate Modeling with Entropy-based Availability Methods** L. Leifsson, S. Koziel, Reykjavik University, Reykjavik, Iceland; S. Hosder, Missouri University of Science and Technology, Rolla, MO; D. Riggins, Reykjavik University, Reykjavik, Iceland	1100 hrs AIAA-2014-0474 **The Sea-based Automated Launch and Recovery System Virtual Testbed** C. Wilkinson, D. Findlay, Naval Air Systems Command, Patuxent River, MD; K. Boothe, S. Dogra, Coherent Technical Services, Inc., Lexington Park, MD	1130 hrs AIAA-2014-0475 **A Framework for Integration of ns-3 with RAMS simulator** T. Bakker, S. Patibandla, R. Klenke, Virginia Commonwealth University, Richmond, VA	1200 hrs AIAA-2014-0476 **Model Complexity Reduction of a Segmented Mirror Telescope** L. Dras, A. Jennings, R. Cobb, Air Force Institute of Technology, Wright-Patterson AFB, OH			

Tuesday, 14 January 2014							
129-MVC-3	**Geometry Preparation and Grid Quality Assessment**						**Chesapeake Conf Rm 9**
Chaired by: S. ALTER, NASA-Langley Research Center and T. MICHAL, Boeing Engineering Operations & Technology							
1000 hrs AIAA-2014-0477 **An Approach Towards Integrating CFD into the Missile Concept Design Process** N. Taylor, MBDA, Bristol, United Kingdom	1030 hrs AIAA-2014-0478 **Truncation and Discretization Error for Diffusion Schemes on Unstructured Meshes** G. Yan, V. Puneria, A. Jalali, C. Ollivier Gooch, University of British Columbia, Vancouver, Canada	1100 hrs AIAA-2014-0479 **Anisotropic Norm-Oriented Mesh Adaptation for Compressible Flows** A. Dervieux, French National Institute for Research in Computer Science and Control (INRIA), Sophia-Antipolis, France; F. Alauzet, A. Loseille, French National Institute for Research in Computer Science and Control (INRIA), Paris Rocquencourt, France					

Tuesday, 14 January 2014							
130-NDA-3	**Probabilistic Methods for Diagnostics & Prognostics**						**Chesapeake Conf Rm 5**
Chaired by: Y. LIU, Clarkson University and P. WANG, Wichita Univ							
1000 hrs AIAA-2014-0480 **An Uncertainty Quantification Framework for Prognostics and Condition-Based Monitoring** S. Sankararaman, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	1030 hrs AIAA-2014-0481 **Statistical Aspects in Neural Network for the Purpose of Prognostics** D. An, N. Kim, University of Florida, Gainesville, Gainesville, FL; J. Choi, Korea Aerospace University, Goyang, South Korea	1100 hrs AIAA-2014-0482 **Probabilistic Design of Smart Sensing Functions for Failure Diagnostics and Prognostics** Z. Wang, A. Almaktoom, P. Wang, Wichita State University, Wichita, KS	1130 hrs AIAA-2014-0483 **Probabilistic Prognosis Using Dynamic Bayesian Networks** G. Bartram, S. Mahadevan, Vanderbilt University, Nashville, TN	1200 hrs AIAA-2014-0484 **A novel Bayesian Imaging Method for probabilistic delamination detection of composite materials** T. Peng, Arizona State University, Tempe, AZ; A. Saxena, K. Goebel, NASA Ames Research Center, Moffett Field, CA; Y. Xiang, Y. Liu, Arizona State University, Tempe, AZ			

Tuesday, 14 January 2014		
131-PANEL-3 **1000 - 1230 hrs**	**Space Shuttle Legacy: How We Did and What We Learned**	**Chesapeake Conf Rm 6**
Moderator: Roger D. Launius, Smithsonian Institution Speakers: **Vigor Yang**, Georgia Institute of Technology **Matthew H. Hersch**, University of Pennsylvania **Linda Billings**, George Washington University **John M. Logsdon**, George Washington University		

Tuesday, 14 January 2014							
132-PC-7	**Frontiers of Combustion Research (Invited)**						**National Harbor Conf Rm 2**
Chaired by: J. TISHKOFF							
1000 hrs Oral Presentation (Invited) **DOE Gas Phase Chemical Physics program on research inspired by ground transportation fuels** W. Sisk, U.S. Department of Energy, Washington, DC	1030 hrs Oral Presentation (Invited) **AFOSR Energy Conversion and Combustion Sciences Program Overview** C. Li, Air Force Office of Scientific Research, Washington, DC	1100 hrs Oral Presentation (Invited) **NSF Combustion, Fire, and Plasma Systems Program Overview** R. Chen, National Science Foundation, Washington, DC					

Tuesday, 14 January 2014							
133-PDL-5	Plasma-Actuators and Flow Control III						Azalea 3
Chaired by: J. ROVEY, Missouri University of Science & Technology and L. RAJA, The University of Texas at Austin							
1000 hrs AIAA-2014-0485 **Compressibility Effects on Dielectric Barrier Discharge Actuation and Boundary Layer Receptivity** M. Denison, L. Massa, E. Cisneros, University of Texas, Arlington, Arlington, TX	1030 hrs AIAA-2014-0486 **Dielectric Barrier Discharge (DBD) Plasma Actuators Thrust - Measurement Methodology Incorporating New Anti-Thrust Hypothesis** D. Ashpis, NASA Glenn Research Center, Cleveland, OH; M. Laun, Sierra Lobo, Inc., Cleveland, OH	1100 hrs AIAA-2014-0487 **Microwave Energy Deposition in Supersonic Flows on Laser-Initiated Dipole Structures** I. Mashek, V. Lashkov, R. Khoronzhuk, D. Potapenko, Saint Petersburg State University, Saint Petersburg, Russia; V. Brovkin, Russian Academy of Sciences, Moscow, Russia	1130 hrs Oral Presentation (Invited) **Modification of a Mach 2 rarefied air flow over a flat plate with a DC discharge** R. Joussot, V. Lago, National Center for Scientific Research (CNRS), Orléans, France; J. Parisse, National Center for Scientific Research (CNRS), Marseille, France				

Tuesday, 14 January 2014							
134-SAT-1	Space and Society: Social Impacts of Air and Space Technologies						National Harbor Conf Rm 15
Chaired by: C. HEARSEY, The University of Mississippi and B. STEINFELDT, Georgia Institute of Technology							
1000 hrs AIAA-2014-0488 **Relationship between Fleet Characteristics and Welfare of Stakeholders of Commercial Air Transportation: Airlines, Manufacturers, and the Public** G. Waycaster, R. Haftka, N. Kim, V. Bilotkach, C. Gogu, C. Bes, University of Florida, Gainesville, Gainesville, FL	1030 hrs AIAA-2014-0489 **Global Geoglyph's Steganography : Uncovering Hidden Earth Art using Space-Based X-Band Synthetic Aperture Radar** J. Lobo, Hisdesat, Madrid, Spain; Y. Garcia, Complutense University, Madrid, Spain	1100 hrs Oral Presentation (Invited) **Development of the AIAA Tucson Engineering/Art Project** M. Rouch, Raytheon Company, Tucson, AZ					

Tuesday, 14 January 2014							
135-SD-5	Beam, Plate, Cable Dynamics						Chesapeake Conf Rm B
Chaired by: S. LIGUORE, Boeing Engineering Operations & Technology and D. JOHNSON, NASA Glenn Research Center							
1000 hrs AIAA-2014-0490 **Experimental Investigation of a Perturbation Model for the Nonlinear Response of a Fatigue Cracked Beam** P. Cooley, J. Slater, Wright State University, Dayton, OH; O. Shiryayev, Petroleum Institute, Abu Dhabi, United Arab Emirates	1030 hrs AIAA-2014-0491 **Inclusion of Shear Effects, Tension, and Damping in a DTF Beam Model for Cable Modeling** 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	1100 hrs AIAA-2014-0492 **Finite Element Structural Updating using FRFs** M. Arras, G. Coppotelli, University of Rome "La Sapienza", Rome, Italy					

Tuesday, 14 January 2014							
136-SD-6	**Computational Aeroelasticity ROM II**						**Chesapeake Conf Rm C**
Chaired by: P. TAYLOR, Gulfstream Aerospace Corporation and J. MCNAMARA, The Ohio State University							
1000 hrs AIAA-2014-0493 **Thermal Reduced Order Model Adaptation to Aero-Thermo-Structural Interactions** A. Matney, Arizona State University, Tempe, AZ; S. Spottswood, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Mignolet, Arizona State University, Tempe, AZ; A. Culler, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. McNamara, Ohio State University, Columbus, OH	1030 hrs AIAA-2014-0494 **An Efficient Computational Method for Structurally Nonlinear Joined Wings Based on Modal Derivatives** P. Tiso, Delft University of Technology, Delft, The Netherlands; L. Demasi, R. Cavallaro, San Diego State University, San Diego, CA	1100 hrs AIAA-2014-0495 **Forced Response Statistics of a Bladed Rotor with Geometric Mistuning** V. Vishwakarma, A. Sinha, Pennsylvania State University, University Park, PA	1130 hrs AIAA-2014-0496 **Evaluation of Linear, Inviscid, Viscous, and Reduced-Order Modeling Aeroelastic Solutions of the AGARD 445.6 Wing Using Root Locus Analysis** W. Silva, P. Chwalowski, B. Perry, NASA Langley Research Center, Hampton, VA				

Tuesday, 14 January 2014							
137-SRE-2	**Resource Enabled Mission Concepts**						**National Harbor Conf Rm 14**
Chaired by: J. KLEINHENZ, NASA Glenn Research Center and P. VISSCHER							
1000 hrs AIAA-2014-0497 **Waste Management Options for Long-Duration Space Missions: When to Reject, Reuse, or Recycle** D. Linne, B. Palaszewski, S. Gokoglu, B. Balasubramaniam, U. Hegde, C. Gallo, NASA Glenn Research Center, Cleveland, OH	1030 hrs AIAA-2014-0498 **Solar System Exploration Augmented by Lunar and Outer Planet Resource Utilization: Historical Perspectives and Future Possibilities** B. Palaszewski, NASA Glenn Research Center, Cleveland, OH	1100 hrs AIAA-2014-0499 **Mars surface transport systems utilizing in situ hydrogen** R. Ash, Old Dominion University, Norfolk, VA; S. Hancock, Science Systems and Applications, Inc., Hampton, VA; J. Tynis, Old Dominion University, Norfolk, VA	1130 hrs AIAA-2014-0500 **Robotic Asteroid Prospector (RAP) NIAC Phase 1 Results** W. James, V Infinity Research, LLC, Altadena, CA; K. Zacny, Honeybee Robotics, Pasadena, CA; J. Craft, Honeybee Robotics, New York, NY; P. Chu, Honeybee Robotics, Pasadena, CA; M. Cohen, Astrotecture™, Moffett Field, CA				

Tuesday, 14 January 2014							
138-STR-7	**Sandwich Structures**						**Chesapeake Conf Rm F**
Chaired by: S. SMELTZER, NASA Langely Research Center and C. FOERSTER							
1000 hrs AIAA-2014-0501 **A Three-Dimensional Multi-Stable Unit Cell for Energy Dissipation** M. Pontecorvo, S. Barbarino, F. Gandhi, Rensselaer Polytechnic Institute, Troy, NY; S. Bland, R. Snyder, J. Kudva, NextGen Aeronautics, Torrance, CA; et al.	1030 hrs AIAA-2014-0502 **Design and Optimization of Opencell™ Metal Sandwich Cylindrical Panel** A. Valente, PLY Technologies GmbH, Hannover, Germany; A. Najafi, ANSYS, Inc., Houston, TX	1100 hrs AIAA-2014-0503 **Degradation in Cellular Core Mechanical Properties due to Transverse Compression** H. Soliman, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1130 hrs AIAA-2014-0504 **Effects of Ply Stacking Sequence in 3D Fiber Reinforced Foam Core Sandwich Structures with Defects** Z. Kier, A. Waas, University of Michigan, Ann Arbor, Ann Arbor, MI; C. Foerster, J. Rome, V. Goyal, The Aerospace Corporation, El Segundo, CA				

Tuesday, 14 January 2014							
139-STR-8	Application of Viscoelasticity and Viscoelastic Materials						Chesapeake Conf Rm E
Chaired by: H. HILTON, University of Illinois at Urbana-Champaign and S. RAGHAVAN, University of Central Florida							
1000 hrs AIAA-2014-0505 **Variable Flight Velocity contributions to Elastic/ Viscoelastic Lifting Surface Control Effectiveness** H. Hilton, N. Nguyen, University of Illinois, Urbana-Champaign, Urbana, IL	1030 hrs AIAA-2014-0506 **Uncertainty in Characterizations of Isotropic Linear Viscoelastic Shear and Bulk Moduli from 1 - D Tensile Experiments** M. Michaeli, A. Shtark, H. Grosbein, Israel Military Industries, Ramat Hasharon, Israel; E. Altus, Technion–Israel Institute of Technology, Haifa, Israel; H. Hilton, University of Illinois, Urbana-Champaign, Urbana, IL	1100 hrs AIAA-2014-0507 **Testing of Viscoelastic Materials and their Implications on the Life Expectancy of GFRP Aircraft** C. Goudie, C. Merrett, Carleton University, Ottawa, Canada	1130 hrs AIAA-2014-0508 **Finite Element for Viscoelastic Composite Plate Bending Using Efficient Higher-Order Displacement Field** N. Nguyen Sy, J. Lee, M. Cho, Seoul National University, Seoul, South Korea	1200 hrs AIAA-2014-0509 **Elastomeric Structural Attachment Concepts for Aircraft Flap Noise Reduction - Challenges and Approaches to Hyperelastic Structural Modeling and Analysis** T. Sreekantamurthy, Analytical Mechanics Associates, Inc., Hampton, VA; T. Turner, J. Moore, J. Su, NASA Langley Research Center, Hampton, VA			

Tuesday, 14 January 2014							
140-TP-1	Aerothermodynamics I						National Harbor Conf Rm 11
Chaired by: W. WOOD, Langley Research Center and A. HASHEMI, Lockheed Martin Space Systems							
1000 hrs AIAA-2014-0510 **Experimental Studies of Spherical Capsule Wake Flows with Reaction Control Jet Interaction** T. Wadhams, CUBRC, Buffalo, NY	1030 hrs AIAA-2014-0511 **Orion MPCV Continuum RCS Heating Augmentation Model Development** A. Hyatt, ERC, Inc., Moffett Field, CA; M. White, NASA Johnson Space Center, Houston, TX	1100 hrs AIAA-2014-0512 **The Effects of Surface Roughness on Turbulent Heat Transfer Measured in Hypersonic Free Flight** M. Wilder, NASA Ames Research Center, Moffett Field, CA; D. Prabhu, ERC, Inc., Moffett Field, CA; D. Reda, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2014-0513 **Adjoint-Based Aerothermodynamic Shape Design of Hypersonic Vehicles in Non-Equilibrium Flows** S. Copeland, F. Palacios, J. Alonso, Stanford University, Stanford, CA				

Tuesday, 14 January 2014							
141-TP-2	Thermal Protection Systems I						National Harbor Conf Rm 10
Chaired by: M. MARTIN, Louisiana State University and B. DROLEN, Boeing Defense, Space & Security							
1000 hrs AIAA-2014-0514 **Development of A Simultaneous Measurement Sensor for Ablative Thermal Protection Systems** T. Sakai, K. Watanabe, H. Nakazawa, M. Kuribayashi, H. Fukui, Nagoya University, Nagoya, Japan; K. Kitagawa, Aichi Institute of Technology, Toyota, Japan; et al.	1030 hrs AIAA-2014-0515 **Singlet O2 Formation by O-atom Recombination on Fused Quartz Surfaces** J. White, J. Marschall, R. Copeland, SRI International, Menlo Park, CA	1100 hrs AIAA-2014-0516 **Emission Intensity Measurements around Mars Entry Capsule with a Free-Piston-Driven Expansion Tube** H. Takayanagi, S. Nomura, K. Fujita, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1130 hrs AIAA-2014-0517 **Influence of Nano-Scale Clusters on Gas Dynamics Parameters of Plasma Jet Created by Capillary Type Discharge** A. Klimov, A. Efimov, A. Pashchina, Russian Academy of Sciences, Moscow, Russia				

Tuesday, 14 January 2014							
142-WE-5	Wind Turbine Aeroelasticity and Structural Dynamics I						Woodrow Wilson C
Chaired by: T. KIM							
1000 hrs AIAA-2014-0518 **Modal Dynamics and Stability of Large Multi-megawatt Deepwater Offshore Vertical-axis Wind Turbines: Initial Support Structure and Rotor Design Impact Studies** B. Owens, D. Griffith, Sandia National Laboratories, Albuquerque, NM; J. Hurtado, Texas A&M University, College Station, TX	1030 hrs AIAA-2014-0519 **Aeroelastic Vibration Suppression of a Rotating Wind Turbine Blade using Adaptive Control** N. Li, M. Balas, University of Wyoming, Laramie, Laramie, WY	1100 hrs AIAA-2014-0520 **FAST Modular Wind Turbine CAE Tool: Nonmatching Spatial and Temporal Meshes** M. Sprague, J. Jonkman, National Renewable Energy Laboratory, Golden, CO	1130 hrs AIAA-2014-0521 **Model-based Aeroservoelastic Design and Load Alleviation of Large Wind Turbines** B. Ng, H. Hesse, R. Palacios, J. Graham, E. Kerrigan, Imperial College London, London, United Kingdom				

Tuesday, 14 January 2014		
143-LNCH-1 1230 - 1400 hrs	Aerospace Sciences Awards Lunch	Potomac Ballroom A&B

Tuesday, 14 January 2014		
144-SB-4 1400 - 1430 hrs	Tuesday Afternoon Speakers' Briefing	Session Rooms

Tuesday, 14 January 2014							
145-AA-4	Jet Noise II						Azalea 2
Chaired by: D. PAPAMOSCHOU, University of California Irvine							
1430 hrs AIAA-2014-0522 **Observed Effect of Bypass Flow on Jet Noise** N. Murray, B. Jansen, University of Mississippi, University, University, MS	1500 hrs AIAA-2014-0523 **Analysis of Supersonic Jet Thrust with Fluidic Injection** D. Cuppoletti, E. Gutmark, University of Cincinnati, Cincinnati, OH; H. Hafsteinsson, L. Eriksson, Chalmers University of Technology, Göteborg, Sweden; E. Prisell, FMV, Stockholm, Sweden	1530 hrs AIAA-2014-0524 **A study of the effects of temperature on velocity and density fluctuations in high-subsonic jets** C. Bogey, École Centrale de Lyon, Ecully, France	1600 hrs AIAA-2014-0525 **Design and Analysis of a Supersonic Jet Noise Reduction Concept** A. Pilon, Lockheed Martin Corporation, Palmdale, CA; D. McLaughlin, P. Morris, R. Powers, Pennsylvania State University, University Park, PA	1630 hrs AIAA-2014-0526 **A Low-order Jet Noise Prediction Model for Chevrons and Microjets** N. Depuru Mohan, A. Dowling, University of Cambridge, Cambridge, United Kingdom	1700 hrs AIAA-2014-0527 **Near-field Pressure and Far-field Acoustic Response of Forced High-Speed Jets** M. Crawley, Ohio State University, Columbus, OH; A. Sinha, California Institute of Technology, Pasadena, CA; M. Samimy, Ohio State University, Columbus, OH		

Tuesday, 14 January 2014							
146-ABPSI-2	Air Breathing Propulsion System Integration and Optimization						Maryland Ballroom D
Chaired by: K. BLODGETT, GE Aviation and M. MCMILLAN, Syngenics Corporation							
1430 hrs AIAA-2014-0528 **Design and Implementation of Waverotor Technology for Small-Bore Two-Stroke Internal Combustion Engines** M. Mataczynski, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; D. Paxson, NASA Glenn Research Center, Cleveland, OH	1500 hrs AIAA-2014-0529 **Thermal Loss Determination for Small Internal Combustion Engines** J. Rittenhouse, A. Rowton, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH; J. Ausserer, P. Litke, Air Force Research Laboratory, Wright-Patterson AFB, OH; K. Grinstead, Innovative Scientific Solutions, Inc., Dayton, OH	1530 hrs AIAA-2014-0530 **Antares DLR-H2 - Fuel cell testing under aeronautical conditions, modelling and test** J. Kallo, J. Schirmer, German Aerospace Center (DLR), Stuttgart, Germany	1600 hrs AIAA-2014-0531 **Design Optimization of a Scramjet Vehicle for Ascent Using Surrogate Optimization** D. Dalle, J. Driscoll, University of Michigan, Ann Arbor, Ann Arbor, MI	1630 hrs AIAA-2014-0532 **Thermal Management of Battery Module Consisting of Multiple Li-ion Cells for Hybrid Power Systems** F. He, X. Li, L. Ma, Virginia Polytechnic Institute and State University, Blacksburg, VA	1700 hrs AIAA-2014-0533 **Stereoscopic PIV Measurements of Swirl Distortion on a Full-Scale Turbofan Engine Inlet** M. Nelson, K. Lowe, W. O'Brien, Virginia Polytechnic Institute and State University, Blacksburg, VA; K. Hoopes, Southwest Research Institute, San Antonio, TX		

Tuesday, 14 January 2014							
147-ACD-7	**Aircraft Design with Electric Propulsion**						**Azalea 1**
Chaired by: D. EAMES, Rolls-Royce Corporation							
1430 hrs AIAA-2014-0534 **Conceptual Design of Electric Aircraft with Distributed Propellers: Multidisciplinary Analysis Needs and Aerodynamic Modeling Development** M. Patterson, B. German, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2014-0535 **Misconceptions of Electric Aircraft and their Emerging Aviation Markets** M. Moore, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2014-0536 **Electric Propulsion Modeling for Conceptual Aircraft Design** R. McDonald, California Polytechnic State University, San Luis Obispo, CA	1600 hrs AIAA-2014-0537 **Fixed Pitch Propeller Design for Electrically Powered Aircraft** J. DeStories, T. Takahashi, Arizona State University, Tempe, AZ	1630 hrs AIAA-2014-0538 **Impact of Advanced Energy Technologies on Aircraft Design** R. McDonald, California Polytechnic State University, San Luis Obispo, CA	1700 hrs AIAA-2014-0539 **Development of a Solar-Powered Unmanned Aerial Vehicle** Z. Lei, Tokyo University of Science, Chino, Japan		

Tuesday, 14 January 2014							
148-AFM-6	**Flight Dynamics and Handling Qualities IV**						**National Harbor Conf Rm 13**
Chaired by: A. DOGAN, University of Texas at Arlington and D. MURRI, NASA Langley Research Center							
1430 hrs AIAA-2014-0540 **The Effects of a Leading Edge Rotating Cylinder on the Performance of a NACA 0015 Airfoil at High Angles of Attack** D. Welsh, M. Lester, M. Lopes, R. Gates, J. Hoover, University of Notre Dame, Notre Dame, IN	1500 hrs AIAA-2014-0541 **Modified Study of Trail Aircraft Trim Effect on Sweet Spot in Formation Flight** W. Okolo, A. Dogan, University of Texas, Arlington, Arlington, TX; W. Blake, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2014-0542 **A Generic Nonlinear Aerodynamic Model for Aircraft** J. Grauer, E. Morelli, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2014-0543 **A Modified Analysis of Alternate Lateral Trimming Methods for Flying Wing Aircraft at Sweet Spot in Formation Flight** W. Okolo, A. Dogan, University of Texas, Arlington, Arlington, TX; W. Blake, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2014-0544 **Computation of Safe and Reachable Sets for Model-Free Dynamical Systems: Aircraft Longitudinal Dynamics** P. Nuthi, K. Subbarao, University of Texas, Arlington, Arlington, TX	1700 hrs AIAA-2014-0545 **Effect of Symmetric and Asymmetric Span Morphing on Flight Dynamics** C. Beaverstock, R. Ajaj, M. Friswell, Swansea University, Swansea, United Kingdom; R. De Breuker, N. Werter, Delft University of Technology, Delft, The Netherlands		

Tuesday, 14 January 2014							
149-AMT-3	**Review of Skin Friction and Shear Stress Measurement Techniques (Invited)**						**Maryland Ballroom 1**
Chaired by: T. LIU, Western Michigan University and V. OTUGEN, Southern Methodist University							
1430 hrs Oral Presentation (Invited) **An Improved Dynamic Shear Stress Sensor Calibration Technique** C. Barnard, University of Florida, Gainesville, Gainesville, FL; J. Meloy, The Boeing Company, Seattle, WA; A. Parikh, D. Blood, M. Sheplak, University of Florida, Gainesville, Gainesville, FL	1500 hrs Oral Presentation (Invited) **Measurement of wall shear stress in a planar backward-facing step flow using a micro-optical sensor** U. Ayaz, T. Ioppolo, V. Otugen, Southern Methodist University, Dallas, TX	1530 hrs Oral Presentation (Invited) **Wall shear-Stress Measurement with Micro-Pillars** E. Gnanamanickam, Embry-Riddle Aeronautical University, Daytona, FL; N. Hutchins, J. Monty, University of Melbourne, Parkville, Austria; J. Sullivan, Purdue University, West Lafayette, IN	1600 hrs Oral Presentation (Invited) **Multi-Image Oil Film Interferometry** J. Naughton, M. Hind, University of Wyoming, Laramie, Laramie, WY	1630 hrs Oral Presentation (Invited) **Polymer Films for Skin Friction and Surface Shear Measurements** J. Crafton, J. Webb, N. Rogoshchenkov, R. Forlines, L. Goss, S. Palluconi, Innovative Scientific Solutions, Inc., Dayton, OH; et al.	1700 hrs Oral Presentation (Invited) **Extraction of Skin Friction Fields from Surface Flow Visualizations** T. Liu, Western Michigan University, Kalamazoo, MI		

Tuesday, 14 January 2014							
150-AMT-4	**Supersonic Flow Diagnostics**						**Maryland Ballroom 2**
Chaired by: D. RICHARDSON, AFRL/RQTC and T. JENKINS, MetroLaser Inc							
1430 hrs AIAA-2014-0546 **Planar Imaging of Shock Waves at Low Pressure using Filtered Rayleigh Scattering** T. Jenkins, J. George, MetroLaser, Inc., Laguna Hills, CA; F. Poehlmann, Fluence, LLC, Newark, CA	1500 hrs AIAA-2014-0547 **Diagnosis of High Speed Flows using Filtered Rayleigh Scattering** J. George, T. Jenkins, Metrolaser, Inc., Laguna Hills, CA; R. Miles, Princeton University, Princeton, NJ	1530 hrs AIAA-2014-0548 **Design and Applications of a Sharp Focusing Schlieren System** B. Brooker, C. DeSio, A. Few, S. Olcmen, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1600 hrs AIAA-2014-0549 **Application of Rainbow Schlieren Techniques to Shock-Containing Jets from Cylindrical Nozzles** R. Nakajima, T. Oka, University of Kitakyushu, Kitakyushu, Japan; K. Konishi, Nagoya University, Nagoya, Japan; D. Ono, Y. Miyazato, University of Kitakyushu, Kitakyushu, Japan	1630 hrs AIAA-2014-0550 **Turbulence Measurements for Numerical Validation Acquired by Ultra High-speed Rainbow Schlieren Deflectometry** P. Kolhe, A. Agrawal, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1700 hrs AIAA-2014-0551 **Flowfield Characterization of Linear Aerospike Nozzles** H. Takahashi, S. Tomioka, T. Tomita, N. Sakuranaka, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan		

Tuesday, 14 January 2014								
151-APA-16	Aerodynamic Design: Analysis, Methodologies and Optimization							Maryland Ballroom 4
Chaired by: K. MASSEY, Georgia Tech Research Institute and J. LATZ, Northrop Grumman Aerospace Systems								
1430 hrs AIAA-2014-0552 **Multi-Objective Genetic Design Optimisation for Early Design** G. Ferraro, T. Kipouros, A. Savill, Cranfield University, Cranfield, United Kingdom; A. Rampurawala, Airbus, Bristol, United Kingdom	1500 hrs AIAA-2014-0553 **Aerodynamic Shape Optimization of Propulsion Airframe Integration While Matching Lift Distribution** A. Gary, R. McDonald, California Polytechnic State University, San Luis Obispo, CA	1530 hrs AIAA-2014-0554 **Adjoint-based Shape Optimization of High-lift Airfoil using the NSU2D Unstructured Mesh Solver** T. Nambu, Waseda University, Tokyo, Japan; D. Mavriplis, K. Mani, University of Wyoming, Laramie, Laramie, WY	1600 hrs AIAA-2014-0555 **Robust Design Consideration in the Multi-Disciplinary Optimization of a Flying Wing UAV Design** L. Minghang, Y. Hu, Northwestern Polytechnical University, Xi'an, China				

Tuesday, 14 January 2014								
152-APA-17	Applied CFD							National Harbor Conf Rm 5
Chaired by: A. SCLAFANI, Boeing Engineering Operations & Technology and D. FINLEY, Lockheed Martin Aeronautics								
1430 hrs AIAA-2014-0556 **Examination of Three-Dimensional Flow over a Chambered Inflatable Wing** F. Zhang, K. Ghobadi, R. LeBeau, M. McQuilling, Saint Louis University, St. Louis, MO	1500 hrs AIAA-2014-0557 **A Two-Dimensional/Infinite Swept Wing Navier-Stokes Solver** S. Ghasemi, A. Mosahebi, E. Laurendeau, École Polytechnique de Montréal, Montréal, Canada	1530 hrs AIAA-2014-0558 **Cart3D Simulations for the First AIAA Sonic Boom Prediction Workshop** M. Aftosmis, NASA Ames Research Center, Moffett Field, CA; M. Nemec, Science and Technology Corporation, Moffett Field, CA	1600 hrs AIAA-2014-0559 **Numerical Prediction of Mean Flow and Acoustic Field of a Supersonic Impinging Jet** K. Kurbatskii, ANSYS, Inc., Lebanon, NH; S. Kumar, ANSYS, Inc., Pune, India; H. El-Asrag, ANSYS, Inc., Lebanon, NH	1630 hrs AIAA-2014-0560 **Computational and Experimental Assessment of Models for the First AIAA Sonic Boom Prediction Workshop** S. Cliff, D. Durston, W. Chan, NASA Ames Research Center, Moffett Field, CA; A. Elmiligui, NASA Langley Research Center, Hampton, VA; S. Moini-Yekta, E. Sozer, Science and Technology Corporation, Moffett Field, CA; et al.	1700 hrs AIAA-2014-0561 **Simulation of Secondary and Separated Flow in a Diffusing S-Duct** C. Fiola, R. Agarwal, Washington University in St. Louis, St. Louis, MO		

Tuesday, 14 January 2014								
153-APA-18	Propeller/Rotorcraft Aerodynamics II							Maryland Ballroom A
Chaired by: Y. LIAN, University of Louisville								
1430 hrs AIAA-2014-0562 **Experimental Investigation of the Propeller Design for future QESTOL Aircraft in the BNF Project** C. Lenfers, German Aerospace Center (DLR), Braunschweig, Germany; R. Janssen, Delft University of Technology, Delft, The Netherlands; N. Beck, J. Friedrichs, Technical University of Braunschweig, Braunschweig, Germany; A. Rezaeian, German Aerospace Center (DLR), Braunschweig, Germany	1500 hrs AIAA-2014-0563 **Constrained and Unconstrained Propeller Blade Optimization** J. Dorfling, K. Rokhsaz, Wichita State University, Wichita, KS	1530 hrs AIAA-2014-0564 **Propeller-Wing Interaction Prediction for Early Design** G. Ferraro, T. Kipouros, A. Savill, Cranfield University, Cranfield, United Kingdom; A. Rampurawala, Airbus, Bristol, United Kingdom; C. Agostinelli, Bristol University, Bristol, United Kingdom	1600 hrs AIAA-2014-0565 **Aerodynamic installation effects of CROR engines at take-off configurations** C. Márquez Gutiérrez, German Aerospace Center (DLR), Braunschweig, Germany; S. Steiner, Rolls-Royce Group plc, Blankenfelde-Mahlow, Germany	1630 hrs AIAA-2014-0566 **Pylon trailing edge blowing effects on the performance and noise production of a pusher propeller** T. Sinnige, L. Veldhuis, Delft University of Technology, Delft, The Netherlands			

Tuesday, 14 January 2014							
154-APA-19	Special Session: Aerodynamic Design Optimization: Current Trends and Future Direction II						Maryland Ballroom 3
Chaired by: S. NADARAJAH and S. LEDOUX, Boeing Engineering Operations & Technology							
1430 hrs AIAA-2014-0567 **RANS-based Aerodynamic Shape Optimization Investigations of the Common Research Model Wing** Z. Lyu, G. Kenway, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1500 hrs AIAA-2014-0568 **Gradient-Based Aerodynamic Optimization with the elsA Software** G. Carrier, D. Destarac, A. Dumont, M. Meheut, I. Salah El Din, J. Peter, ONERA, Châtillon, France; et al.	1530 hrs AIAA-2014-0569 **Aerodynamic Shape Optimization by Automatic Hybrid Genetic Tool OPTIMENGA_AERO** B. Epstein, Academic College of Tel Aviv-Jaffa, Tel Aviv, Israel; S. Peigin, OPTIMENGA, Ltd., Modiin, Israel	1600 hrs AIAA-2014-0570 **Study of parameterizations in the project CEDESA** O. Amoignon, Swedish Defense Research Agency (FOI), Stockholm, Sweden; J. Hradil, J. Navratil, Brno University of Technology, Brno, Czech Republic	1630 hrs AIAA-2014-0571 **Application of Jetstream to a Suite of Aerodynamic Shape Optimization Problems** K. Telidetzki, L. Osusky, D. Zingg, University of Toronto, Toronto, Canada	1700 hrs AIAA-2014-0572 **Aerodynamic Design Optimization: Physics-based Surrogate Approaches for Airfoil and Wing Design** L. Leifsson, S. Koziel, Reykjavik University, Reykjavik, Iceland; S. Hosder, Missouri University of Science and Technology, Rolla, MO		

Tuesday, 14 January 2014							
155-DE-3	Design Engineering						Chesapeake Conf Rm D
Chaired by: G. HONEA, Raytheon Missile Systems and L. SAAM, ATA Engineering, Inc. (HQ)							
1430 hrs No Presentations		1530 hrs AIAA-2014-0573 **Optimization of mechanism design of flapping wing MAV** V. Kalpathy Venkiteswaran, H. Su, Ohio State University, Columbus, OH	1600 hrs AIAA-2014-0574 **Trawl-Door Design Optimization by Local Surrogate Models** L. Leifsson, S. Koziel, Reykjavik University, Reykjavik, Iceland; E. Hermannsson, R. Fakhraie, Royal Institute of Technology (KTH), Stockholm, Sweden	1630 hrs AIAA-2014-0575 **Hyperion - three years of novel aircraft design** J. Koster, University of Colorado, Boulder, Boulder, CO			

Tuesday, 14 January 2014							
156-FD-20	Combustion Engines						Maryland Ballroom 5
Chaired by: M. HARVAZINSKI, Air Force Research Laboratory and S. SILTON, US Army Research Laboratory							
1430 hrs AIAA-2014-0576 **RANS-based Multi-Scale Simulations of a Scramjet Combustor** E. Hassan, D. Eklund, Air Force Research Laboratory, Wright-Patterson AFB, OH; H. Aono, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1500 hrs AIAA-2014-0577 **Parametric Trends in the Combustion Stability Characteristics of a Single-Element Gas-Gas Rocket Engine** M. Harvazinski, V. Sankaran, D. Talley, Air Force Research Laboratory, Edwards AFB, CA	1530 hrs AIAA-2014-0578 **Assessing Energy Losses Associated with the Pulsating Flow in the Exhaust Port of an Internal Combustion Engine** Y. Wang, B. Semlitsch, M. Mihaescu, L. Fuchs, Royal Institute of Technology (KTH), Stockholm, Sweden	1600 hrs AIAA-2014-0579 **Further Assessment of Turbulent Inflow Boundary Conditions for Rocket Motor Internal Flows** D. Gonzalez, Naval Surface Warfare Center, Indian Head, MD; M. Lewis, Science and Technology Policy Institute, Washington, DC	1630 hrs AIAA-2014-0580 **Aerosol Modeling of Soot Nanoparticles in a Turbulent Diffusion Flame Using An Extended Detailed Kinetic Scheme** M. Darbandi, M. Ghafourizadeh, Sharif University of Technology, Tehran, Iran; G. Schneider, University of Waterloo, Waterloo, Canada	1700 hrs AIAA-2014-0581 **Acoustic timescale analysis of a model hot spot** M. Kurtz, J. Regele, Iowa State University, Ames, IA		

Tuesday, 14 January 2014							
157-FD-21	**RANS Turbulence Modeling: Strengths, Weaknesses and New Approaches**						**Chesapeake Conf Rm 8**
Chaired by: B. SMITH, Lockheed Martin Aeronautics and R. BOWERSOX, Texas A&M University							
1430 hrs AIAA-2014-0582 **Investigation of the Validity of the Spalart-Allmaras Turbulence Model for Confined Impinging Slot Jets** A. Tahsini, S. Tadayon Mousavi, Aerospace Research Institute, Tehran, Iran	1500 hrs AIAA-2014-0583 **An Assessment of Attached and Mildly Separated Flows in Adverse Pressure Gradient Regions** A. de Jesus, L. Schiavo, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; J. Azevedo, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil; J. Laval, Lille University of Science and Technology, Villeneuve d'Ascq, France	1530 hrs AIAA-2014-0584 **Development of an extended non-linear turbulence model and its application for analysis of three-dimensional wall jets** K. Ishiko, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; K. Tonsho, Ryoyu Systems Company, Ltd., Nagoya, Japan; A. Hashimoto, T. Aoyama, Y. Matsuo, A. Yoshizawa, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1600 hrs AIAA-2014-0585 **Initial Validation of a Non-equilibrium Wilcox k - omega Turbulence Model in Subsonic and Transonic Flow Regimes** T. Kudla, M. Rumpfkeil, University of Dayton, Dayton, OH	1630 hrs AIAA-2014-0586 **On "Steady" RANS Modeling for improved Prediction of Wall-bounded Separation** S. Jakirlic, R. Maduta, Technical University of Darmstadt, Darmstadt, Germany	1700 hrs AIAA-2014-0587 **Variable Surface Roughness Modeling for Skin Friction Estimation** S. Medida, J. Baeder, University of Maryland, College Park, College Park, MD; N. Nigam, P. Chen, Intelligent Automation, Inc., Rockville, MD		

Tuesday, 14 January 2014							
158-FD-22	**Turbulence II: Large Eddy Simulations**						**National Harbor Conf Rm 3**
Chaired by: S. HEINZ, University of Wyoming and J. SEIDEL, USAF Academy							
1430 hrs AIAA-2014-0588 **High-Order Implicit Large-Eddy Simulations of Supersonic Corner Flo** N. Bisek, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2014-0589 **Unified RANS-LES Analysis of Turbulent Jets Covering Several Swirl Number Regimes** S. Heinz, C. Zemtsop, H. Gopalan, M. Stoellinger, University of Wyoming, Laramie, Laramie, WY	1530 hrs AIAA-2014-0590 **Effect of Boundary Layer Thickness on Jet Mixing in a Supersonic Turbulent Crossflow** T. Rossmann, Lafayette College, Easton, PA; A. Pizzaia, Rutgers University, Piscataway, NJ	1600 hrs AIAA-2014-0591 **Analysis of the Onset of Dynamic Stall Using High-Fidelity Large-Eddy Simulations** M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2014-0592 **Turbulence Structure Characteristics of LES Methods Implied by Stochastic Turbulence Models** P. Saha, S. Heinz, E. Kazemi, University of Wyoming, Laramie, Laramie, WY	1700 hrs AIAA-2014-0593 **Generating inflow turbulence for eddy simulation of turbomachinery flows** S. Arolla, P. Durbin, Iowa State University, Ames, IA		

Tuesday, 14 January 2014							
159-GEPC-2	**Progress Towards N+3 Technologies in NASA's Fixed Wing Project**						**Woodrow Wilson A**
Chaired by: R. WAHLS, NASA-Langley Research Center and N. MADAVAN, NASA Ames Research Center							
1430 hrs Oral Presentation (Invited) **NASA Fixed Wing Project: Green Technologies for Future Aircraft Generations** R. Del Rosario, J. Koudelka, NASA Glenn Research Center, Cleveland, OH; R. Wahls, NASA Langley Research Center, Hampton, VA; N. Madavan, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2014-0594 **A Noise and Emissions Assessment of the N3-X Transport** J. Berton, W. Haller, NASA Glenn Research Center, Cleveland, OH	1530 hrs AIAA-2014-0595 **Changing the Paradigm - Feasibility of Protective Skins for Composite Airliners** V. Johnson, R. Boone, S. Jones, V. Pendse, G. Hayward, Cessna Aircraft Company, Wichita, KS	1600 hrs AIAA-2014-0596 **High Aspect Ratio Wing Design: Optimal Aerostructural Tradeoffs for the Next Generation of Materials** J. Martins, G. Kennedy, G. Kenway, University of Michigan, Ann Arbor, Ann Arbor, MI	1630 hrs AIAA-2014-0597 **Current and Future Research in Active Control of Lightweight, Flexible Structures Using the X-56 Aircraft** J. Ryan, J. Bosworth, NASA Dryden Flight Research Center, Edwards, CA	1700 hrs AIAA-2014-0598 **Aeroelastic Tailoring of the NASA Common Research Model via Novel Material and Structural Configurations** C. Jutte, Craig Technologies, Inc., Cape Canaveral, FL; B. Stanford, C. Wieseman, J. Moore, NASA Langley Research Center, Hampton, VA		

Tuesday, 14 January 2014							
160-GNC-9	Aircraft Guidance, Navigation and Control I						National Harbor Conf Rm 7
Chaired by: A. WILDSCHEK, European Aeronautic Defence and Space Company and T. ZSEDROVITS							
1430 hrs AIAA-2014-0599 **Flight Dynamics and Control Related Challenges for Design of a Commercial Blended Wing Body Aircraft** A. Wildschek, EADS, Munich, Germany	1500 hrs AIAA-2014-0600 **A Summary of Revisions Applied to a Turbulence Response Analysis Method for Flexible Aircraft Configurations** C. Funk, B. Perry, W. Silva, NASA Langley Research Center, Hampton, VA; B. Newman, Old Dominion University, Norfolk, VA	1530 hrs AIAA-2014-0601 **A Robust and Self-Scheduled Longitudinal Flight Control System: a Multi-Model and Structured H-infinity Approach** H. Lhachemi, D. Saussie, G. Zhu, École Polytechnique de Montréal, Montréal, Canada	1600 hrs AIAA-2014-0602 **Flight Tests of a General Aviation Envelope Protection and Stability Augmentation System** J. Wilson, Upper Valley Aero, LLC, Hanover, NH; M. Peters, Saab Sensis Corporation, East Syracuse, NY; G. Pettit, Dysim, Mattaponi, VA	1630 hrs AIAA-2014-0603 **Multi-Input Higher-order Sliding Mode Control of Aeroelastic Systems With Uncertainties and Gust Load** K. Lee, Kwandong University, Gangwon, South Korea; S. Singh, University of Nevada, Las Vegas, Las Vegas, NV	1700 hrs AIAA-2014-0604 **Towards Real-Time Visual and IMU Data Fusion** T. Zsedrovits, Pázmány Péter Catholic University, Budapest, Hungary; P. Bauer, Hungarian Academy of Sciences, Budapest, Hungary; A. Zarandy, Pázmány Péter Catholic University, Budapest, Hungary; B. Vanek, J. Bokor, Hungarian Academy of Sciences, Budapest, Hungary; T. Roska, Pázmány Péter Catholic University, Budapest, Hungary		

Tuesday, 14 January 2014							
161-GNC-10	Novel Navigation, Estimation, and Tracking Methods						National Harbor Conf Rm 8
Chaired by: L. POLLINI, University of Pisa and Y. CHENG, Mississippi State University							
1430 hrs AIAA-2014-0605 **UAS Source Localization with High Latency Sensors in Turbulent Environments** M. Palframan, C. Woolsey, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2014-0606 **Fixed-Point Smoothing Approach for Dual-Mode Guidance Filtering with Delayed Measurement** S. Kim, Korea Advanced Institute of Science and Technology, Daejeon, South Korea; B. Park, LIG Nex1, Seongnam, South Korea; H. Choi, M. Tahk, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1530 hrs AIAA-2014-0607 **Solving Optimal Positioning Problems via Homotopy Continuation** Y. Tian, Harbin Institute of Technology, Harbin, China; Y. Cheng, Mississippi State University, Mississippi State, MS					

Tuesday, 14 January 2014							
162-GNC-11	Validation of Onboard Systems Technologies for LOC Prevention and Recovery, Session (Invited) I						National Harbor Conf Rm 12
Chaired by: K. FEIGH, Georgia Institute of Technology and D. CRIDER, National Transportation Safety Board							
1430 hrs AIAA-2014-0608 **A Formal Approach to the Identication and Validation of Empirical Dynamic Models** L. Crespo, E. Morelli, S. Kenny, D. Giesy, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2014-0609 **Pilot Mental Models and Loss of Control** S. Mamessier, K. Feigh, A. Pritchett, D. Dickson, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2014-0610 **Certification Analysis for a Model-Based UAV Fault Detection System** B. Hu, P. Seiler, University of Minnesota, Minneapolis, Minneapolis, MN	1600 hrs AIAA-2014-0611 **Sensitivity of the Generic Transport Model upset dynamics to time delay** S. Gill, M. Lowenberg, University of Bristol, Bristol, United Kingdom; L. Crespo, National Institute of Aerospace, Hampton, VA; S. Neild, University of Bristol, Bristol, United Kingdom; B. Krauskopf, University of Auckland, Auckland, New Zealand; G. Puyou, Airbus, Toulouse, France	1630 hrs AIAA-2014-0612 **Preliminary Analysis of Aircraft Loss of Control Accidents: Worst Case Precursor Combinations and Temporal Sequencing** C. Belcastro, J. Foster, NASA Langley Research Center, Hampton, VA; R. Newman, Crew Systems, Seattle, WA; L. Groff, D. Crider, National Transportation Safety Board, Washington, DC; D. Klyde, Systems Technology, Inc., Hawthorne, CA	1700 hrs AIAA-2014-0613 **Pilot-in-the-Loop Flight Simulator for NASA's Transport Class Model** K. Ackerman, S. Pelech, R. Carbonari, N. Hovakimyan, A. Kirlik, University of Illinois, Urbana-Champaign, Urbana, IL; I. Gregory, NASA Langley Research Center, Hampton, VA		

Tuesday, 14 January 2014							
163-GT-4	**Wind Tunnel Data Corrections**						**Maryland Ballroom B**
Chaired by: S. SIMERLY, NASA Glenn Research Center and R. GUYTON, USAF Wright Lab							
1430 hrs AIAA-2014-0614 **A Practical Method to Determine True Pitching Moment for Internal Balance Wind Tunnel Testing with Longitudinal Variation in Flow Angularity** K. Kelly, Wichita State University, Wichita, KS	1500 hrs AIAA-2014-0615 **Verification and Expansion of the Hensel Blockage Correction in the National Full-Scale Aerodynamics Complex 80- by 120-foot Wind Tunnel** P. Goulding, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2014-0616 **Verification of the Hensel Blockage Correction in the National Full-Scale Aerodynamics Complex 40- by 80-foot Wind Tunnel Using Hypersonic Inflatable Aerodynamic Decelerators** P. Goulding, NASA Ames Research Center, Moffett Field, CA	1600 hrs AIAA-2014-0617 **Spectral Characteristics of Free-stream Turbulence in the National Transonic Facility** K. Owen, A. Owen, Complere, Inc., Pacific Grove, CA	1630 hrs AIAA-2014-0618 **Towards Interference Corrections for Three-Dimensional Models in Kevlar-Walled Anechoic Test Sections** K. Brown, W. Devenport, A. Borgoltz, Virginia Polytechnic Institute and State University, Blacksburg, VA; H. Ura, K. Yamamoto, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1700 hrs AIAA-2014-0619 **Measurement and Analysis of Background Noise in NF-6 Pressurized Transonic Wind Tunnel** Y. Ji, C. Gao, Z. Zhang, N. Wang, B. Wu, Northwestern Polytechnical University, Xi'an, China		

Tuesday, 14 January 2014							
164-GTE-4	**Gas Turbine Combustor II**						**Woodrow Wilson D**
Chaired by: F. DRYER, Princeton University and L. MADDALENA, The University of Texas at Arlington							
1430 hrs AIAA-2014-0620 **Computational Study of Combustion Dynamics in a Single-Element Lean Direct Injection Gas Turbine Combustor** C. Yoon, R. Gejji, W. Anderson, Purdue University, West Lafayette, IN; V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA	1500 hrs AIAA-2014-0621 **LES Investigation of Flow Field Sensitivity in a Gas Turbine Model Combustor** Y. See, University of Michigan, Ann Arbor, Ann Arbor, MI; M. Ihme, Stanford University, Stanford, CA	1530 hrs AIAA-2014-0622 **Plasma Control of Combustion Instability in a Lean Direct Injection Gas Turbine Combustor** J. D'Entremont, R. Gejji, V. Lakshmanan, P. Venkatesh, S. Bane, W. Anderson, Purdue University, West Lafayette, IN	1600 hrs AIAA-2014-0623 **Recurrence Analysis of Combustion Generated Noise** L. Kabiraj, H. Nawroth, A. Saurabh, C. Paschereit, Technical University of Berlin, Berlin, Germany				

Tuesday, 14 January 2014							
165-HSABP-2	**CFD Analysis of Scramjets I**						**Chesapeake Conf Rm 7**
Chaired by: B. SEKAR, USAF AFRL/RZTC and H. HASSAN, North Carolina State University							
1430 hrs AIAA-2014-0624 **Turbulence Model Effects on RANS Simulations of the HIFiRE Flight 2 Ground Test Configurations** N. Georgiadis, M. Mankbadi, M. Vyas, NASA Glenn Research Center, Cleveland, OH	1500 hrs AIAA-2014-0625 **Comparison of Mode-Transition Phenomena in Axisymmetric and Rectangular Scramjet Flowpaths** R. Yentsch, D. Gaitonde, Ohio State University, Columbus, OH	1530 hrs AIAA-2014-0626 **High Fidelity Analysis of a Three Dimensional Supersonic Pulse Detonation Combustor** F. Malo-Molina, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2014-0627 **Turbulence / Chemistry Interactions in a Ramp-Stabilized Supersonic Hydrogen-Air Diffusion Flame** J. Fulton, Sandia National Laboratories, Albuquerque, NM; J. Edwards, North Carolina State University, Raleigh, NC; A. Cutler, George Washington University, Washington, DC; J. McDaniel, C. Goyne, University of Virginia, Charlottesville, Charlottesville, VA	1630 hrs AIAA-2014-0628 **Effect of ramp interaction on global mixing modes induced by hypermixers** L. Massa, University of Texas, Arlington, Arlington, TX	1700 hrs AIAA-2014-0629 **Multi-Objective Design and Trajectory Optimization of Space Transport Systems with RBCC Propulsion via Evolutionary Algorithms and Pseudospectral Methods** M. Kodera, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan; H. Ogawa, RMIT University, Melbourne, Australia; S. Tomioka, S. Ueda, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan		

Tuesday, 14 January 2014		
166-LECT-5 1430 - 1530 hrs	NDA Special Session: Assuring Aero-Structural Reliability in an Uncertain World	Maryland Ballroom C

Ravi Chona
USAF Senior Scientist and Director, Structural Sciences Center
Air Force Research Laboratory

Tuesday, 14 January 2014							
167-MAT-4	Advanced Composites & Fabrics						Chesapeake Conf Rm A
Chaired by: K. SHIVAKUMAR, North Carolina Agricultural and Technical State University and A. KELKAR, Joint School of Nanoscience & Nanoengineering							
1430 hrs No Presentations		1530 hrs AIAA-2014-0630 **Microvascular composite skin panels for hypersonic aircraft** A. Najafi, A. Coppola, S. Soghrati, N. Sottos, S. White, P. Geubelle, University of Illinois, Urbana-Champaign, Urbana, IL	1600 hrs AIAA-2014-0631 **Modeling of Plain Woven Fabrics for Inflatable Aerodynamic Decelerators** J. Hill, R. Braun, Georgia Institute of Technology, Atlanta, GA	1630 hrs AIAA-2014-0632 **Novel Composite Space Shielding Concepts for Hypervelocity Orbital Debris Impact Mitigation** S. Offenberger, J. Warren, T. Lacy, Mississippi State University, Mississippi State, MS; A. Al-Ostaz, University of Mississippi, Oxford, Oxford, MS; H. Toghiani, S. Kundu, Mississippi State University, Mississippi State, MS; et al.		

Tuesday, 14 January 2014							
168-MDO-4	Structural and Topology Optimization						Chesapeake Conf Rm 4
Chaired by: G. KENNEDY, University of Toronto and H. KIM, University of Bath							
1430 hrs No Presentations		1530 hrs AIAA-2014-0633 **Optimal Topology of Aircraft Rib and Spar Structures under Aeroelastic Loads** B. Stanford, NASA Langley Research Center, Hampton, VA; P. Dunning, National Institute of Aerospace, Hampton, VA	1600 hrs AIAA-2014-0634 **Aerostructural Level Set Topology Optimization for a Common Research Model Wing** P. Dunning, National Institute of Aerospace, Hampton, VA; B. Stanford, NASA Langley Research Center, Hampton, VA; H. Kim, University of Bath, Bath, United Kingdom	1630 hrs AIAA-2014-0635 **Rules, Precursors and Parameterisation Methodologies for Topology Optimised Structural Designs Realised Through Additive Manufacturing** M. Muir, EADS, Bristol, United Kingdom; O. Querin, V. Toropov, University of Leeds, Leeds, United Kingdom			

Tuesday, 14 January 2014							
169-MST-2	Modeling and Simulation Tools and Technologies						National Harbor Conf Rm 6
Chaired by: R. RUFF							
1430 hrs AIAA-2014-0636 **Openness Requirements for Next Generation Hardware-in-the-Loop Testing Systems** A. Himmler, dSPACE GmbH, Paderborn, Germany	1500 hrs AIAA-2014-0637 **Accelerating Genetic Algorithm Profile Fitting Using a Six-DOF Enhanced with GPU Coding** R. Hartfield, J. Burkhalter, D. Benton, Auburn University, Auburn, AL	1530 hrs AIAA-2014-0638 **Numerical Study on Drag Reduction for Swept-back, Swept-front , Delta Grid Fin with Blunt and Sharp Leading Edges** W. Dan, Y. Yong, Beijing Institute of Technology, Beijing, China	1600 hrs AIAA-2014-0639 **DIMMACSS-Stage: a Distributed Intelligence Model for a Multi-Agent Control System using Simulink and the Stage robotic simulator** S. Walker, J. Shan, L. Liu, York University, Toronto, Canada	1630 hrs AIAA-2014-0640 **Testability, Test Automation and Test Driven Development for the Trick Simulation Toolkit** J. Penn, L-3 Communications, Houston, TX	1700 hrs AIAA-2014-0641 **Validation of Different Control System Techniques using Modeling and Simulation** M. Mohamed, Deference Systems Studies Center, Cairo, Egypt; A. Aly, Military Technical College, Cairo, Egypt; A. El Ramlawy, Deference Systems Studies Center, Cairo, Egypt		

Tuesday, 14 January 2014		
170-MVC-4 1430 - 1730 hrs	Current Status and Future Trends of Integrated Computational Environments	Chesapeake Conf Rm 9

Chaired by: G. POWER, Aerospace Testing Alliance

Computational environments are becoming increasingly critical for effective application of advanced computational tools through the management of the process and comprehension of the resulting data. Experts from government, industry and academia will discuss the current status and future trends of computational environments for improved engineering decision making.

Panelists:

Kenneth Moreland
Computation, Computers, Information and Mathematics Center
Sandia National Laboratories

Kenneth "Mark" Bryden
Program Director, Simulation, Modeling, and Decision Science
Ames Laboratory

Andrew W. Cary
Technical Fellow - CFD
The Boeing Company

David McDaniel
DoD CREATE/Kestrel Development Team
University of Alabama at Birmingham

Steve M. Legensky
General Manager and Founder
Intelligent Light

Tuesday, 14 January 2014						
171-NDA-4	Reliability					Chesapeake Conf Rm 5
Chaired by: G. BARTRAM, Vanderbilt University and L. DOMYANCIC, Southwest Research Institue						
1430 hrs No Presentations	1530 hrs AIAA-2014-0642 **Probability of Failure Analysis and Design Using An Efficient Sequential Sampling Approach** Z. Wang, P. Wang, Wichita State University, Wichita, KS	1600 hrs AIAA-2014-0643 **Ignoring Dependence between Failure Modes is Reasonable for Low Probabilities of Failure** C. Park, N. Kim, University of Florida, Gainesville, Gainesville, FL	1630 hrs AIAA-2014-0644 **Integration of System Reliability Analysis and FMECA to Efficiently Identify Structural Hot Spots** C. Quintana, H. Millwater, University of Texas, San Antonio, San Antonio, TX; R. Penmetsa, Air Force Research Laboratory, Wright-Patterson AFB, OH	1700 hrs AIAA-2014-0645 **Reliability Estimation Using Guided Tail Modeling with Adaptive Sampling** E. Acar, TOBB University of Economics and Technology, Ankara, Turkey; P. Ramu, Indian Institute of Technology Madras, Chennai, India		

Tuesday, 14 January 2014		
172-PANEL-4 1430 - 1630 hrs	Turning Technology Into a Business Panel	Potomac Ballroom C

Moderator: Stephen Fleming, Vice President & Executive Director, Enterprise Innovation Institute, Georgia Tech

Panelists:

Jason Dunn
Co-founder and CTO
Made In Space, Inc.

Debra Facktor Lepore
Vice President and General Manager, Strategic Operations
Ball Aerospace & Technologies Corporation

David Thompson
CEO
Orbital Sciences Corporation

John Tylko
President
Aurora Flight Sciences

Tuesday, 14 January 2014							
173-PC-8	**Heterogeneous Combustion and Propellants**						**Chesapeake Conf Rm G**
Chaired by: X. YANG, Princeton University and A. HIGGINS, McGill University							
1430 hrs AIAA-2014-0646 **Ignition and Reaction Analysis of High Loading Nano-Al/ Fluoropolymer Energetic Composite Films** J. DeLisio, University of Maryland, College Park, College Park, MD; C. Huang, Nanjing University of Science and Technology, Nanjing, China; G. Jian, M. Zachariah, University of Maryland, College Park, College Park, MD; G. Young, Naval Surface Warfare Center, Indian Head, MD	1500 hrs AIAA-2014-0647 **Microsphere Composites of Nano-Al and Nanothermite: An Approach to Better Utilization of Nanomaterials** H. Wang, G. Jian, J. DeLisio, M. Zachariah, University of Maryland, College Park, College Park, MD	1530 hrs AIAA-2014-0648 **Burning Rate of nano-Aluminum-Water Propellant at High Pressures** W. Georges, Y. Yavor, A. Higgins, S. Goroshin, McGill University, Montréal, Canada; R. Stowe, S. Ringuette, Defense Research and Development Canada, Québec City, Canada	1600 hrs AIAA-2014-0649 **Evaluation of a laser beam scanning method for correction of multiple scattering and attenuation effects in dense spray measurements** G. Charalampous, Y. Hardalupas, Imperial College London, London, United Kingdom				

Tuesday, 14 January 2014							
174-PC-9	**Laminar Flames**						**Chesapeake Conf Rm I**
Chaired by: S. WON, Princeton University							
1430 hrs AIAA-2014-0650 **Effects of Flow Strain Rates on Counterflow Diffusion Flames at Subcritical and Supercritical Pressures: Oxygen/Methane Mixture** X. Wang, V. Yang, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2014-0651 **Effect of Axial Diffusion on the Response of Over-ventilated Diffusion Flames to Axial Flow Perturbations** N. Magina, T. Lieuwen, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2014-0652 **Soot Formation in Laminar Diffusion Flames of Diluted Ethylene in Air at Pressures up to 20 ATM** A. Karatas, O. Gulder, University of Toronto, Toronto, Canada	1600 hrs AIAA-2014-0653 **Minor Species Measurements in Premixed Cellular Tubular Flames** C. Hall, Vanderbilt University, Nashville, TN; W. Kulatilaka, N. Jiang, Spectral Energies, LLC, Dayton, OH; J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH; R. Pitz, Vanderbilt University, Nashville, TN	1630 hrs AIAA-2014-0654 **Role of Azimuthal Flow Fluctuations on Flow Dynamics and Global Flame Response of Axisymmetric Swirling Flames** V. Acharya, T. Lieuwen, Georgia Institute of Technology, Atlanta, GA	1700 hrs AIAA-2014-0655 **Further Aspects of the Behavior of Edge Flames with a Fuel Spray in a Mixing Layer** J. Greenberg, Technion–Israel Institute of Technology, Haifa, Israel		

Tuesday, 14 January 2014							
175-PC-10	**Turbulent Flames II**						**Chesapeake Conf Rm H**
Chaired by: B. WINDOM, Princeton University and I. BOXX, DLR - German Aerospace Center							
1430 hrs AIAA-2014-0656 **OH-PLIF Studies in a LDI Swirl-Stabilized Combustor** R. Villalva Gomez, B. Dolan, D. Munday, E. Gutmark, University of Cincinnati, Cincinnati, OH	1500 hrs AIAA-2014-0657 **Flow Dynamics of a Simplex Swirl Injector at Supercritical Conditions** H. Huo, X. Wang, V. Yang, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2014-0658 **Effect of Excitation Amplitude on Disturbance Field of a Transversely Forced Swirl Flow and Flame** J. O'Connor, Pennsylvania State University, University Park, PA	1600 hrs AIAA-2014-0659 **Stability Analysis of Reacting Wakes: The Physical Role of Flame-Shear Layer Offset** B. Emerson, D. Noble, T. Lieuwen, Georgia Institute of Technology, Atlanta, GA	1630 hrs AIAA-2014-0660 **Investigation of Dimethyl Ether Combustion Instabilities in a Partially - Premixed Gas Turbine Model Combustor Using High-Speed Laser Diagnostics** P. Allison, Y. Chen, J. Driscoll, University of Michigan, Ann Arbor, Ann Arbor, MI			

Tuesday, 14 January 2014							
176-PDL-6	Plasma-Assisted Combustion I						Azalea 3
Chaired by: S. LEONOV, JIHT RAS							
1430 hrs AIAA-2014-0661 **Studying The Atmospheric Plasma Jet For The Plasma-Assisted Combustion** S. Kolosenok, A. Savarovskii, A. Kuranov, Hypersonic Systems Research Institute, Saint Petersburg, Russia; V. Soukhomlinov, Saint Petersburg State University, Saint Petersburg, Russia; V. Bychkov, Moscow State University, Moscow, Russia	1500 hrs AIAA-2014-0662 **Multi-Pulse Operation at Plasma-Assistance in High-Speed Combustor** S. Leonov, Ohio State University, Columbus, OH; A. Napartovich, I. Kochetov, Russian Academy of Sciences, Troitsk, Russia; D. Yarantsev, Russian Academy of Sciences, Moscow, Russia	1530 hrs AIAA-2014-0663 **Ignition of nanosecond discharge in liquids: cavitation bubble, bushy and filamentary discharge** S. Starikovskaya, A. Rousseau, I. Marinov, Pierre and Marie Curie University, Palaiseau, France	1600 hrs AIAA-2014-0664 **Investigation of the Effects of Non-Equilibrium Plasma Discharges on Temperature and OH Concentrations in Low-Pressure Premixed Flames** T. Li, I. Adamovich, J. Sutton, Ohio State University, Columbus, OH	1630 hrs AIAA-2014-0665 **Ignition of CH4:O2:Ar and n-C4H10:O2:Ar(N2) mixtures with initial temperatures between 650-950 K by a surface pulsed discharge** S. Stepanyan, École Polytechnique, Paris, France; M. Bouhmedi, G. Vanhove, P. Desgroux, Lille University of Science and Technology, Lille, France; N. Popov, Moscow State University, Moscow, Russia; S. Starikovskaya, École Polytechnique, Paris, France		

Tuesday, 14 January 2014							
177-PDL-7	Plasma Discharge Structure						Maryland Ballroom 6
Chaired by: S. MACHERET, Lockheed Martin Aeronautics							
1430 hrs AIAA-2014-0666 **Filamentation of the nanosecond surface dielectric barrier discharge at elevated pressures** S. Stepanyan, École Polytechnique, Paris, France; N. Popov, Moscow State University, Moscow, Russia; S. Starikovskaya, École Polytechnique, Paris, France	1500 hrs AIAA-2014-0667 **Studies of Nanosecond Pulse Surface Ionization Wave Discharges over Solid and Liquid Dielectric Surfaces** V. Petrishchev, S. Leonov, W. Lempert, I. Adamovich, Ohio State University, Columbus, OH	1530 hrs AIAA-2014-0668 **Turbulent Cascade Process in Arc Driven Plasma Channels** A. Tropina, Kharkov National Automobile and Highway University, Kharkov, Ukraine; M. Shneider, R. Miles, Princeton University, Princeton, NJ					

Tuesday, 14 January 2014							
178-SAT-2	Space and Society: Social Dimensions of Space Exploration and Exploitation						National Harbor Conf Rm 15
Chaired by: C. HEARSEY, The University of Mississippi and B. STEINFELDT, Georgia Institute of Technology							
1430 hrs AIAA-2014-0669 **Astrosociology: Fostering Collaborative Synergy between Members of the Social Sciences and Those of the Traditional Space Community** J. Pass, Astrosociology Research Institute, Huntington Beach, CA	1500 hrs AIAA-2014-0670 **Musical Counter Narratives: Space, Skepticism, and Religion in American Music** P. Blount, University of Mississippi, University, University, MS; J. Fussell, Self, Oxford, MS	1530 hrs Oral Presentation (Invited) **The Foreign Space Flight Participant Problem: Can a Space Flight Operator Balance Satisfaction of FAA Informed Consent Information Requirements with ITAR?** C. Hearsey, Astrosociology Research Institute, Silver Spring, MD	1600 hrs Oral Presentation (Invited) **Legal and Policy Issues of Emergent Private Sector Space Activities: Impacting the Evolution of International Space Law** M. Mineiro, Science and Technology Policy Institute, Washington, DC				

Tuesday, 14 January 2014						
179-SCS-1	Materials for Gossamer Systems					Chesapeake Conf Rm 6
Chaired by: M. SANTER, Imperial College London and M. SILVER, MIT Lincoln Laboratory						
1430 hrs No Presentations	1530 hrs AIAA-2014-0671 **Adaptive Multistable Flexible Composite Surfaces** Y. Cui, M. Santer, Imperial College London, London, United Kingdom	1600 hrs AIAA-2014-0672 **A Quasi-Static Nonlinear Model of Shape Memory Polymer Composite Beams for Space Applications** D. Bergman, B. Yang, University of Southern California, Los Angeles, CA; H. Fang, Shanghai YS Information Technology Company, Ltd., Shanghai, China	1630 hrs AIAA-2014-0673 **MOIRE: Membrane Material Property Characterizations, Testing and Lessons Learned** T. Copp, J. Domber, P. Atcheson, W. Tandy, J. Kommers, Ball Aerospace & Technologies Corporation, Boulder, CO; B. Farmer, NeXolve Corporation, Huntsville, AL			

Tuesday, 14 January 2014						
180-SD-7	Computational Aeroelasticity II					Chesapeake Conf Rm C
Chaired by: D. RAVEH and R. GORDNIER, Air Force Reseach Laboratory						
1430 hrs No Presentations	1530 hrs AIAA-2014-0674 **Computational Transonic Flutter Solutions for Cranked Wing Planforms** E. Mellquist, The Aerospace Corporation, El Segundo, CA; O. Bendiksen, University of California, Los Angeles, Los Angeles, CA	1600 hrs AIAA-2014-0675 **The NASA High Speed ASE Project: Computational Analyses of a Low-Boom Supersonic Configuration** W. Silva, NASA Langley Research Center, Hampton, VA; A. De La Garza, P. Zink, E. Bounajem, C. Johnson, Lockheed Martin Corporation, Fort Worth, TX; M. Buonanno, Lockheed Martin Corporation, Palmdale, CA; et al.	1630 hrs AIAA-2014-0676 **Analytical Correlation of a Flexible Empennage Wind Tunnel Flutter Test at High Transonic Mach Number** F. von Knoblauch, R. Moreno, P. Taylor, Gulfstream Aerospace Corporation, Savannah, GA; J. Newsom, Newsom Aerospace Consulting, LLC, Poquoson, VA			

Tuesday, 14 January 2014						
181-SD-8	Nonlinear Dynamics and Aeroelasticity					Chesapeake Conf Rm B
Chaired by: R. YURKOVICH and M. ALLEN, University of Wisconsin						
1430 hrs No Presentations	1530 hrs AIAA-2014-0677 **Aeroelasticity and Dynamic Analysis of Cracked Composite Wings Using Spectral Finite Element Method** R. Elkins, G. Wang, University of Alabama, Huntsville, Huntsville, AL	1600 hrs AIAA-2014-0678 **Design and Development of New Whirl Flutter Aeroelastic Demonstrator** J. Cecrdle, J. Malecek, Aeronautical Research and Test Institute (VZLU), Prague, Czech Republic	1630 hrs AIAA-2014-0679 **Uncertainties in control surface free-play and structural properties and their effect on flutter and LCO** D. Pitt, P. Bansal, The Boeing Company, St. Louis, MO	1700 hrs AIAA-2014-0680 **Aeroservoelastic Optimization of Varying Wing Sweep Angle Platform** S. Buchnik, M. Karpel, Technion–Israel Institute of Technology, Haifa, Israel		

Tuesday, 14 January 2014							
182-SE-1	**Systems Engineering**						**National Harbor Conf Rm 14**
Chaired by: J. EILER, Stellar Solutions, Inc. and D. DRESS, NASA Langley Research Center							
1430 hrs AIAA-2014-0681 **An Integrated and Parametric Environment for Generation, Selection and Evaluation of New Architectures at a Conceptual Level: Application to the Environmental Control System** C. Frank, W. Levy, E. Garcia, D. Mavris, J. Durand, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2014-0682 **Quantification of Margins and Uncertainties for Aerospace Systems using Stochastic Expansions** T. West, S. Hosder, Missouri University of Science and Technology, Rolla, MO; T. Winter, M4 Engineering, Inc., Long Beach, CA	1530 hrs AIAA-2014-0683 **Requirements and Concepts of Operations for a Personalized Air Transport System in 2050** N. Randt, S. Sartorius, Technical University of Munich, Munich, Germany	1600 hrs AIAA-2014-0684 **Proposed Variants for a Collaborative Aerospace Lifecycle Systems Engineering Master's Program** J. Silva, Georgia Institute of Technology, Atlanta, GA	1630 hrs AIAA-2014-0685 **Raytheon Weapon Server (RWS)** S. Baba, Raytheon Company, Tucson, AZ			

Tuesday, 14 January 2014		
183-SOF-1 **1430 - 1730 hrs**	**Cybersecurity in Space Systems Panel**	**National Harbor Conf Rm 2**
Chaired by: D. LAVALLEE, JHU/Applied Physics Laboratory		

1430-1600 hrs — Moderator: Richard M. (Dickie) George, Senior Advisor for Cybersecurity, JHU/APL

The panel will include any aspect of spacecraft, link, ground station, and operations centers. national security, civilian, and commercial systems will be discussed.

Panelists:

Sam Adhikari
VP, Operations and Research, Sysoft Corporation, and Chair of the AIAA Cybersecurity Working Group

Col. Scott Lathrop
Deputy Director, Advanced Capabilities Directorate U.S. Cyber Command

Dr. Norm Moulton
Director, J9, Advanced Concepts and Technologies U.S. Cyber Command

Dr. Mark Maybury
Chief Technology Officer, MITRE Corporation Former Chief Scientist and Author of Air Force Cyber Vision 2025

Phil Bounds (Ret)
Senior Strategic Security Advisor for Human Exploration and Operations Mission Directorate, NASA HQ

1600-1730 hrs — AIAA Cybersecurity Working Group, Open Meeting

Tuesday, 14 January 2014							
184-SRE-3	**Environmental Factors in Extraterrestrial Systems**						**National Harbor Conf Rm 4**
Chaired by: D. BOUCHER, Deltion Innovations Ltd. and D. CLARK, Lockheed Martin Space Systems							
1430 hrs AIAA-2014-0686 **Lunar Rover Analogue Mission Deployments** P. Visscher, D. Woolley, Ontario Drive and Gear, New Hamburg, Canada	1500 hrs AIAA-2014-0687 **Lunabotics Student Paper Award: The University of Alabama MOLE System** J. Headley, C. Leslie, D. Sandel, B. Grace, A. Faulkner, K. Ricks, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1530 hrs AIAA-2014-0688 **Planetary Drill Evolution** S. Schmidt, M. Viel, T. Atwell, Deltion Innovations Ltd., Sudbury, Canada	1600 hrs AIAA-2014-0689 **Lunar Polar Environmental Testing: Regolith Simulant Conditioning** J. Kleinhenz, NASA Glenn Research Center, Cleveland, OH				

Tuesday, 14 January 2014							
185-STR-9	Impact Mechanics and Structural Survivability						Chesapeake Conf Rm F
Chaired by: M. ROYBAL, Raytheon Missile Systems and R. KOCH, Naval Undersea Warfare Center							
1430 hrs No Presentations		1530 hrs AIAA-2014-0690 **The Vertical Drop Water Impact of Civil Aircraft Fuselage Structure based on SPH and ALE methods** Y. Ren, J. Xiang, Beihang University, Beijing, China	1600 hrs AIAA-2014-0691 **Baseline Analysis of LSDyna to Model the Effectiveness of an Explosive Containment Box for Aircraft Protection** A. Costain, J. Bayandor, Virginia Polytechnic Institute and State University, Blacksburg, VA	1630 hrs AIAA-2014-0692 **Investigation of Composite Patch Performance Under Low-Velocity Impact Loading** G. Goodmiller, S. TerMaath, University of Tennessee, Knoxville, Knoxville, TN	1700 hrs AIAA-2014-0693 **Slosh Damping with Floating Electroactive Microbaffles** V. Santhanam, R. Baum, D. Kim, S. Gangadharan, Embry-Riddle Aeronautical University, Daytona Beach, FL		

Tuesday, 14 January 2014							
186-STR-10	Structures Under Thermal Environment						Chesapeake Conf Rm E
Chaired by: B. WILLIS, Boeing Defense, Space & Security and O. ZHUPANSKA, The University of Iowa							
1430 hrs No Presentations		1530 hrs AIAA-2014-0694 **Peridynamics for Fully Coupled Thermomechanical Analysis of Fiber Reinforced Laminates** S. Oterkus, E. Madenci, University of Arizona, Tucson, Tucson, AZ	1600 hrs AIAA-2014-0695 **C0-type efficient higher-order plate theory for the thermo-mechanical analysis of laminated composite plates** J. Han, Seoul National University, Seoul, South Korea; J. Kim, Kumoh National Institute of Technology, Gyeongbuk, South Korea; M. Cho, Seoul National University, Seoul, South Korea	1630 hrs AIAA-2014-0696 **FEM Correlation of Sandwich Composite Antenna Structure Subject to Thermal Distortion** H. Soliman, Virginia Polytechnic Institute and State University, Blacksburg, VA; T. Stoumbos, Orbital Sciences Corporation, Dulles, VA			

Tuesday, 14 January 2014							
187-TP-3	Direct Simulation Monte Carlo Methods I						National Harbor Conf Rm 11
Chaired by: K. STEPHANI, University of Michigan and J. KUHLMAN, West Virginia University							
1430 hrs AIAA-2014-0697 **Efficient Direct Simulation Monte Carlo Modeling of Very Low Knudsen Number Gas Flows** J. Burt, E. Josyula, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs Oral Presentation (Invited) **An Accurate Direct Numerical Simulation of the Shock Wave Structure** E. Malkov, M. Ivanov, Russian Academy of Sciences, Novosibirsk, Russia	1530 hrs AIAA-2014-0698 **DSMC Calculations of Electron Density Flow Fields near Reentering Space Vehicles with SMILE++ Software System** Y. Bondar, A. Shevyrin, A. Kashkovsky, M. Ivanov, Russian Academy of Sciences, Novosibirsk, Russia	1600 hrs AIAA-2014-0699 **Effects of surface chemistry on high-altitude aerothermodynamics of space vehicles** A. Shumakova, A. Shevyrin, Y. Bondar, A. Kashkovsky, M. Ivanov, Russian Academy of Sciences, Novosibirsk, Russia				

Tuesday, 14 January 2014							
188-TP-4	Thermal Protection Systems II						National Harbor Conf Rm 10
Chaired by: J. OCHTERBECK, Clemson University and E. SILK, NASA-Goddard Space Flight Center							
1430 hrs AIAA-2014-0700 **Flexible Thermal Protection System Physics-Based Modeling for Temperature Profile Predictions** G. Rossman, R. Braun, Georgia Institute of Technology, Atlanta, GA; J. Dec, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2014-0701 **Measurements of Film Cooling Performance in Supersonic Environments** D. Maqbool, M. Collett, K. Dellimore, University of Maryland, College Park, College Park, MD; J. Ruf, NASA Marshall Space Flight Center, Huntsville, AL; C. Cadou, University of Maryland, College Park, College Park, MD	1530 hrs AIAA-2014-0702 **Design, Integration, and Initial Testing of an Integrated System for Thermal Conductivity Measurement of Insulation Materials at High Pressure** R. Nutsugah, Southern University and A&M, Baton Rouge, LA; M. Triay, A. Cooley, D. Sparacino, T. LaCour, J. Castillo, Louisiana State University, Baton Rouge, LA; et al.	1600 hrs AIAA-2014-0703 **Unsteady Simulation of One Dimensional Heat Transfer in Porous Media with a Temperature Jump Condition** P. Gangwar, M. Martin, Louisiana State University, Baton Rouge, LA	1630 hrs AIAA-2014-0704 **Feasibility Improvement of Non-Ablative Lightweight TPS for Mars Aero-flyby Sample Collection Mission** T. Suzuki, T. Aoki, T. Ogasawara, K. Fujita, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; J. Koyanagi, Tokyo University of Science, Tokyo, Japan	1700 hrs AIAA-2014-0705 **Reduction of Aerodynamic Heating with Opposing Jet through Extended Nozzle in High Enthalpy Flow** N. Morimoto, J. Yoon, S. Aso, Y. Tani, Kyushu University, Fukuoka, Japan		

Tuesday, 14 January 2014							
189-WE-6	Wind Farm and Turbine-Wake Interaction I						Woodrow Wilson B
Chaired by: S. SCHMITZ, Pennsylvania State University							
1430 hrs AIAA-2014-0706 **Experimental quantification of the entrainment of kinetic energy and production of turbulence in the wake of a wind turbine with Particle Image Velocimetry** L. Lignarolo, D. Ragni, C. Simao Ferreira, G. van Bussel, Delft University of Technology, Delft, The Netherlands	1500 hrs AIAA-2014-0707 **Evaluation of the effect of Realistic and Synthetic Inflow on the Power and Loading Pattern of Wind Turbine** H. Gopalan, D. Chandar, C. Gundling, J. Sitaraman, University of Wyoming, Laramie, Laramie, WY; W. Henshaw, J. Mirocha, Lawrence Livermore National Laboratory, Livermore, CA; et al.	1530 hrs AIAA-2014-0708 **Analyzing Effects of Turbulence on Power Generation Using Wind Plant Monitoring Data** J. Zhang, B. Hodge, National Renewable Energy Laboratory, Golden, CO; S. Chowdhury, Syracuse University, Syracuse, NY; Y. Wan, National Renewable Energy Laboratory, Golden, CO	1600 hrs AIAA-2014-0709 **Optimal control of wind farm power extraction in large eddy simulations** J. Goit, J. Meyers, Catholic University of Leuven, Leuven, Belgium	1630 hrs AIAA-2014-0710 **The Effect of Various Actuator-Line Modeling Approaches on Turbine-Turbine Interactions and Wake-Turbulence Statistics in Atmospheric Boundary-Layer Flow** P. Jha, Pennsylvania State University, University Park, PA; M. Churchfield, P. Moriarty, National Renewable Energy Laboratory, Golden, CO; S. Schmitz, Pennsylvania State University, University Park, PA	1700 hrs AIAA-2014-0711 **Modelling Extreme Wind Events in a Wind Farm using Large Eddy Simulation** R. Storey, S. Norris, J. Cater, University of Auckland, Auckland, New Zealand		

Tuesday, 14 January 2014							
190-WE-7	Wind Turbine Aeroelasticity and Structural Dynamics II						Woodrow Wilson C
Chaired by: M. LACKNER, University of Massachusetts and B. OWENS							
1430 hrs AIAA-2014-0712 **Cyber-physical Energy Harvesting through Flow-Induced Oscillations of a Rectangular Plate** K. Onoue, A. Song, B. Strom, K. Breuer, Brown University, Providence, RI	1500 hrs AIAA-2014-0713 **Floquet Stability Analysis of Wind Turbines Using Input-Output Models** C. Bottasso, Technical University of Munich, Munich, Germany; S. Cacciola, Technical University of Milan, Milan, Italy	1530 hrs AIAA-2014-0714 **Aerodynamic Sensitivity Analysis of Rotor Imbalance and Shear Web Disbond Detection Strategies for Offshore Structural Health Prognostics Management of Wind Turbine Blades** N. Myrent, N. Bilal, D. Adams, Purdue University, West Lafayette, IN; D. Griffith, Sandia National Laboratories, Albuquerque, NM	1600 hrs AIAA-2014-0715 **Wind Turbine Structural Model Using Non-Linear Modal Formulations** L. Bernhammer, R. De Breuker, Delft University of Technology, Delft, The Netherlands; M. Karpel, Technion–Israel Institute of Technology, Haifa, Israel	1630 hrs AIAA-2014-0716 **Aeroelastic Study of a Vertical Axis Wind Turbine with Troposkien Shape** A. Fereidooni, F. Nitzsche, E. Matida, Carleton University, Ottawa, Canada	1700 hrs AIAA-2014-0717 **Wind Turbine Fluid-Structure Interaction using an Actuator Line Solver and a Finite Element Solver in a Tightly-Coupled Implementation** J. Motta-Mena, P. Jha, R. Campbell, S. Schmitz, J. Brasseur, Pennsylvania State University, University Park, PA		

Tuesday, 14 January 2014		
191-NW-5 1530 - 1600 hrs	Tuesday Afternoon Networking Coffee Break	Exhibit Hall

Tuesday, 14 January 2014		
192-NW-6 1730 - 1900 hrs	Reception in the Exhibit Hall	Exhibit Hall

Wednesday

Wednesday, 15 January 2014		
193-NW-7 0700 - 0800 hrs	Wednesday Morning Networking Breakfast	Exhibit Hall

Wednesday, 15 January 2014		
194-SB-5 0730 - 0800 hrs	Wednesday Morning Speakers' Briefing	Session Rooms

Wednesday, 15 January 2014		
195-PLNRY-3 0800 - 0930 hrs	Wednesday Morning Keynote and Plenary Panel	Potomac Ballroom A&B

Keynote

Tech Superiority in an Age of Austerity
Frank Kendall
Under Secretary of Defense for Acquisition, Technology and Logistics
Department of Defense

Plenary Panel: Design for Affordability

Moderator: The Honorable Jacques S. Gansler, Professor and Roger C. Lipitz Chair, Glenn L. Martin Institute Fellow of Engineering Center for Public Policy & Private Enterprise, School of Public Policy, University of Maryland

Panelists:

Carl Avila
Director Advanced Weapons and Missile Systems
Boeing

John Bergeron
Senior Director, Raytheon Six Sigma, Engineering, Technology & Mission Assurance
Raytheon Company

John Fisher
Chief Engineer, Engineering, Manufacturing & Logistics
Northrop Grumman Electronic Systems

Wednesday, 15 January 2014		
196-NW-8 0930 - 1000 hrs	Wednesday Morning Networking Coffee Break	Exhibit Hall

Wednesday, 15 January 2014							
197-AA-5	Fan and Duct Acoustics						National Harbor Conf Rm 3
Chaired by: W. EVERSMAN, Missouri University of Science and Technology							
1000 hrs AIAA-2014-0718 **Experimental Simulation of Ducted Fan Acoustics at Very Small Scale** A. Truong, D. Papamoschou, University of California, Irvine, Irvine, CA	1030 hrs AIAA-2014-0719 **A Mode Propagation Database Suitable for Code Validation Utilizing the NASA Glenn Advanced Noise Control Fan and Artificial Sources** D. Sutliff, NASA Glenn Research Center, Cleveland, OH	1100 hrs AIAA-2014-0720 **The Numerical Analysis of Forward Fan Noise Shielding Effect on the Over-the-Wing Nacelle Configuration** Y. Fukushima, T. Misaka, S. Obayashi, Tohoku University, Sendai, Japan; D. Sasaki, Kanazawa Institute of Technology, Nonoichi, Japan; K. Nakahashi, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1130 hrs AIAA-2014-0721 **Recent Improvements to the Acoustic Testing Laboratory at the NASA Glenn Research Center** D. Sutliff, NASA Glenn Research Center, Cleveland, OH				

Wednesday, 15 January 2014							
198-ABPSI-3	**Group for Aeronautical Research and Technology in EURope (GARTEUR) II**						**Chesapeake Conf Rm 9**
Chaired by: A. DELOT, ONERA and T. BERENS, EADS Deutschland GmbH/Cassidian							
1000 hrs Oral Presentation (Invited) **An Overview of the Group for Aeronautical Research and Technology in EURope (GARTEUR)** H. Consigny, O. Vasseur, ONERA, Palaiseau, France; A. Delot, ONERA, Meudon, France	1030 hrs AIAA-2014-0722 **Numerical and Experimental Investigations on Highly Integrated Subsonic Air Intakes** T. Berens, Cassidian, Manching, Germany; A. Delot, ONERA, Meudon, France; M. Tormalm, Swedish Defense Research Agency (FOI), Stockholm, Sweden; L. Ruiz-Calavera, D. Funes-Sebastian, Airbus, Getafe, Spain; M. Rein, German Aerospace Center (DLR), Göttingen, Germany; et al.	1100 hrs AIAA-2014-0723 **DES Computations for a Subsonic UAV Configuration with a Highly Integrated S-Shaped Intake Duct** A. Delot, ONERA, Meudon, France; T. Berens, Cassidian, Manching, Germany; M. Tormalm, Swedish Defense Research Agency (FOI), Stockholm, Sweden; M. Säterskog, Saab, Linköping, Sweden; N. Ceresola, Alenia Aermacchi, Turin, Italy	1130 hrs AIAA-2014-0724 **Flow Control using Vortex Generators or Micro-Jets Applied in an UCAV Intake** M. Tormalm, Swedish Defense Research Agency (FOI), Stockholm, Sweden				

Wednesday, 15 January 2014							
199-ACD-8	**Unmanned Aircraft Design**						**Azalea 1**
Chaired by: G. CROUSE, Sierra Nevada Corporation							
1000 hrs AIAA-2014-0725 **A Parametric Study of Maximum Flight Efficiency for Micro Aerial Vehicles** C. Kroninger, A. Harrington, M. Munson, Army Research Laboratory, Aberdeen Proving Ground, MD	1030 hrs AIAA-2014-0726 **Modeling and Evaluation of a Spherical VTOL Aerial Vehicle with Ground Mobility** W. Loh, J. Jacob, Oklahoma State University, Stillwater, OK	1100 hrs AIAA-2014-0727 **Performance and Testing of a Quad Rotor Biplane Micro Air Vehicle for Multi Role Missions** V. Hrishikeshavan, C. Bogdanowicz, I. Chopra, University of Maryland, College Park, College Park, MD					

Wednesday, 15 January 2014							
200-AFM-7	**Aerodynamic Predictive Methods**						**National Harbor Conf Rm 13**
Chaired by: J. GRAUER, NASA - Dynamic Systems & Control Branch							
1000 hrs AIAA-2014-0728 **Analytically-derived Aerodynamic Force and Moment Coefficients of Resident Space Objects in Free-Molecular Flow** K. Hart, S. Dutta, K. Simonis, B. Steinfeldt, R. Braun, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2014-0729 **Unsteady and Post-Stall Aerodynamic Modeling for Flight Dynamics Simulation** R. Paul, North Carolina State University, Raleigh, NC; J. Murua, University of Surrey, Guildford, United Kingdom; A. Gopalarathnam, North Carolina State University, Raleigh, NC	1100 hrs AIAA-2014-0730 **Rapid Aerodynamic Parameter Identification on a Large Transport Aircraft** C. Raab, German Aerospace Center (DLR), Braunschweig, Germany	1130 hrs AIAA-2014-0731 **Roll Damping Derivatives from Generalized Lifting-Surface Theory and Wind Tunnel Forced-Oscillation Tests** A. Pototzky, NASA Langley Research Center, Hampton, VA	1200 hrs AIAA-2014-0732 **Assessing the Impact of Aerodynamic Modelling on Manoeuvring Aircraft** A. Da Ronch, University of Southampton, Southampton, United Kingdom; A. McCracken, K. Badcock, University of Liverpool, Liverpool, United Kingdom			

Wednesday, 15 January 2014							
201-AMT-5/PC-11	**Combustion Diagnostics I**						**Maryland Ballroom 1**
Chaired by: P. DANEHY, NASA Langley Research Center and J. SUTTON, Ohio State University							
1000 hrs AIAA-2014-0733 **High-Repetition-Rate OH-PLIF and PIV Measurements in Bluff Body Stabilized Flames** A. Caswell, N. Jiang, S. Roy, Spectral Energies, LLC, Dayton, OH; B. Huelskamp, Innovative Scientific Solutions, Inc., Dayton, OH; J. Monfort, University of Dayton Research Institute, Dayton, OH; A. Lynch, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	1030 hrs AIAA-2014-0734 **High Repetition Rate OH-PLIF of a Jet Flame in a Vitiated Swirling Crossflow and a Qualitative Analysis Using Proper Orthogonal Decomposition** P. Panda, M. Roa, R. Lucht, Purdue University, West Lafayette, IN	1100 hrs AIAA-2014-0735 **Three-Dimensional Measurements of Turbulent Jet Flames at kHz Rate Based on Tomographic Chemiluminescence** X. Li, L. Ma, Virginia Polytechnic Institute and State University, Blacksburg, VA	1130 hrs AIAA-2014-0736 **High-speed radiographic spray imaging with a broadband tube source** B. Halls, T. Morgan, T. Heindel, T. Meyer, Iowa State University, Ames, IA; A. Kastengren, Argonne National Laboratory, Argonne, IL	1200 hrs Oral Presentation (Invited) **Long-record-length burst-mode planar imaging for combustion diagnostics** J. Michael, P. Venkateswaran, Iowa State University, Ames, IA; J. Miller, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Slipchenko, Spectral Energies, LLC, Dayton, OH; J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH; S. Roy, Spectral Energies, LLC, Dayton, OH; et al.			

Wednesday, 15 January 2014							
202-APA-20	**Icing Effects on Vehicle Aerodynamics**						**Maryland Ballroom 3**
Chaired by: S. MORRIS, Engineering Systems, Inc. and H. HU, Iowa State University							
1000 hrs AIAA-2014-0737 **Prediction of ice accretion on the nacelle of a turboprop aircraft** C. Gallego Cañizares, L. Ruiz-Calavera, Airbus, Getafe, Spain	1030 hrs AIAA-2014-0738 **Splashing Model for Impact of Supercooled Large Droplets on a Thin Liquid Film** E. Norde, J. Hospers, E. van der Weide, H. Hoeijmakers, University of Twente, Enschede, The Netherlands	1100 hrs AIAA-2014-0739 **Thermal Analysis and Testing of a Cone with Leading Edge Hot Air Anti-icing System** W. Dong, J. Zhu, M. Zheng, Shanghai Jiao Tong University, Shanghai, China	1130 hrs AIAA-2014-0740 **Numerical Simulation of Supercooled Large Droplets Using the Moment of Fluid Method** Y. Lian, University of Louisville, Louisville, KY	1200 hrs AIAA-2014-0741 **An Experimental Investigation on Wind-Driven Rivulet/Film Flows over a NACA0012 Airfoil by Using Digital Image Projection Technique** K. Zhang, B. Johnson, A. Rothmayer, H. Hu, Iowa State University, Ames, IA			

Wednesday, 15 January 2014							
203-APA-21	**Low Speed Low Reynolds Number Aerodynamics II**						**Chesapeake Conf Rm I**
Chaired by: J. MASTERS, Aerospace Testing Alliance (ATA)							
1000 hrs AIAA-2014-0742 **Experimental Analysis of Power Requirements for Fixed-, Flapping-, and Rotary-Wing Micro Air Vehicles** B. Pipenberg, M. Maughmer, Pennsylvania State University, University Park, PA	1030 hrs AIAA-2014-0743 **Low Reynolds Number Experimental Studies on Flat Plates** R. Stevens, H. Babinsky, University of Cambridge, Cambridge, United Kingdom	1100 hrs AIAA-2014-0744 **Propeller Slipstream Interference with Wing Aerodynamic Characteristics of Mars Airplane at Low Reynolds Number** F. Makino, H. Nagai, Tohoku University, Sendai, Japan	1130 hrs AIAA-2014-0745 **Flow Field around Asymmetric Flapping Flat Plate Optimized using Micro Genetic Algorithm** P. Palar, University of Tokyo, Tokyo, Japan; L. Zuhal, Bandung Institute of Technology, Bandung, Indonesia	1200 hrs AIAA-2014-0746 **A Flat Plate with Unsteady Motion: Effect of Angle of Attack on Vortex Shedding** X. Xia, K. Mohseni, University of Florida, Gainesville, Gainesville, FL			

Wednesday, 15 January 2014							
204-APA-22	Special Session: 2nd High Lift Prediction Workshop (HiLiftPW-2) I						Maryland Ballroom A
Chaired by: D. MAVRIPLIS, University of Wyoming and C. WOEBER, Pointwise, Inc.							
1000 hrs AIAA-2014-0747 **Overview and Summary of the Second AIAA High Lift Prediction Workshop** C. Rumsey, NASA Langley Research Center, Hampton, VA; J. Slotnick, The Boeing Company, Huntington Beach, CA		1100 hrs AIAA-2014-0748 **NSU3D Results for the Second High-Lift Prediction Workshop** D. Mavriplis, University of Wyoming, Laramie, Laramie, WY; M. Long, Scientific Simulations, League City, TX; T. Lake, University of Wyoming, Laramie, Laramie, WY	1130 hrs AIAA-2014-0749 **Finite Element Flow Simulations of the EUROLIFT DLR-F11 High Lift Configuration** K. Chitale, Rensselaer Polytechnic Institute, Troy, NY; M. Rasquin, Argonne National Laboratory, Lemont, IL; J. Martin, Massachusetts Institute of Technology, Cambridge, MA; K. Jansen, University of Colorado, Boulder, Boulder, CO	1200 hrs AIAA-2014-0750 **Results from the 2nd AIAA CFD High Lift Prediction Workshop using Edge** P. Eliasson, Swedish Defense Research Agency (FOI), Stockholm, Sweden			

Wednesday, 15 January 2014							
205-APA-23	Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-Up Air Vehicles II						Maryland Ballroom 4
Chaired by: N. HARIHARAN, CREATE-AV; D. MCDANIEL, University of Alabama at Birmingham; B. HALLISSY, NAVAIR and T. SHAFER, NAVAIR							
1000 hrs AIAA-2014-0751 **Prediction of Unsteady Flow in UCAV Weapon's Bay Using CREATE-AV's Kestrel** B. Hallissy, CREATE AV Team, Patuxent River, MD; N. Hariharan, CREATE AV Team, Lorton, VA	1030 hrs AIAA-2014-0752 **CFD Solver Comparison of Low Mach Number Flow over the ROBIN Fuselage** J. Abras, CREATE AV Team, Patuxent River, MD; N. Hariharan, HPCMP CREATE-AV, Lorton, VA	1100 hrs AIAA-2014-0753 **Inlet/Engine Integration Examples Using Coupled Transient and Steady Engine Performance Models with Kestrel** S. Morton, CREATE Kestrel Team, Eglin AFB, FL	1130 hrs AIAA-2014-0754 **A-10 LAU-131 Jettison CFD Analysis** C. Lillian, SURVICE Engineering, Belcamp, MD	1200 hrs AIAA-2014-0755 **CREATETM-AV DaVinci Strategic Airlift Pilot Project** G. Roth, U.S. Air Force, Dayton, OH; J. Zhu, Flairsoft Federal, Dayton, OH; R. Buchy, Nova Technology Solutions, LLC, Dayton, OH			

Wednesday, 15 January 2014							
206-APA-24	Special Session: 2nd Cranked Arrow Wing Aerodynamic Project International (CAWAPI) II						Maryland Ballroom D
Chaired by: A. ELMILIGUI, NASA Langley Research Center and G. GATLIN							
1000 hrs AIAA-2014-0756 **USM3D Numerical Simulations For the F-16XL Aircraft Configuration** A. Elmiligui, K. Abdol-Hamid, NASA Langley Research Center, Hampton, VA; P. Cavallo, Combustion Research and Flow Technology, Inc., Pipersville, PA	1030 hrs AIAA-2014-0757 **Flow Analysis of the F-16XL Aircraft (CAWAPI-2) At Transonic Flow Conditions** O. Boelens, National Aerospace Laboratory (NLR), Amsterdam, The Netherlands; J. Luckring, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2014-0758 **Vortex Flows of the F-16XL Configuration - CAWAPI-II Free-Flight Simulations** S. Hitzel, Cassidian, Manching, Germany	1130 hrs AIAA-2014-0759 **What was Learned in Predicting Slender Airframe Aerodynamics with the F16-XL Aircraft** A. Rizzi, Royal Institute of Technology (KTH), Stockholm, Sweden				

Wednesday, 15 January 2014							
207-AS-1	Optimization and Structural Health Monitoring						Chesapeake Conf Rm D
Chaired by: D. AMBUR, NASA Langley Research Center and V. GIURGIUTIU, University of South Carolina							
1000 hrs AIAA-2014-0760 **Integrated experimental and numerical investigation for damage diagnosis in composite materials** T. Peng, Arizona State University, Tempe, AZ; A. Saxena, K. Goebel, NASA Ames Research Center, Moffett Field, CA; Y. Xiang, Y. Liu, Arizona State University, Tempe, AZ	1030 hrs AIAA-2014-0761 **Multidisciplinary Performance Based Optimization of Morphing Aircraft** A. Suleman, University of Victoria, Victoria, Canada; F. Lau, J. Vale, F. Afonso, Technical University of Lisbon, Lisbon, Portugal	1100 hrs AIAA-2014-0762 **Design and Optimisation of Composite Corrugated Skin for a Span Morphing Wing** Y. Xia, R. Ajaj, M. Friswell, Swansea University, Swansea, United Kingdom	1130 hrs AIAA-2014-0763 **Topology Optimization & Experimental Validation of 0-υ Honeycomb for Adaptive Morphing Wing** A. Dale, J. Cooper, University of Bristol, Bristol, United Kingdom; A. Mosquera, ACEL, Ltd., Daresbury, United Kingdom	1200 hrs AIAA-2014-0764 **A visco-electric device for vibration energy harvesting on rotorcraft** R. Mahmood, E. Smith, G. Lesieutre, Pennsylvania State University, University Park, PA		

Wednesday, 15 January 2014							
208-FD-23	Active and Passive Flow Control III						National Harbor Conf Rm 6
Chaired by: D. MILLER, Lockheed Martin Corporation and M. MCQUILLING, Saint Louis University							
1000 hrs AIAA-2014-0765 **Numerical investigation of Active Flow Control on a pitching NACA 0015 airfoil using Detached-Eddy Simulation** L. Wang, L. Li, S. Fu, Tsinghua University, Beijing, China	1030 hrs AIAA-2014-0766 **Effects of Burst Frequency and Momentum Coefficient of DBD Actuator on Control of Deep-stall Flow around NACA0015 at Rec=2.6x10^{5}** H. Aono, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; K. Okada, Ryoyu Systems Company, Ltd., Nagoya, Japan; T. Nonomura, S. Kawai, M. Sato, A. Yakeno, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; et al.	1100 hrs AIAA-2014-0767 **Experimental Study of Nano-second Pulse Plasma Actuator for Low Reynolds Number Flow Control** S. Sekimoto, T. Sulaiman, University of Tokyo, Sagamihara, Japan; M. Anyoji, T. Nonomura, K. Fujii, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1130 hrs AIAA-2014-0768 **Detached Eddy Simulations of a Synthetic Jet for a High-angle-of-attack Airfoil -Influence of the Jet Angle-** Y. Ishibashi, K. Miyaji, Yokohama National University, Yokohama, Japan	1200 hrs AIAA-2014-0769 **Vorticity and Turbulence Properties of Microjet Arrays for Active Flow Control** E. Fernandez, F. Alvi, Florida State University, Tallahassee, FL		

Wednesday, 15 January 2014							
209-FD-24	Higher-Order Methods II						Maryland Ballroom 5
Chaired by: H. HUYNH, NASA Glenn Research Center and T. FISHER, Sandia National Laboratories							
1000 hrs AIAA-2014-0770 **High-Order Implicit-Explicit Multi-block Time-stepping Method for Hyperbolic PDEs** T. Nielsen, NASA Marshall Space Flight Center, Huntsville, AL; T. Fisher, Sandia National Laboratories, Albuquerque, NM; S. Frankel, Purdue University, West Lafayette, IN	1030 hrs AIAA-2014-0771 **High-order temporal accuracy for 3D finite-element ALE flow simulations** A. Hay, S. Etienne, D. Pelletier, A. Garon, École Polytechnique de Montréal, Montréal, Canada	1100 hrs AIAA-2014-0772 **Higher-order Multi-dimensional Limiting Strategy for Correction Procedure via Reconstruction** J. Park, T. Chang, C. Kim, Seoul National University, Seoul, South Korea					

Wednesday, 15 January 2014							
210-FD-25	**Hypersonic Boundary Layer Receptivity**						**Maryland Ballroom 6**
Chaired by: V. THEOFILIS, Universidad Politécnica de Madrid and J. SCHMISSEUR, USAF AFOSR/NA							
1000 hrs AIAA-2014-0773 **Characterization of a Laser-Generated Perturbation in High-Speed Flow for Receptivity Studies** A. Chou, S. Schneider, Purdue University, West Lafayette, IN; M. Kegerise, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2014-0774 **Parametric Study of Boundary-Layer Receptivity to Freestream Hot-Spot Perturbation over a Blunt Compression Cone** Y. Huang, X. Zhong, University of California, Los Angeles, Los Angeles, CA	1100 hrs AIAA-2014-0775 **Numerical simulation of hypersonic non-equilibrium boundary-layer receptivity and stability** X. Wang, X. Zhong, University of California, Los Angeles, Los Angeles, CA					

Wednesday, 15 January 2014							
211-FD-26/MVC-5	**Overset Grid Methods**						**National Harbor Conf Rm 5**
Chaired by: M. GALBRAITH; D. THOMPSON, Mississippi State University and P. BUNING, NASA Langley Research Center							
1000 hrs AIAA-2014-0776 **A 3-D Discontinuous Galerkin Chimera Overset Method** M. Galbraith, P. Orkwis, University of Cincinnati, Cincinnati, OH; J. Benek, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2014-0777 **Analysis of a Chimera Scheme with a Finite Element Discretization** D. French, M. Galbraith, University of Cincinnati, Cincinnati, OH; J. Benek, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2014-0778 **Development of Arbitrary Unstructured Chimera Grid** S. Zhang, ESI Group, Huntsville, AL; X. Zhao, Alabama A&M University, Huntsville, AL; H. Guan, AVIC The First Aircraft Institute, Xi'an, China	1130 hrs AIAA-2014-0779 **Automatic Structured and Unstructured Grid Cell Remediation for Overset Meshes** J. Steinbrenner, Pointwise, Inc., Fort Worth, TX				

Wednesday, 15 January 2014							
212-FD-27/TP-5	**Rarefied Gas Dynamics in Micro- and Nano-Systems**						**National Harbor Conf Rm 4**
Chaired by: M. MARTIN, Louisiana State University; D. HITT, University of Vermont and M. KHAN, Tuskegee University							
1000 hrs Oral Presentation (Invited) **Research in Rarefied Gas Dynamics at the Micro-Scale at Purdue University** A. Alexeenko, Purdue University, West Lafayette, IN	1030 hrs Oral Presentation (Invited) **Development of New Computational Methods for Micro-Scale Rarefied Flow** D. Kessler, Naval Research Laboratory, Washington, DC	1100 hrs Oral Presentation (Invited) **Development of Kundsen Pumps for Micro-Scale Applications** M. Martin, Louisiana State University, Baton Rouge, LA	1130 hrs Oral Presentation (Invited) **Challenges in Rarefied Flows at the Micro-Scale** M. Gallis, Sandia National Laboratories, Albuquerque, NM	1200 hrs Oral Presentation (Invited) **Gas Flow and Heat Transfer in Arrays of Nano-Scale Structures** M. Martin, Louisiana State University, Baton Rouge, LA			

Wednesday, 15 January 2014							
213-GNC-12	**Intelligent Control in Aerospace Applications**						**National Harbor Conf Rm 7**
Chaired by: A. LAMPTON, Systems Technology, Inc.							
1000 hrs AIAA-2014-0780 **Derivation and Comparison between Numerical Based and Novel Analytical Compromise Solutions to the Multi-Objective Control Allocation Problem** F. Salama, A. Savvaris, Cranfield University, Cranfield, United Kingdom	1030 hrs AIAA-2014-0781 **Output Feedback M-MRAC Backstepping With Aerospace Applications** V. Stepanyan, University of California, Santa Cruz, Moffett Field, CA; K. Krishnakumar, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2014-0782 **Frequency Limited Adaptive Control Using a Quadratic Stability Framework: Stability and Convergence** J. Muse, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2014-0783 **Frequency Limited Adaptive Control Using a Quadratic Stability Framework: Guaranteed Stability Limits** J. Muse, Air Force Research Laboratory, Wright-Patterson AFB, OH				

Wednesday, 15 January 2014							
214-GNC-13	**Validation of Onboard Systems Technologies for LOC Prevention and Recovery, Session (Invited) II**						**National Harbor Conf Rm 8**
Chaired by: K. FEIGH, Georgia Institute of Technology and E. XARGAY							
1000 hrs AIAA-2014-0784 **Loss-of-Control Prediction and Prevention for NASA's Transport Class Model** J. Chongvisal, R. Malawy, D. Talleur, A. Kirlik, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL; C. Belcastro, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2014-0785 **An Evaluation of Flight Safety Assessment and Management to avoid Loss of Control during Takeoff** S. Balachandran, E. Atkins, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2014-0786 **Recoverable sets of initial conditions and their use for aircraft flight planning after a loss of control event** K. McDonough, I. Kolmanovsky, E. Atkins, University of Michigan, Ann Arbor, Ann Arbor, MI	1130 hrs AIAA-2014-0787 **Software Implementation and Verification of Sliding-Mode Control and Fault Detection Methods** A. Esna Ashari, E. Feron, Georgia Institute of Technology, Atlanta, GA	1200 hrs AIAA-2014-0788 **Frequency-Limited Adaptive Control of a Generic Transport Model in the Presence of System Uncertainty and Losses in Control Effectiveness** G. De La Torre, T. Yucelen, E. Johnson, W. Haddad, T. Rajpurohit, Georgia Institute of Technology, Atlanta, GA			

Wednesday, 15 January 2014							
215-GT-5	**The Direction and Integration of Experimental Ground Test Capabilities and Computational Methods, Part II (Invited)**						**Maryland Ballroom B**
Chaired by: S. DUNN, Jacobs Technology, T. TREPAL, Institute for Defense Analysis							
1000 hrs Oral Presentation (Invited) **Findings from the Part I/CASE Session on the Direction and Integration of GT and CFD** S. Dunn, Jacobs, Hampton, VA	1030 hrs Panelists: Mr. Alex Krynytzky, The Boeing Company, Seattle WA Mr. Shigeya Watanabe, Japan Aerospace Exploration Agency Mr. Tom Wayman, Gulfstream Aerospace Corporation, Savannah, GA Dr. Rubén del Rosario, NASA Glenn Research Center, Cleveland, OH Dr. Edward Marquart, Raytheon Missile Systems, Tucson, AZ Dr. Greg Power, Aerospace Testing Alliance, Arnold Engineering and Development Center, TN						

Wednesday, 15 January 2014							
216-GTE-5	**Turbomachinery II**						**Woodrow Wilson D**
Chaired by: G. WELCH, NASA Glenn Research Center and S. SUBRAMANIAN, QuEST Global, Inc.							
1000 hrs AIAA-2014-0789 **Investigation of Non-synchronous Vibration Mechanism for a High Speed Axial Compressor Using Delayed DES** H. Im, G. Zha, University of Miami, Coral Gables, FL	1030 hrs AIAA-2014-0790 **Full-Annulus Simulation of Non-Synchronous Blade Vibration of an Axial Compressor** D. Espinal, G. Zha, University of Miami, Coral Gables, FL; H. Im, Honeywell International, Inc., Rancho Palos Verdes, CA	1100 hrs AIAA-2014-0791 **Thermocouple Recovery Factor for Temperature Measurements in Turbomachinery Test Facilities** M. Fernelius, S. Gorrell, Brigham Young University, Provo, UT					

Wednesday, 15 January 2014							
217-IS-1	**Adaptive and Predictive Systems**						**National Harbor Conf Rm 15**
Chaired by: R. SAVELY, NASA Johnson Space Center							
1000 hrs AIAA-2014-0792 **A Concept for Adaptation of Perceptual Capabilities for UAV Platforms using Case-Based Reasoning** C. Hellert, P. Stütz, University of the German Federal Armed Forces, Neubiberg, Germany	1030 hrs AIAA-2014-0793 **Satisfiability Checking of LTL Specifications for Verifiable UAV Mission Planning** B. Kim, L. Humphrey, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2014-0794 **Inference of Aerodynamic Loads Under Uncertainty Using Strain Measurements and Bayesian Networks** D. Rancourt, S. Ghosh, N. Weston, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1130 hrs AIAA-2014-0795 **An Adaptive Expert System for the Autonomous Detection of Aviation Mishap Leading Indicators** D. Haas, Naval Surface Warfare Center, West Bethesda, MD; J. Walker, Quadelta, Inc., Arlington, VA; M. Morales, Computer Sciences Corporation, Bethesda, MD				

Wednesday, 15 January 2014							
218-MAT-5	**Integrated Computational Materials Engineering II**						**Chesapeake Conf Rm A**
Chaired by: M. SANGID, Purdue University; J. MATLIK, Rolls-Royce Corporation and S. ARNOLD							
1000 hrs AIAA-2014-0796 **Multi-Scale Crystal Plasticity FEM Approach to Modeling Nickel-Based Superalloys** S. Ghosh, Johns Hopkins University, Baltimore, MD	1030 hrs AIAA-2014-0797 **Examples of QuesTek Innovations' Application ICME to Materials Design, Development, and Rapid Qualification** J. Sebastian, G. Olson, QuesTek Innovations, LLC, Evanston, IL	1100 hrs AIAA-2014-0798 **Multi-scale Intrinsic Flaws in Composite Materials** J. Goodsell, R. Pipes, Purdue University, West Lafayette, IN	1130 hrs AIAA-2014-0799 **Effect of soft segment fraction on rate dependent damping of polyurethane and polyurethane-clay nanocomposites** T. Sain, E. Arruda, B. Yeom, A. Waas, University of Michigan, Ann Arbor, Ann Arbor, MI	1200 hrs AIAA-2014-0800 **Modeling the Coupled Transport-Deformation Response of Titanium Alloys Subjected to Thermo-Mechanical Environment** C. Oskay, H. Yan, Vanderbilt University, Nashville, TN			

Wednesday, 15 January 2014							
219-MDO-5	**Optimization Methods and Algorithms II**						**Chesapeake Conf Rm 4**
Chaired by: J. CHRISSIS, USAF and V. TOROPOV, University of Leeds							
1000 hrs AIAA-2014-0801 **Using Estimation Techniques in Multidisciplinary Design** B. Steinfeldt, R. Braun, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2014-0802 **A Multifidelity Approach to Aircraft Conceptual Design Under Uncertainty** L. Ng, K. Willcox, Massachusetts Institute of Technology, Cambridge, MA	1100 hrs AIAA-2014-0803 **A Multi-Objective Post-Optimality Data Handling Approach to Robust Optimization** K. Ryan, M. Lewis, K. Yu, University of Maryland, College Park, College Park, MD	1130 hrs AIAA-2014-0804 **Extensibility of a Linear Rapid Robust Design Methodology** B. Steinfeldt, R. Braun, Georgia Institute of Technology, Atlanta, GA	1200 hrs AIAA-2014-0805 **Robust Design Optimization Using a Trended Kriging Surrogate Model** S. Choi, H. Kwon, Korea Advanced Institute of Science and Technology, Daejeon, South Korea			

Wednesday, 15 January 2014							
220-MST-3	**Air Traffic Management/Human Factors**						**National Harbor Conf Rm 12**
Chaired by: F. CARDULLO, State University of NY							
1000 hrs AIAA-2014-0806 **Exploration of the Theoretical Physical Capacity of the John F. Kennedy International Airport Runway System** K. Neitzke, NASA Langley Research Center, Hampton, VA; N. Guerreiro, Analytical Mechanics Associates, Inc., Hampton, VA	1030 hrs AIAA-2014-0807 **Aircraft Trajectory Design Based on Reducing the Combined Effects of Carbon-Di-Oxide, Oxides of Nitrogen and Contrails** B. Sridhar, N. Chen, NASA Ames Research Center, Moffett Field, CA; H. Ng, University of California, Santa Cruz, Moffett Field, CA	1100 hrs AIAA-2014-0808 **Evaluation of Haptic Shared Control and a Highway-in-the-Sky Display for Personal Aerial Vehicles** F. Nieuwenhuizen, H. Bülthoff, Max Planck Institute for Biological Cybernetics, Tübingen, Germany	1130 hrs AIAA-2014-0809 **An Experimental Comparison of Haptic and Automated Pilot Support Systems** M. Olivari, F. Nieuwenhuizen, H. Bülthoff, Max Planck Institute for Biological Cybernetics, Tübingen, Germany; L. Pollini, University of Pisa, Pisa, Italy	1200 hrs AIAA-2014-0810 **Multimodal Pilot Behavior in Multi-Axis Tracking Tasks with Time-Varying Motion Cueing Gains** P. Zaal, San Jose State University Research Foundation, San Jose, CA; D. Pool, Delft University of Technology, Delft, The Netherlands			

Wednesday, 15 January 2014							
221-NDA-5	**Validation & Uncertainty Quantification Applications**						**Chesapeake Conf Rm 5**
Chaired by: B. BICHON, Southwest Research Institue and G. MODGIL, Rolls-Royce Corporation							
1000 hrs AIAA-2014-0811 **Handling Bias and Uncertainty in Model Verification and Validation associated with Heated Pipes Pressurized to Failure** V. Romero, Sandia National Laboratories, Albuquerque, NM	1030 hrs AIAA-2014-0812 **A Pre-Validation Study on Supersonic Wind Tunnel Data Collected from Legacy Aerothermal Experiments** M. Balch, Arctan, Inc., Alexandria, VA; B. Smarslok, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2014-0813 **Uncertainty Quantification of Hypersonic Reentry Flows using Sparse Sampling and Stochastic Expansions** T. West, S. Hosder, Missouri University of Science and Technology, Rolla, MO	1130 hrs AIAA-2014-0814 **Uncertainty analysis of corrugated skin with random elastic parameters and surface topology** A. Kundu, Swansea University, Swansea, United Kingdom; F. DiazDelaO, University of Liverpool, Liverpool, United Kingdom; M. Friswell, S. Adhikari, Swansea University, Swansea, United Kingdom				

Wednesday, 15 January 2014		
222-PANEL-5 1000 - 1200 hrs	Additive Manufacturing - A Transformative Technology Panel	Potomac Ballroom C

Moderator: Ed Morris, Director; Vice President, America Makes - National Additive Manufacturing Innovation Institute; National Center for Defense Manufacturing and Machining (NCDMM)

Panelists:

William Flite
Project Engineering Senior Manager
Lockheed Martin Aeronautics

Dan Johns
Chief Technologist, Additive Manufacturing
GKN Aerospace

Eric MacDonald
Associate Director, W. M. Keck Center of 3D Innovation
The University of Texas at El Paso

Paul Susalla
Section Supervisor - Rapid Manufacturing, Global Powertrain Manufacturing Engineering
Ford Motor Company

Wednesday, 15 January 2014							
223-PC-12	Advanced Combustion Concepts and New Technologies						National Harbor Conf Rm 2
Chaired by: M. ANAND, Rolls-Royce Corporation and B. WINDOM, Princeton University							
1000 hrs AIAA-2014-0815 **Transient Injection of Supercritical Fuel** S. Leonov, I. Adamovich, W. Lempert, Ohio State university, Columbus, OH	1030 hrs AIAA-2014-0816 **Gas vs. Condensed Phase Reactions in Nano-Thermites** R. Jacob, G. Jian, P. Guerieri, M. Zachariah, University of Maryland, College Park, College Park, MD	1100 hrs AIAA-2014-0817 **Characterization of Patterened Galvanic Porous Silicon for On-Chip Combustion** N. Piekiel, W. Churaman, C. Morris, D. Lunking, Army Research Laboratory, Adelphi, MD	1130 hrs AIAA-2014-0818 **A New Cool Flame: Establishment and Studies of Dynamics and Kinetics** S. Won, B. Jiang, Y. Ju, Princeton University, Princeton, NJ				

Wednesday, 15 January 2014							
224-PC-13	Kinetic Model Reduction						Chesapeake Conf Rm H
Chaired by: J. BELLAN, Jet Propulsion Laboratory							
1000 hrs AIAA-2014-0819 **Dimensionality Reduction Using a Dominant Dynamic Variable, Self Similarity and Data Tabulation: Application to Hydrocarbon Oxidation** P. Kourdis, J. Bellan, California Institute of Technology, Pasadena, CA; K. Harstad, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1030 hrs AIAA-2014-0820 **Model Reduction Opportunities in Detailed Simulations of Combustion Dynamics** R. Munipalli, HyPerComp, Inc., Westlake Village, CA; X. Zhu, Brown University, Providence, RI; S. Menon, Georgia Institute of Technology, Atlanta, GA; J. Hesthaven, Brown University, Providence, RI	1100 hrs AIAA-2014-0821 **Correlated Dynamic Adaptive Chemistry and Multi-timescale Modeling of Ignition and Combustion of a n-Heptane/ Air Mixture** W. Sun, Princeton University, Princeton, NJ; H. El-Asrag, ANSYS, Inc., Lebanon, NH; Y. Ju, Princeton University, Princeton, NJ	1130 hrs AIAA-2014-0822 **Comparison of ODE Solver for Chemical Kinetics and Reactive CFD Applications** C. Stone, Computational Science and Engineering, LLC, Chicago, IL; F. Bisetti, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia				

Wednesday, 15 January 2014							
225-PC-14	Turbulent Combustion Modeling I						Chesapeake Conf Rm G
Chaired by: S. MENON, Georgia Institute of Technology							
1000 hrs AIAA-2014-0823 **Models for the LES equations to describe multi-species mixing occurring at supercritical pressure** G. Borghesi, J. Bellan, California Institute of Technology, Pasadena, CA	1030 hrs AIAA-2014-0824 **LES of Premixed Flame Flashback in a Turbulent Channel** C. Lietz, M. Hassanaly, V. Raman, University of Texas, Austin, Austin, TX; H. Kolla, J. Chen, Sandia National Laboratories, Livermore, CA; A. Gruber, SINTEF Energy Research, Trondheim, Norway	1100 hrs AIAA-2014-0825 **Large Eddy Simulation of Turbulent Reacting Jet in Cross Flow with Adaptive Mesh Refinement** B. Muralidharan, S. Menon, Georgia Institute of Technology, Atlanta, GA	1130 hrs AIAA-2014-0826 **Towards Predictive Reacting Flow LES** P. Cocks, V. Sankaran, M. Soteriou, United Technologies Corporation, East Hartford, CT	1200 hrs AIAA-2014-0827 **Large Eddy Simulation of Non-premixed Turbulent Combustion Using Nanosecond Pulsed Actuators** C. Wang, Yuan Ze University, Chung, Taiwan			

Wednesday, 15 January 2014							
226-PDL-8	**Magnetohydrodynamics/Microwave Plasmas**						**Azalea 3**
Chaired by: N. BISEK, Air Force Reseach Laboratory							
1000 hrs AIAA-2014-0828 **Shock Wave Propagation through Region of Electrical and Magnetic Fields Action** A. Erofeev, T. Lapushkina, S. Poniaev, Russian Academy of Sciences, Saint Petersburg, Russia	1030 hrs AIAA-2014-0829 **A Three-Dimensional Numerical Study of MHD interaction between Supernova Remnants and Interstellar Wind** S. Surzhikov, M. Ermishkin, Russian Academy of Sciences, Moscow, Russia	1100 hrs AIAA-2014-0830 **Ignition of electric gas discharge in the deeply subcritical field of quasi-optical microwave beam with an electromagnetic vibrator mounted over a metal screen** A. Ravaev, L. Grachev, I. Esakov, A. Vasilyev, Russian Academy of Sciences, Moscow, Russia	1130 hrs AIAA-2014-0831 **Characteristics of localized microwave discharges on surface of aerodynamic models** P. Lavrov, A. Ravaev, I. Esakov, Russian Academy of Sciences, Moscow, Russia				

Wednesday, 15 January 2014							
227-SCS-2	**Solar Sails and Tensioned Membranes**						**Chesapeake Conf Rm 6**
Chaired by: V. LAPPAS, University of Surrey and M. MCEACHEN, ATK Space Systems							
1000 hrs AIAA-2014-0832 **Nonflatness of Solar Sail Membrane Predicted by Nonlinear Finite Element Analyses** Y. Satou, Tokyo Institute of Technology, Yokohama, Japan; N. Okuizumi, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; G. Ono, University of Tokyo, Tokyo, Japan; H. Furuya, H. Sakamoto, Tokyo Institute of Technology, Yokohama, Japan; Y. Shirasawa, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; et al.	1030 hrs AIAA-2014-0833 **Optical Control of Solar Sails using Distributed Reflectivity** A. Borggräfe, J. Heiligers, University of Strathclyde, Glasgow, United Kingdom; M. Ceriotti, University of Glasgow, Glasgow, United Kingdom; C. McInnes, University of Strathclyde, Glasgow, United Kingdom	1100 hrs AIAA-2014-0834 **Systematic Surface Deviation and Shape Control of a Large Mesh Reflector** L. Xiao, W. Minger, Tongji University, Shanghai, China; X. Ma, H. Fang, Shanghai YS Information Technology Company, Ltd., Shanghai, China					

Wednesday, 15 January 2014							
228-SD-9	**Adaptive Aeroelastic Wing Shaping Control I**						**Chesapeake Conf Rm C**
Chaired by: H. KIM, Boeing Defense, Space & Security and J. SLATER, Wright State University							
1000 hrs AIAA-2014-0835 **Control System Design for a Variable Camber Continuous Trailing Edge Flap System on an Elastic Wing** C. Morris, J. Sheahan, J. Dykman, D. Clingman, J. Urnes, The Boeing Company, St. Louis, MO	1030 hrs AIAA-2014-0836 **Static Aeroelastic Analysis with an Inviscid Cartesian Method** D. Rodriguez, Science and Technology Corporation, Moffett Field, CA; M. Aftosmis, NASA Ames Research Center, Moffett Field, CA; M. Nemec, Science and Technology Corporation, Moffett Field, CA; S. Smith, Zee Aero, Mountain View, CA	1100 hrs AIAA-2014-0837 **Static Aeroelastic and Longitudinal Trim Model of Flexible Wing Aircraft Using Finite-Element Vortex-Lattice Coupled Solution** E. Ting, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; N. Nguyen, NASA Ames Research Center, Moffett Field, CA; K. Trinh, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	1130 hrs AIAA-2014-0838 **Static Aeroelastic Scaling and Analysis of a Sub-Scale Flexible Wing Wind Tunnel Model** E. Ting, S. Lebofsky, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; N. Nguyen, NASA Ames Research Center, Moffett Field, CA; K. Trinh, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	1200 hrs AIAA-2014-0839 **Flutter Analysis of Mission-Adaptive Wing with Variable Camber Continuous Trailing Edge Flap** N. Nguyen, NASA Ames Research Center, Moffett Field, CA; E. Ting, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; D. Nguyen, University of California, Berkeley, Berkeley, CA; K. Trinh, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA			

Wednesday, 15 January 2014							
229-SD-10	**Very Flexible Aircraft**						**Chesapeake Conf Rm B**
Chaired by: R. MALLA, University of Connecticut and R. SCOTT, NASA-Langley Research Center							
1000 hrs AIAA-2014-0840 **Nonlinear Aeroelastic Behavior of High Aspect Ratio Wing Excited by Time Dependent Thrust** P. Mardanpour, D. Hodges, R. Rezvani, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2014-0841 **Computational Nonlinear Aeroelasticity of Very Flexible Aircraft with Deformable Airfoils** W. Su, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1100 hrs AIAA-2014-0842 **Nonlinear Model Reduction for Aeroelastic Control of Flexible Aircraft Described by Large Finite-Element Models** Y. Wang, W. Andrew, R. Palacios, Imperial College London, London, United Kingdom	1130 hrs AIAA-2014-0843 **Predictive Control for Alleviation of Gust Loads on Very Flexible Aircraft** R. Simpson, R. Palacios, H. Hesse, Imperial College London, London, United Kingdom; P. Goulart, Swiss Federal Institute of Technology, Zürich, Switzerland				

Wednesday, 15 January 2014							
231-STR-11	**Shell Bucking-Charles Rankin Special Session I**						**Chesapeake Conf Rm E**
Chaired by: M. HILBURGER, NASA-Langley Research Center and R. YOUNG, NASA-Langley Research Center							
1000 hrs AIAA-2014-0844 **Minimum Weight Design of an Axially Compressed Isotropic Prismatic Panel Consisting of a Series of Cylindrical Segments and Verification by STAGS** D. Bushnell, Self, Palo Alto, CA; M. Jacoby, Lockheed Martin Corporation, Palo Alto, CA	1030 hrs AIAA-2014-0845 **The Use of the STAGS Finite Element Code in Stitched Structures Development** D. Jegley, A. Lovejoy, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2014-0846 **High-Fidelity Buckling Analysis of Composite Cylinders using the STAGS Finite Element Code** M. Hilburger, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2014-0847 **Post-buckling Response of Scarf Repaired Laminates Using a Refined Zigzag Element** A. Borut, E. Madenci, University of Arizona, Tucson, Tucson, AZ; A. Tessler, NASA Langley Research Center, Hampton, VA	1200 hrs AIAA-2014-0848 **STAGS Developments for Residual Strength Analysis Methods for Metallic Fuselage Structures** R. Young, C. Rose, NASA Langley Research Center, Hampton, VA			

Wednesday, 15 January 2014							
232-STR-12	**Advances in Design and Analysis of Structures**						**Chesapeake Conf Rm F**
Chaired by: D. PHILLIPS, NASA-Marshall Space Flight Center and M. WOLFF, Gulfstream Aerospace Corporation							
1000 hrs AIAA-2014-0849 **A Computational Model for the Flow of Resin in Self-Healing Composites** J. Hall, T. Rendall, I. Qamar, R. Trask, University of Bristol, Bristol, United Kingdom	1030 hrs AIAA-2014-0850 **Analysis of the Effect of a Wrinkle on the Elastic Wave Propagation in Membrane Structures** Y. Akaike, T. Yokozeki, University of Tokyo, Tokyo, Japan; A. Kanda, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1100 hrs AIAA-2014-0851 **Forming Process Analysis of Vibration Damping Laminated Steel Using Finite Element Analysis** C. Sun, W. Zhou, United Technologies Corporation, Syracuse, NY; P. Pankaj, Larsen & Toubro, Ltd., Mumbai, India; A. Sardar, J. Covington, M. Lombardo, United Technologies Corporation, Syracuse, NY	1130 hrs AIAA-2014-0852 **Single Edge Notch Tension Test on Cross-Ply Laminated Composites for Intralaminar Fracture Properties** S. Boyd, W. Ji, A. Joseph, A. Waas, University of Michigan, Ann Arbor, Ann Arbor, MI				

Wednesday, 15 January 2014							
233-TES-1	**Cutting Edge Energy Systems and Fuels**						**Azalea 2**
Chaired by: B. SLOAN, Iowa State University							
1000 hrs AIAA-2014-0853 **Butyl Nonanoate as a Future Biofuel for Clean Gas Turbine Engines** A. Khalil Hasan, A. Gupta, University of Maryland, College Park, College Park, MD	1030 hrs AIAA-2014-0854 **High Velocity Oxy Fuel Thermal Spray Gun Design** D. Mohamed, L. Cabrera, N. Love, A. Choudhuri, University of Texas, El Paso, El Paso, TX	1100 hrs AIAA-2014-0855 **Development of passive wireless temperature sensors using metamaterials** H. Karim, A. Choudhuri, University of Texas, El Paso, El Paso, TX	1130 hrs AIAA-2014-0856 **Reducing the Space and Power Consumption for Aerospace Water Treatment by Improving Aeration Process Using Innovative mixing Power Reclamation Device** R. Amano, University of Wisconsin, Milwaukee, Milwaukee, WI; A. Alkhalidi, Hashemite University, Amman, Jordan; H. Albabaa, University of Wisconsin, Milwaukee, Milwaukee, WI	1200 hrs AIAA-2014-0857 **Design and Production of Composite Structures: Thermoplastic Wind Turbine Blades** R. Amano, L. Forsythe, University of Wisconsin, Milwaukee, Milwaukee, WI			

Wednesday, 15 January 2014							
234-TP-6	**Heat Transfer**						**National Harbor Conf Rm 11**
Chaired by: E. SHORT, Raytheon Company							
1000 hrs AIAA-2014-0858 **Fractal Loop Heat Pipe Performance Comparisons of a Soda Lime Glass and Compressed Carbon Foam Wick** D. Myre, KDM Systems, Inc., Chantilly, VA; E. Silk, NASA Goddard Space Flight Center, Greenbelt, MD	1030 hrs AIAA-2014-0859 **Neutron Imaging of an Unbalanced Flat-Plate Oscillating Heat Pipe** J. Monroe, S. Thompson, Z. Aspin, Mississippi State University, Mississippi State, MS; D. Jacobson, D. Hussey, National Institute of Standards and Technology, Gaithersburg, MD	1100 hrs AIAA-2014-0860 **Evaluation of Multi-Louvered Fin Based Heat Exchangers for use in Automobile Exhaust Energy Harvesting Systems** J. Athavale, J. Pandit, S. Ekkad, S. Huxtable, Virginia Polytechnic Institute and State University, Blacksburg, VA	1130 hrs AIAA-2014-0861 **The Study of Air-Cooled Condenser (ACC) Under Wind Velocity and Environmental Temperature Conditions** M. Darbandi, A. Behrouzifar, H. Salemkar, Sharif University of Technology, Tehran, Iran; G. Schneider, University of Waterloo, Waterloo, Canada	1200 hrs AIAA-2014-0862 **Assessment of Combined Natural Convection-Radiation in a Participating Square Cavity Including Compressibility Effects** M. Darbandi, B. Abrar, Sharif University of Technology, Tehran, Iran; G. Schneider, University of Waterloo, Waterloo, Canada			

Wednesday, 15 January 2014							
235-TP-7	**Non-Equilibrium Flows I**						**National Harbor Conf Rm 10**
Chaired by: R. GOSSE, AFRL - Air Force Research Laboratory and A. SURESH, GE							
1000 hrs AIAA-2014-0863 **Passive control of hypersonic non-equilibrium boundary layers using regular porous coating** X. Wang, X. Zhong, University of California, Los Angeles, Los Angeles, CA	1030 hrs AIAA-2014-0864 **Influence of State-to-State Transport Coefficients on Surface Heat Transfer in Hypersonic Flows** E. Josyula, Air Force Research Laboratory, Wright-Patterson AFB, OH; E. Kustova, Saint Petersburg State University, Saint Petersburg, Russia; P. Vedula, University of Oklahoma, Norman, Norman, OK; J. Burt, Universal Technology Corporation, Beachwood, OH	1100 hrs AIAA-2014-0865 **Computational Modeling of the Flow Environment in Inductively Coupled Plasma Jet Facilities** P. Norman, T. Schwartzentruber, G. Candler, University of Minnesota, Minneapolis, Minneapolis, MN	1130 hrs AIAA-2014-0866 **Consistent Implementation of State-to-State Collision Models for Direct Simulation Monte Carlo** C. Zhang, T. Schwartzentruber, University of Minnesota, Minneapolis, Minneapolis, MN				

Wednesday, 15 January 2014							
236-WE-8	**Atmospheric Physics and Inflow**						**Woodrow Wilson C**
Chaired by: S. ANANTHAN, US DOE and S. SCHRECK, National Renewable Energy Laboratory, National Wind Technology Center							
1000 hrs AIAA-2014-0867 **Blade Boundary Layer Response to Atmospheric Boundary Layer Turbulence on a NREL 5MW Wind Turbine Blade with Hybrid URANS-LES** G. Vijayakumar, A. Lavely, B. Jayaraman, B. Craven, J. Brasseur, Pennsylvania State University, University Park, PA	1030 hrs AIAA-2014-0868 **Transition in Atmospheric Turbulence Structure from Neutral to Convective Stability States** B. Jayaraman, J. Brasseur, Pennsylvania State University, University Park, PA	1100 hrs AIAA-2014-0869 **Towards a Blade-Resolved Hybrid URANS-LES of the NREL 5-MW Wind Turbine Rotor within Large Eddy Simulation of the Atmospheric Boundary Layer** A. Lavely, G. Vijayakumar, B. Craven, B. Jayaraman, Pennsylvania State University, University Park, PA; E. Paterson, Virginia Polytechnic Institute and State University, Blacksburg, VA; T. Nandi, Pennsylvania State University, University Park, PA; et al.	1130 hrs AIAA-2014-0870 **On the Use of Site Data to Define Extreme Turbulence Conditions for Wind Turbine Design** J. Moon, W. Sahasakkul, M. Soni, L. Manuel, University of Texas, Austin, Austin, TX				

Wednesday, 15 January 2014							
237-WE-9	**Wind Turbine Loads, Dynamics, and Control I**						**Woodrow Wilson B**
Chaired by: M. BALAS, University of Wyoming							
1000 hrs AIAA-2014-0871 **Synthetic Jet based Active Flow Control of Dynamic Stall Phenomenon on Wind Turbines Under Yaw Misalignment** S. Tran, Rensselaer Polytechnic Institute, Troy, NY; D. Corson, Altair Engineering, Inc., Clifton Park, NY; O. Sahni, Rensselaer Polytechnic Institute, Troy, NY	1030 hrs AIAA-2014-0872 **An Active Fault-Tolerant Control Approach to Wind Turbine Torque Load Control against Actuator Faults** H. Badihi, Y. Zhang, H. Hong, Concordia University, Montréal, Canada	1100 hrs AIAA-2014-0873 **Effects of gain-scheduling methods in a classical wind turbine controller on wind turbine aero-servo-elastic modes and loads** C. Tibaldi, L. Henriksen, M. Hansen, C. Bak, Technical University of Denmark, Lyngby, Denmark	1130 hrs AIAA-2014-0874 **Sizing and Control of Trailing Edge Flaps on a Smart Rotor for Maximum Power Generation in Low Fatigue Wind Regimes** J. Smit, L. Bernhammer, Delft University of Technology, Delft, The Netherlands; L. Bergami, M. Gaunaa, DTU Wind Energy, Roskilde, Denmark	1200 hrs AIAA-2014-0875 **Wind Turbine and Wind Farm Control Testing in a Boundary Layer Wind Tunnel** C. Bottasso, Technical University of Munich, Munich, Germany; F. Campagnolo, Technical University of Milan, Milan, Italy			

Wednesday, 15 January 2014		
238-LNCH-2 **1230 - 1330 hrs**	**Luncheon in the Exhibit Hall**	**Exhibit Hall**

Wednesday, 15 January 2014		
239-SB-6 **1330 - 1400 hrs**	**Wednesday Afternoon Speakers' Briefing**	**Session Rooms**

Wednesday, 15 January 2014							
240-AA-6	**Jet Noise III**						**Azalea 2**
Chaired by: K. AHUJA, Georgia Institute of Technology and K. TEERLINCK, United Technologies Research Center							
1400 hrs AIAA-2014-0876 **Noise from Aft Deck Exhaust Nozzles—Differences in Experimental Embodiments** J. Bridges, NASA Glenn Research Center, Cleveland, OH	1430 hrs AIAA-2014-0877 **Resonant Interaction of a Rectangular Jet with a Flat-plate** K. Zaman, A. Fagan, M. Clem, C. Brown, NASA Glenn Research Center, Cleveland, OH	1500 hrs AIAA-2014-0878 **Developing an Empirical Model for Jet-Surface Interaction Noise** C. Brown, NASA Glenn Research Center, Cleveland, OH	1530 hrs AIAA-2014-0879 **Experimental Study on Acoustic Phenomena of Supersonic Jet Impinging on Inclined Flat Plate** M. Akamine, Y. Nakanishi, K. Okamoto, University of Tokyo, Chiba, Japan; S. Teramoto, T. Okunuki, University of Tokyo, Tokyo, Japan; S. Tsutsumi, Japan Aerospace Exploration Agency (JAXA), Kanagawa, Japan	1600 hrs AIAA-2014-0880 **Experimental Investigation of Two Impinging Model Scale Jets** L. Myers, C. Kuo, D. McLaughlin, Pennsylvania State University, University Park, PA	1630 hrs AIAA-2014-0881 **Investigation of the Instabilities of Supersonic Impinging Jets Using Unsteady Pressure Sensitive Paint** T. Davis, A. Edstrand, L. Cattafesta, F. Alvi, Florida State University, Tallahassee, FL; D. Yorita, K. Asai, Tohoku University, Sendai, Japan	1700 hrs AIAA-2014-0882 **Acoustic Generation Mechanism of a Supersonic Jet Impinging on Deflectors** S. Tsutsumi, R. Takaki, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; Y. Nakanishi, K. Okamoto, University of Tokyo, Kashiwa, Japan; S. Teramoto, University of Tokyo, Bunkyo, Japan	

Wednesday, 15 January 2014							
241-AFM-8	**Launch Vehicles**						**National Harbor Conf Rm 12**
Chaired by: M. LOWENBERG, University of Bristol and B. BURCHETT, Rose-Hulman Institute of Technology							
1400 hrs AIAA-2014-0883 **Predictive Optimal Pulse-jet Control for Symmetric Projectiles** B. Burchett, Rose-Hulman Institute of Technology, Terre Haute, IN	1430 hrs AIAA-2014-0884 **Impact of Cross-axis Structural Dynamics on Validation of Linear Models for Space Launch System** J. Pei, S. Derry, NASA Langley Research Center, Hampton, VA; J. Newsom, Analytical Mechanics Associates, Inc., Hampton, VA; Z. Zhou, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2014-0885 **Low Cost, High Maneuverability Projectile Guidance and Flight Control** F. Fresconi, Army Research Laboratory, Aberdeen Proving Ground, MD	1530 hrs AIAA-2014-0886 **Limit Circular Motion of Spinning Projectiles Induced by Backlash of Actuators** W. Zhou, S. Yang, L. Zhao, Beijing Institute of Technology, Beijing, China	1600 hrs AIAA-2014-0887 **GPS-Denied State Estimation for Spin-Stabilized Precision Projectiles** L. Fairfax, J. Maley, F. Fresconi, Army Research Laboratory, Aberdeen Proving Ground, MD	1630 hrs AIAA-2014-0888 **Trajectory Simulation of Flexible Missiles and the Effect of Flexibility on Hit Precision** S. Yao, Z. Wu, C. Yang, Beihang University, Beijing, China		

Wednesday, 15 January 2014							
242-AFM-9	**Micro UAVs**						**National Harbor Conf Rm 13**
Chaired by: R. LIND, University of Florida and E. MORELLI, NASA Langley Research Center							
1400 hrs AIAA-2014-0889 **An Experimental Study of Stroke Kinematics and Wing Planform Design for Slow Forward Flapping Flight** W. Fassmann, S. Thomson, Brigham Young University, Provo, UT	1430 hrs AIAA-2014-0890 **In-Flight Oscillation of Flapping Wing Vehicle** A. Jennings, Air Force Institute of Technology, Wright-Patterson AFB, OH; M. Mayhew, Virginia Military Institute, Lexington, VA; J. Black, Air Force Institute of Technology, Wright-Patterson AFB, OH	1500 hrs AIAA-2014-0891 **Effect of the Parametric Excitation on the Longitudinal Stability of Hovering MAVs/ Insects** H. Taha, A. Nayfeh, M. Hajj, Virginia Polytechnic Institute and State University, Blacksburg, VA	1530 hrs AIAA-2014-0892 **Characterization of a Simplified Dynamics Model for Control and Design of Flexible Flapping Wing MAVs** S. Nogar, A. Gogulapati, J. McNamara, A. Serrani, Ohio State University, Columbus, OH	1600 hrs AIAA-2014-0893 **Neural Model of an Entomopter Aerodynamics** K. Sibilski, Air Force Institute of Technology, Warsaw, Poland; P. Czekalowski, Institute of Aviation, Warsaw, Poland; W. Wroblewski, Wroclaw University of Technology, Wroclaw, Poland; A. Zyluk, Air Force Institute of Technology, Warsaw, Poland	1630 hrs AIAA-2014-0894 **Flow structures, transport and navigation in hurricanes** D. Lipinski, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1700 hrs AIAA-2014-0895 **Nonlinear Dynamics of Flapping Wing MAV Using Cycle-Averaged Force Coefficients** A. Rege, K. Subbarao, B. Dennis, University of Texas, Arlington, Arlington, TX	

Wednesday, 15 January 2014							
243-AMT-6	**Recent Advances and Applications of Stochastic Estimation Techniques (Invited)**						**Maryland Ballroom 2**
Chaired by: P. LAVOIE, University of Toronto and L. UKEILEY, University of Florida							
1400 hrs Oral Presentation (Invited) **Simultaneous use of PIV, wall shear stress and pressure measurements for separation control on a NACA 0015 profile** J. Bonnet, B. Noack, V. Parezanovic, National Center for Scientific Research (CNRS), Poitiers, France	1430 hrs Oral Presentation (Invited) **Surface Quantity Based Flow Field Estimation** L. Ukeiley, A. Nickels, University of Florida, Gainesville, Gainesville, FL; R. Reger, L. Cattafesta, Florida State University, Tallahassee, FL	1500 hrs AIAA-2014-0896 **Velocity Field Estimation Using Unsteady Wall Pressure Measurements in a Leading Edge Slat Flow** S. Wilkins, P. Richard, J. Hall, University of New Brunswick, Fredericton, Canada	1530 hrs Oral Presentation (Invited) **Validation of Estimation Methods via Time Resolved PIV in High Speed Compressible Jets** P. Shea, M. Glauser, Z. Berger, M. Berry, Syracuse University, Syracuse, NY; B. Kiel, Air Force Research Laboratory, Wright-Patterson AFB, OH; S. Gogineni, Spectral Energies, LLC, Dayton, OH; et al.	1600 hrs Oral Presentation (Invited) **Stochastic Estimation of Acoustic Source Terms in the Vortex Sound Analogy** N. Zawodny, D. Dussault, L. Ukeiley, University of Florida, Gainesville, Gainesville, FL; L. Cattafesta, Florida State University, Gainesville, FL	1630 hrs Oral Presentation (Invited) **Multi-time-delay LSE-POD complementary approach applied to unsteady high Reynolds number near wake flow** V. Durgesh, California State University, Northridge, CA; J. Naughton, University of Wyoming, Laramie, Laramie, WY	1700 hrs AIAA-2014-0897 **Stochastic estimation of cavity shear layer and fully developed turbulent channel flows: linear and non linear multi-time-delay analyses** D. Lasagna, Southampton University, Southampton, United Kingdom; L. Fronges, M. Orazi, G. Iuso, Technical University of Turin, Turin, Italy	

Wednesday, 15 January 2014							
244-APA-25	**Aerodynamic and Multi-Disciplinary Design and Optimization**						**Maryland Ballroom 4**
Chaired by: J. MURRAY, Sandia National Laboratories and J. GUGLIELMO, Boeing Defense, Space & Security							
1400 hrs AIAA-2014-0898 **Efficient Global Optimization using a Multi-objective Approach Infill Sampling Criteria** S. Yi H. Kwon, S. Choi, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1430 hrs AIAA-2014-0899 **A numerical study of adaptive FFD in aerodynamic shape optimization** O. Amoignon, Swedish Defense Research Agency (FOI), Stockholm, Sweden; J. Hradil, J. Navratil, Brno University of Technology, Brno, Czech Republic	1500 hrs AIAA-2014-0900 **Variable-Fidelity Aerodynamic Design Using Gradient-Enhanced Kriging Surrogate Model with Regression** Y. Jo, S. Choi, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1530 hrs AIAA-2014-0901 **An Invariant Formulation for the Minimum Induced Drag Conditions of Non-planar Wing Systems** L. Demasi, A. Dipace, San Diego State University, San Diego, CA; G. Monegato, Technical University of Turin, Turin, Italy; R. Cavallaro, San Diego State University, San Diego, CA	1600 hrs AIAA-2014-0902 **Wing Shape Optimization Using Local Response Surface Approximations, Space Mapping and Physics-Based Surrogates** S. Koziel, L. Leifsson, Reykjavik University, Reykjavik, Iceland	1630 hrs AIAA-2014-0903 **Multipoint Aerodynamic High Fidelity Shape Optimization of an Isolated Engine Nacelle** H. Toubin, I. Salah El Din, M. Meheut, ONERA, Meudon, France	1700 hrs AIAA-2014-0904 **Efficient Global Optimization of Vortex Generators on a Super Critical Infinite-Wing Using Kriging-Based Surrogate Models** N. Namura, S. Obayashi, Tohoku University, Sendai, Japan; S. Jeong, Kyunghee University, Yongin, South Korea	

Wednesday, 15 January 2014							
245-APA-26	**Environmentally Friendly Aircraft Design - Laminar Flow Enabling Technology**						**Maryland Ballroom A**
Chaired by: S. FERGUSON, Boeing Defense, Space & Security and R. WAHLS, NASA-Langley Research Center							
1400 hrs AIAA-2014-0905 **Aerodynamically Optimal Regional Aircraft Concepts: Conventional and Blended-Wing-Body Designs** T. Reist, D. Zingg, University of Toronto, Toronto, Canada	1430 hrs AIAA-2014-0906 **Preliminary Experimental Assessment of the Boundary Layer Ingestion Benefit for the D8 Aircraft** A. Uranga, M. Drela, E. Greitzer, N. Titchener, M. Lieu, N. Siu, Massachusetts Institute of Technology, Cambridge, MA; et al.	1500 hrs AIAA-2014-0907 **Computational Assessment of the Boundary Layer Ingesting Nacelle Design of the D8 Aircraft** S. Pandya, NASA Ames Research Center, Moffett Field, CA; A. Uranga, A. Espitia, A. Huang, Massachusetts Institute of Technology, Cambridge, MA	1530 hrs AIAA-2014-0908 **High-fidelity Aerodynamic Shape Optimization of Unconventional Aircraft through Axial Deformation** H. Gagnon, D. Zingg, University of Toronto, Toronto, Canada	1600 hrs AIAA-2014-0909 **Laminar Flow Control Flight Experiment Design and Execution** A. Tucker, Air Force Research Laboratory, Wright-Patterson AFB, OH; W. Saric, H. Reed, Texas A&M University, College Station, TX	1630 hrs AIAA-2014-0910 **Effects of Step Excrescences on a Swept Wing in a Low-Disturbance Wind Tunnel** G. Duncan, B. Crawford, M. Tufts, W. Saric, H. Reed, Texas A&M University, College Station, TX		

Wednesday, 15 January 2014							
246-APA-27	**Special Session: 2nd High Lift Prediction Workshop (HiLiftPW-2) II**						**Maryland Ballroom 3**
Chaired by: R. RUDNIK, DLR - German Aerospace Center and T. WAYMAN, Gulfstream Aerospace Corporation							
1400 hrs AIAA-2014-0911 **Lattice-Boltzmann Flow Simulations for the HiLiftPW-2** B. Koenig, Exa GmbH, Stuttgart, Germany	1430 hrs AIAA-2014-0912 **Contribution from Metacomp Technologies, Inc. to the Second High Lift Prediction Workshop** U. Goldberg, Y. Allaneau, Metacomp Technologies, Agoura Hills, CA	1500 hrs AIAA-2014-0913 **NSMB contribution to the 2nd High Lift Prediction Workshop** T. Deloze, E. Laurendeau, École Polytechnique de Montréal, Montréal, Canada	1530 hrs AIAA-2014-0914 **Numerical Simulation of DLR-F11 High Lift Configuration from HiLiftPW-2 using STAR-CCM+** J. Hanke, P. Shankara, D. Snyder, Computational Dynamics Ltd., Winter Garden, FL	1600 hrs AIAA-2014-0915 **DLR Contribution to the 2nd High Lift Prediction Workshop** R. Rudnik, German Aerospace Center (DLR), Braunschweig, Germany	1630 hrs AIAA-2014-0916 **CRUNCH CFD Calculations for HiLiftPW-2 with Discretization Error Predictions** P. Cavallo, CRAFT Tech, Dublin, PA	1700 hrs AIAA-2014-0917 **Time-resolved adaptive FEM simulation of the DLR-F11 aircraft model at high Reynolds number** J. Hoffman, J. Jansson, R. Vilela de Abreu, N. Jansson, Royal Institute of Technology (KTH), Stockholm, Sweden	

Wednesday, 15 January 2014							
247-APA-28	**Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-Up Air Vehicles III**						**Maryland Ballroom 5**
Chaired by: N. HARIHARAN, CREATE-AV; D. MCDANIEL, University of Alabama at Birmingham; B. HALLISSY, NAVAIR and T. SHAFER, NAVAIR							
1400 hrs AIAA-2014-0918 **CREATE-AV Quality Assurance: Best Practices for Validating and Supporting Computation-Based Engineering Software** B. Hallissy, D. Hine, J. Laiosa, T. Shafer, J. Forsythe, J. Abras, CREATE AV Team, Patuxent River, MD; et al.	1430 hrs AIAA-2014-0919 **3-D DES and RANS Validation Using CREATE-AV Kestrel** T. Shafer, D. Hine, J. Laiosa, B. Hallissy, J. Forsythe, Naval Air Systems Command, Patuxent River, MD	1500 hrs AIAA-2014-0920 **Fundamental Physics Validation Using CREATE-AV KestrelTM Part I** D. Hine, J. Forsythe, B. Hallissy, T. Shafer, J. Laiosa, Naval Air Systems Command, Patuxent River, MD	1530 hrs AIAA-2014-0921 **The CREATE-DaVinci Power User Experience** B. Rooney, Air Force Life Cycle Management Center, Wright-Patterson AFB, OH				

Wednesday, 15 January 2014							
248-AS-2	**Adaptive Actuation**						**Chesapeake Conf Rm D**
Chaired by: D. MCGOWAN, NASA Langley Research Center and F. GANDHI, Rensselaer Polytechnic Inst							
1400 hrs No Presentations	1500 hrs AIAA-2014-0922 **Active Flow Control via Piezo-Actuated Airfoils for High-Lift** C. Behr, M. Sinapius, Technical University of Braunschweig, Braunschweig, Germany; P. Wierach, German Aerospace Center (DLR), Braunschweig, Germany	1530 hrs AIAA-2014-0923 **Adaptive-Twist Airfoil Based on Electrostatic Stiffness Variation** W. Raither, L. De Simoni, L. Di Lillo, Swiss Federal Institute of Technology, Zürich, Switzerland; A. Bergamini, Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland; P. Ermanni, Swiss Federal Institute of Technology, Zürich, Switzerland	1600 hrs AIAA-2014-0924 **Synergistic Smart Morphing Aileron: Aero-structural Performance Analysis** A. Pankonien, K. Duraisamy, C. Faria, D. Inman, University of Michigan, Ann Arbor, Ann Arbor, MI			

Wednesday, 15 January 2014							
249-ASE-1	**Topics in the Tropospheric Environment**						**Chesapeake Conf Rm 9**
Chaired by: N. AHMAD, NASA Langley Research Center and M. POLITOVICH, National Center for Atmospheric Research							
1400 hrs AIAA-2014-0925 **Wake Vortex Evolution During Approach and Landing With and Without Plate Lines** F. Holzäpfel, A. Stephan, German Aerospace Center (DLR), Oberpfaffenhofen, Germany; T. Misaka, Tohoku University, Sendai, Japan; S. Körner, German Aerospace Center (DLR), Oberpfaffenhofen, Germany	1430 hrs AIAA-2014-0926 **Numerical Simulation of Jet-Wake Vortex Interaction** T. Misaka, S. Obayashi, Tohoku University, Sendai, Japan; A. Stephan, F. Holzäpfel, T. Gerz, German Aerospace Center (DLR), Oberpfaffenhofen, Germany; K. Nakahashi, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1500 hrs AIAA-2014-0927 **Review of Idealized Aircraft Wake Vortex Models** N. Ahmad, F. Proctor, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2014-0928 **Simulating the Freezing of Supercooled Water Droplets Impacting a Cooled Substrate** J. Blake, D. Thompson, Mississippi State University, Mississippi State, MS; D. Raps, Eurocopter Deutschland, Donauworth, Germany; T. Strobl, EADS, Munich, Germany	1600 hrs AIAA-2014-0929 **Study of Icing Process using Dual-Luminescence Imaging for Aircraft-Icing Prevention** H. Sakaue, K. Morita, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; M. Tanaka, S. Kimura, Kanagawa Institute of Technology, Atsugi, Japan			

Wednesday, 15 January 2014							
250-FD-28	**Flow Control of Bodies and Riblets**						**Woodrow Wilson D**
Chaired by: J. LITTLE, The University of Arizona and K. GRANLUND, Air Force Research Laboratory							
1400 hrs AIAA-2014-0932 **Aerodynamic Flow Control of a Moving Axisymmetric Bluff Body** T. Lambert, B. Vukasinovic, A. Glezer, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2014-0930 **Closed-Loop Flow Control on a Ogive Forebody at a High Angle of Attack using Model Predictive Control** C. Porter, C. Fagley, J. Seidel, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1500 hrs AIAA-2014-0931 **Asymmetric Vortex State Response to Open-Loop Actuation for Variations in Angle of Attack and Reynolds Number** J. Farnsworth, C. Fagley, C. Porter, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1530 hrs AIAA-2014-0933 **Flow Control over a Conical Forebody Using Pulsed Nanosecond Discharge Actuators** Y. Long, H. Li, X. Meng, Northwestern Polytechnical University, Xi'an, China; F. Liu, S. Luo, University of California, Irvine, Irvine, CA	1600 hrs AIAA-2014-0934 **Direct Numerical Simulations of High-Speed Turbulent Boundary Layers over Riblets** L. Duan, National Institute of Aerospace, Hampton, VA; M. Choudhari, NASA Langley Research Center, Hampton, VA			

Wednesday, 15 January 2014							
251-FD-29	**Higher-Order Methods III**						**Chesapeake Conf Rm 8**
Chaired by: H. HUYNH, NASA Glenn Research Center and N. BURGESS, University of Wyoming							
1400 hrs AIAA-2014-0935 **Canonical Test Cases for High-Order Unstructured Implicit Large Eddy Simulation** B. Vermeire, S. Nadarajah, McGill University, Montréal, Canada; P. Tucker, University of Cambridge, Cambridge, United Kingdom	1430 hrs AIAA-2014-0936 **Higher Order Multigrid Algorithms for a Discontinuous Galerkin RANS Solver** M. Wallraff, T. Leicht, German Aerospace Center (DLR), Braunschweig, Germany	1500 hrs AIAA-2014-0937 **High-Order Flux Correction/ Finite Difference Schemes for Strand Grids** A. Katz, D. Work, Utah State University, Logan, UT	1530 hrs AIAA-2014-0938 **A Hybridized Discontinuous Galerkin Method for Three-Dimensional Compressible Flow Problems** M. Woopen, A. Balan, G. May, RWTH Aachen University, Aachen, Germany	1600 hrs AIAA-2014-0939 **A Finite Volume Method Based on WENO Reconstruction for Compressible Flows on Hybrid Grids** H. Luo, North Carolina State University, Raleigh, NC			

Wednesday, 15 January 2014							
252-FD-30	**Shock Interactions and Control**						**Maryland Ballroom 6**
Chaired by: M. MCQUILLING, Saint Louis University and R. SCHMIT, USAF AFRL							
1400 hrs AIAA-2014-0940 **A body-force based method to generate supersonic equilibrium turbulent boundary layer profiles** M. Waindim, D. Gaitonde, R. Yentsch, Ohio State University, Columbus, OH	1430 hrs AIAA-2014-0941 **Characterization of the Shear Layer in a Mach 3 Shock/ Turbulent Boundary Layer Interaction** C. Helm, S. Priebe, J. Li, University of Maryland, College Park, College Park, MD; D. Pierre, National Center for Scientific Research (CNRS), Marseille, France; P. Martin, University of Maryland, College Park, College Park, MD	1500 hrs AIAA-2014-0942 **Active Transonic Shock Control** A. Gissen, B. Vukasinovic, A. Glezer, Georgia Institute of Technology, Atlanta, GA; S. Gogineni, Spectral Energies, LLC, Dayton, OH; M. Paul, D. Wittich, Air Force Research Laboratory, Kirtland AFB, NM	1530 hrs AIAA-2014-0943 **Three-dimensional shock control bumps: effects of geometry** P. Bruce, Imperial College London, London, United Kingdom; S. Colliss, H. Babinsky, University of Cambridge, Cambridge, United Kingdom	1600 hrs AIAA-2014-0944 **Numerical Simulation of Energy Deposition in a Supersonic Flow Past a Hemisphere** M. Mortazavi, D. Knight, Rutgers University, New Brunswick, NJ; O. Azarova, Russian Academy of Sciences, Moscow, Russia; J. Shi, H. Yan, Northwestern Polytechnical University, Xi'an, China			

Wednesday, 15 January 2014							
253-FD-31	**Shock-Dominated Flows**						**National Harbor Conf Rm 2**
Chaired by: A. GROSS, New Mexico State University and V. NARAYANASWAMY, University of Texas @ Austin							
1400 hrs AIAA-2014-0945 **Adaptive Shock Control Bumps** E. Jinks, P. Bruce, M. Santer, Imperial College London, London, United Kingdom	1430 hrs AIAA-2014-0946 **Influence of Different Inlet Flow on the Ring-like Vortex Structure in MVG Controlled Supersonic Ramp Flow** Y. Yan, C. Liu, University of Texas, Arlington, Arlington, TX	1500 hrs AIAA-2014-0947 **Entropy Viscosity Approach for Compressible Turbulent Simulations using Discontinuous Spectral Element Method** H. Abbassi, F. Mashayek, University of Illinois, Chicago, Chicago, IL; G. Jacobs, San Diego State University, San Diego, CA	1530 hrs AIAA-2014-0948 **Blast Loading on the Head Under a Military Helmet: Effect of Face Shield and Mandible Protection** D. Mott, Naval Research Laboratory, Washington, DC; T. Young, Berkeley Research Associates, Beltsville, MD; D. Schwer, Naval Research Laboratory, Washington, DC	1600 hrs AIAA-2014-0949 **Study of Shock Trains and Pseudo-Shock Waves in Constant Area Ducts** T. Oka, D. Ono, Y. Miyazato, University of Kitakyushu, Kitakyushu, Japan			

Wednesday, 15 January 2014		
254-FD-32 **1400 - 1730 hrs**	**Transition Open Forum**	**National Harbor Conf Rm 4**
Chaired by: H. REED, Texas A&M University and G. HUANG, Wright State University		

Wednesday, 15 January 2014							
255-FD-33	**Transonic and Supersonic Flows**						**Azalea 1**
Chaired by: W. LIOU, Western Michigan University and S. GORDEYEV, University of Notre Dame							
1400 hrs AIAA-2014-0950 **Numerical Investigation of Effects of Transonic Wind Tunnel Porous Walls on Two-Dimensional Airfoil Tests** J. Jin, C. Gao, Z. Zhao, Z. Zhang, Northwestern Polytechnical University, Xi'an, China; J. Xiong, F. Liu, University of California, Irvine, Irvine, CA; et al.	1430 hrs AIAA-2014-0951 **Computational Analysis of Shock Wave Turbulent Boundary Layer Interaction** T. Leger, J. Poggie, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2014-0952 **Validation of a Lattice-Boltzmann Approach for Transonic and Supersonic Flow Simulations** E. Fares, M. Wessels, R. Zhang, C. Sun, N. Gopalaswamy, P. Roberts, Exa Corporation, Burlington, MA; et al.	1530 hrs AIAA-2014-0954 **SDNS of large domain supersonic boundary layers over weakly and strongly adiabatic walls** I. Beekman, Princeton University, Princeton, NJ; S. Priebe, P. Martin, University of Maryland, College Park, College Park, MD				

Wednesday, 15 January 2014							
256-FD-34	**Vortex Flows**						**National Harbor Conf Rm 3**
Chaired by: M. GREEN, Syracuse University							
1400 hrs AIAA-2014-0955 **Wingtip Vortices from an Exergy-Based Perspective** M. Memon, K. Wabick, A. Altman, University of Dayton, Dayton, OH; R. Buffo, RWTH Aachen University, Aachen, Germany	1430 hrs AIAA-2014-0956 **Vortex Flow Control over a Delta Wing Using Leading-edge Rudder** Z. Yang, X. Meng, W. Li, J. Cai, Northwestern Polytechnical University, Xi'an, China	1500 hrs AIAA-2014-0957 **The Impact of an Inhomogeneous Temperature Field on the Precessing Vortex Core in Swirling Jets Undergoing Vortex Breakdown** L. Rukes, M. Sieber, C. Nayeri, C. Paschereit, Technical University of Berlin, Berlin, Germany	1530 hrs AIAA-2014-0958 **Experimental Investigation of Turbulent Swirling Wakes** M. Hind, J. Naughton, University of Wyoming, Laramie, Laramie, WY	1600 hrs AIAA-2014-0959 **Vortex Control by Pulsed Power Pumping** A. Klimov, V. Bityurin, I. Moralev, S. Bychkov, L. Pyatnitsky, N. Tretyakova, Russian Academy of Sciences, Moscow, Russia	1630 hrs AIAA-2014-0960 **Vortex Control by Non-Equilibrium Plasma** A. Klimov, V. Bityurin, M. Sidorenko, I. Moralev, B. Tolkunov, A. Efimov, Russian Academy of Sciences, Moscow, Russia; et al.		

Wednesday, 15 January 2014							
257-GEPC-3	**NASA Aeronautical Sciences Project Overview and Progress**						**Woodrow Wilson A**
Chaired by: M. ROGERS, NASA Ames Research Center and D. WILLIAMS, NASA Langley Research Center							
1400 hrs Oral Presentation (Invited) **NASA Aeronautical Sciences Project Overview** J. Heidmann, NASA Glenn Research Center, Cleveland, OH	1430 hrs Oral Presentation (Invited) **NASA Aeronautical Sciences Project - Revolutionary Computational Aerosciences Overview** M. Malik, NASA Langley Research Center, Hampton, VA	1500 hrs Oral Presentation (Invited) **NASA Aeronautical Sciences Project - Structures and Materials Overview** D. Hopkins, NASA Glenn Research Center, Cleveland, OH	1530 hrs Oral Presentation (Invited) **NASA Aeronautical Sciences Project - MDAO and Systems Analysis Overview** J. Robinson, J. Viken, NASA Langley Research Center, Hampton, VA	1600 hrs Oral Presentation (Invited) **NASA Aeronautical Sciences Project - Combustion Overview** J. Moder, D. Bulzan, NASA Glenn Research Center, Cleveland, OH	1630 hrs Oral Presentation (Invited) **NASA Aeronautical Sciences Project - Innovative Measurements Overview** T. Jones, NASA Langley Research Center, Hampton, VA	1700 hrs Oral Presentation (Invited) **NASA Aeronautical Sciences Project - Controls Overview** S. Garg, NASA Glenn Research Center, Cleveland, OH	

Wednesday, 15 January 2014							
258-GNC-14	**Aircraft Guidance, Navigation and Control II**						**National Harbor Conf Rm 7**
Chaired by: F. ALMEIDA, Instituto de Aeronáutica e Espaço and N. SMITH							
1400 hrs AIAA-2014-0961 **Three-dimensional Guidance Filter for Autonomous Collision Avoidance** D. Galisteu, F. Almeida, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil	1430 hrs AIAA-2014-0962 **Physically Integrated Reference Model and Its Aids in Model Based Flight Control Development** F. Zhang, S. Braun, F. Holzapfel, Technical University of Munich, Munich, Germany	1500 hrs AIAA-2014-0963 **Incremental Nonlinear Dynamic Inversion and Control Allocation for a Tilt Rotor UAV** G. Di Francesco, M. Mattei, E. D'Amato, Second University of Naples, Aversa, Italy	1530 hrs AIAA-2014-0964 **Development of the SAFE-Cue System Component Mechanizations for Loss of Control Mitigation** A. Lampton, D. Klyde, D. Lee, Systems Technology, Inc., Hawthorne, CA; B. Cogan, NASA Dryden Flight Research Center, Edwards, CA	1600 hrs AIAA-2014-0965 **Selective Reinitialisation Multiple Model Adaptive Estimation for Fault Detection and Diagnosis** P. Lu, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	1630 hrs AIAA-2014-0966 **Optimal Collision Avoidance Trajectories via Direct Orthogonal Collocation for Unmanned/ Remotely Piloted Aircraft Sense and Avoid Operations** N. Smith, R. Cobb, S. Pierce, Air Force Institute of Technology, Wright-Patterson AFB, OH; V. Raska, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Wednesday, 15 January 2014							
259-GNC-15	**Multi-Vehicle Coordination and Control**						**National Harbor Conf Rm 8**
Chaired by: E. FREW, University of Colorado Boulder							
1400 hrs AIAA-2014-0967 **A Sense and Avoid System for Unmanned Aircraft in Formation Flight** J. Cooper, J. Schierman, Barron Associates, Inc., Charlottesville, VA	1430 hrs AIAA-2014-0968 **Coordinated Transport of a Slung Load by a Team of Autonomous Rotorcraft** Z. Li, J. Horn, J. Langelaan, Pennsylvania State University, University Park, PA	1500 hrs AIAA-2014-0969 **Guided Exploration for Coordinated Autonomous Soaring Flight** K. Cheng, J. Langelaan, Pennsylvania State University, University Park, PA	1530 hrs AIAA-2014-0970 **Decentralized Model Predictive Control for Planning Three-Dimensional Conflict-Free Trajectories** N. Yokoyama, National Defense Academy, Yokosuka, Japan	1600 hrs AIAA-2014-0971 **Incomplete Information Pursuit-Evasion Games with Uncertain Relative Dynamics** K. Cavalieri, Texas A&M University, College Station, TX; N. Satak, Air Force Research Laboratory, Eglin AFB, FL; J. Hurtado, Texas A&M University, College Station, TX	1630 hrs AIAA-2014-0972 **Trajectory Generation and Collision Avoidance for Safe Operation of Cooperating UAVs** V. Cichella, R. Choe, B. Mehdi, E. Xargay, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL; A. Trujillo, NASA Langley Research Center, Hampton, VA; et al.		

Wednesday, 15 January 2014							
260-GNC-16	**Unmanned Autonomous Systems**						**National Harbor Conf Rm 5**
Chaired by: R. BEVILACQUA, Rensselaer Polytechnic Institute and S. ULRICH, Carleton University							
1400 hrs AIAA-2014-0973 **Hovering control for a stratospheric airship in unknown wind** Z. Zheng, M. Zhu, D. Shi, Z. Wu, Beihang University, Beijing, China	1430 hrs AIAA-2014-0974 **Autonomous Parafoil Return-to-Point Vehicle for High Altitude Ballooning** S. Lee, A. Arena, Oklahoma State University, Stillwater, OK	1500 hrs AIAA-2014-0975 **3D Shape Mapping of Obstacle Using Stereo Vision Sensor on Quadrotor UAV** J. Park, Y. Kim, Seoul National University, Seoul, South Korea	1530 hrs AIAA-2014-0976 **Scan registration using Region-growing clustering NDT** S. Ahuja, S. Waslander, University of Waterloo, Waterloo, Canada	1600 hrs AIAA-2014-0977 **Safety Critical Platform for Mini UAS Insertion into the Common Airspace** B. Vanek, P. Bauer, I. Gozse, M. Lukatsi, I. Reti, J. Bokor, Hungarian Academy of Sciences, Budapest, Hungary	1630 hrs AIAA-2014-0978 **Integration of Real-Time Autonomous UAV with Commercial R/C Aircraft** S. Lee, Oklahoma State University, Stillwater, OK	1700 hrs AIAA-2014-0979 **Investigation of an Autonomous Landing Sensor for Unmanned Aerial Systems** J. McCafferty, D. Woodward, G. Ray, A. Bachelani, B. Kim, University of Kansas, Lawrence, Lawrence, KS	

Wednesday, 15 January 2014							
261-GT-6	**Test Facility and Systems Development I**						**Maryland Ballroom D**
Chaired by: J. MICOL, NASA-Langley Research Center and R. PARYZ							
1400 hrs AIAA-2014-0980 **Mechanical Characteristics of Electromagnetic Shakers and its Force Control** C. Ma, Z. Wu, C. Yang, Beihang University, Beijing, China	1430 hrs AIAA-2014-0981 **AFRL/AEDC Instant Loads at High Incidence Angles** T. Reynolds, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2014-0982 **Towards EFD/CFD Integration: Development of DAHWIN - Digital/Analog-Hybrid Wind Tunnel** S. Watanabe, S. Kuchi-ishi, K. Murakami, A. Hashimoto, H. Kato, T. Yamashita, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; et al.	1530 hrs AIAA-2014-0983 **Development of Dynamic Force Measurement Capabilities at AEDC Tunnel 9** A. Collopy, S. Lee, University of Maryland, College Park, College Park, MD; E. Marineau, Arnold Engineering Development Center, Silver Spring, MD				

Wednesday, 15 January 2014							
262-HSABP-3	**Experimental Investigations of Scramjets**						**Chesapeake Conf Rm 7**
Chaired by: R. SPRINGER, Johns Hopkins University Applied Physics Laboratory							
1400 hrs Oral Presentation (Invited) **X-51A Flight Demonstration Program Overview (Oral)** C. Brink, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2014-0984 **Filtered Rayleigh Scattering Measurements in Helium-Air Mixing Experiments of Selected Streamwise Vortex Interactions in a Mach 2.5 Flow** M. Crisanti, F. Vergine, L. Maddalena, University of Texas, Arlington, Arlington, TX	1500 hrs AIAA-2014-0985 **Implementation of Maximum-Likelihood Expectation-Maximization Algorithm for Tomographic Reconstruction of TDLAT Measurements** K. Busa, J. McDaniel, University of Virginia, Charlottesville, Charlottesville, VA; M. Brown, Air Force Research Laboratory, Wright-Patterson AFB, OH; G. Diskin, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2014-0986 **Characterization of a Dual-Mode Scramjet via Stereoscopic Particle Image Velocimetry** B. Rice, C. Goyne, J. McDaniel, R. Rockwell, University of Virginia, Charlottesville, Charlottesville, VA	1600 hrs AIAA-2014-0987 **Systematic Application of Background Oriented Schlieren for Shock-Boundary Layer Interaction Study** J. Geerts, K. Yu, University of Maryland, College Park, College Park, MD	1630 hrs AIAA-2014-0988 **Plasma-assisted combustion in supersonic airflow: optimization of electrical discharge geometry** S. Leonov, Ohio State university, Columbus, OH; A. Vincent-Randonnier, V. Sabelnikov, ONERA, Palaiseau, France; A. Firsov, D. Yarantsev, Russian Academy of Sciences, Moscow, Russia		

Wednesday, 15 January 2014							
263-IS-2	**Unmanned Aircraft Sensing and Control**						**National Harbor Conf Rm 15**
Chaired by: K. COHEN and E. KIVELEVITCH, University of Cincinnati							
1400 hrs AIAA-2014-0989 **A Neural Network Approach to an Attitude Heading Reference System** M. Leccadito, T. Bakker, R. Klenke, Virginia Commonwealth University, Richmond, VA	1430 hrs AIAA-2014-0990 **Autonomous Soaring Using Reinforcement Learning for Trajectory Generation** T. Woodbury, C. Dunn, J. Valasek, Texas A&M University, College Station, TX	1500 hrs AIAA-2014-0991 **Dynamic Multi-Task Allocation for Collaborative Unmanned Aircraft Systems** T. Bakker, R. Klenke, Virginia Commonwealth University, Richmond, VA	1530 hrs AIAA-2014-0992 **Intelligent Fuzzy Flight control of an Autonomous Quadrotor UAV** V. Fnu, K. Cohen, University of Cincinnati, Cincinnati, OH				

Wednesday, 15 January 2014		
264-LECT-6 **1400 - 1500 hrs**	**ASC Special Session: DLR's Adaptive Structures Activities within the European Network**	**Maryland Ballroom C**
Hans-Peter Monner Head of Department Adaptronics DLR German Aerospace Center		

Wednesday, 15 January 2014						
265-MAT-6	**Integrated Computational Materials Engineering III**					**Chesapeake Conf Rm A**
Chaired by: S. ARNOLD; J. MATLIK, Rolls-Royce Corporation and M. SANGID, Purdue University						
1400 hrs No Presentations	1500 hrs AIAA-2014-0993 **Multi-scale computational modeling of two-phased metal using GMC method** M. Ghorbani Moghaddam, A. Achuthan, Clarkson University, Potsdam, NY; B. Bednarcyk, S. Arnold, E. Pineda, NASA Glenn Research Center, Cleveland, OH	1530 hrs AIAA-2014-0994 **Modelling the High Temperature Fatigue Behaviour of Titanium Alloys** H. Basoalto, J. Brooks, University of Birmingham, Birmingham, United Kingdom	1600 hrs AIAA-2014-0995 **Multi-Scale Modeling of Free-Edge Micro-Cracks with XFEM** J. Dustin, The Boeing Company, Seattle, WA; R. Pipes, Purdue University, West Lafayette, IN	1630 hrs AIAA-2014-0996 **Atomistic Simulations as Part of an Integrated Computational Environment for Structural Design** E. Wimmer, C. Freeman, M. Christensen, W. Wolf, D. Rigby, W. Hamm, Materials Design, Inc., Santa Fe, NM; et al.	1700 hrs AIAA-2014-0997 **A novel Volume-Compensated Particle method (VCPM) for elasticity and plasticity analysis** H. Chen, Y. Liu, Arizona State University, Tempe, AZ	

Wednesday, 15 January 2014							
266-MDO-6	**Optimization Framework and Applications**						**Chesapeake Conf Rm 4**
Chaired by: R. KHIRE, United Technologies Research Center and R. KAPANIA							
1400 hrs No Presentations		1500 hrs AIAA-2014-0998 **Exploring the Trade-offs between Wind Farm Capacity Factor and Noise Impact through Novel Pareto Translation** W. Tong, S. Chowdhury, A. Mehmani, O. Peele, Syracuse University, Syracuse, NY; A. Messac, Mississippi State University, Mississippi State, MS	1530 hrs AIAA-2014-0999 **Multilevel Design Optimization With Application to Material-Product Systems** S. DorMohammadi, M. Rais-Rohani, Mississippi State University, Mississippi State, MS; M. Rouhi, Concordia University, Montréal, Canada	1600 hrs AIAA-2014-1000 **Experimental Validation of the EBF3PanelOpt Vibro-acoustic Analysis of Panels with Straight and Curvilinear stiffeners** P. Joshi, S. Mulani, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA			

Wednesday, 15 January 2014							
267-MST-4	**Simulation Requirements for LOC Prevention & Recovery Training (Invited)**						**National Harbor Conf Rm 6**
Chaired by: D. CRIDER, National Transportation Safety Board							
1400 hrs AIAA-2014-1001 **Progress in Loss of Control Mitigation** D. Crider, National Transportation Safety Board, Washington, DC	1430 hrs AIAA-2014-1002 **An Evaluation of Several Stall Models for Commercial Transport Training** J. Schroeder, Federal Aviation Administration, Moffett Field, CA; J. Burki-Cohen, U.S. Department of Transportation, Cambridge, MA; D. Shikany, The Boeing Company, Seattle, WA; D. Gingras, Bihrle Applied Research, Inc., Hampton, VA; P. Desrochers, Test Pilot, Inc., Weatherford, TX	1500 hrs AIAA-2014-1003 **Flight Simulator Augmentation for Stall and Upset Training** D. Gingras, J. Ralston, R. Oltman, C. Wilkening, R. Watts, Bihrle Applied Research, Inc., Hampton, VA; P. Derochers, Test Pilot, Inc., Peaser, TX	1530 hrs AIAA-2014-1004 **Pilot Vehicle System Modeling Using Sub-Scale Flight Experiments** T. Kumar, Y. Gu, West Virginia University, Morgantown, WV	1600 hrs AIAA-2014-1005 **Research into reduction of Loss-of-Control accident rate in a meaningful and measurable way through the use of innovative pilot training techniques** J. Priest, Calspan Corporation, Buffalo, NY	1630 hrs AIAA-2014-1006 **Air Frame Icing Influences on the Risk of Loss of Control In-flight** P. Ransbury, D. Carroll, Aviation Performance Solutions, Mesa, AZ		

Wednesday, 15 January 2014							
268-NDA-6	**Nondeterministic Methods for Design**						**Chesapeake Conf Rm 5**
Chaired by: N. KIM, University of Florida and S. HOSDER, Missouri University of Science and Technology							
1400 hrs No Presentations		1500 hrs AIAA-2014-1007 **Aggressive Design Under Uncertainty** P. Seshadri, P. Constantine, G. Iaccarino, Stanford University, Stanford, CA	1530 hrs AIAA-2014-1008 **Optimal Design and Tolerancing of Compressor Blades Subject to Manufacturing Variability** E. Dow, Q. Wang, Massachusetts Institute of Technology, Cambridge, MA	1600 hrs AIAA-2014-1009 **Performance of Different Alloys by Assessing Epistemic and Aleatory Uncertainty in the Crack Growth Rates** K. Bhachu, R. Haftka, N. Kim, University of Florida, Gainesville, Gainesville, FL; C. Hurst, Cessna Aircraft Company, Wichita, KS	1630 hrs AIAA-2014-1010 **Deciding How Conservative A Designer Should Be: Simulating Future Tests and Redesign** N. Price, T. Matsumura, R. Haftka, N. Kim, University of Florida, Gainesville, Gainesville, FL	1700 hrs AIAA-2014-1011 **Utilizing an Adjustment Factor to Scale Between Multiple Fidelities Within a Design Process: A Stepping Stone to Dialable Fidelity Design** C. Fischer, R. Grandhi, Wright State University, Dayton, OH	

Wednesday, 15 January 2014		
269-PANEL-6 **1400 - 1600 hrs**	**Emerging Technologies of Importance to Aerospace Panel**	**Potomac Ballroom C**

Moderator: Dan Jensen, Engineering Manager, Rolls-Royce Corporation

Panelists:

Foundational Shifts in Computing-Enabled Design & Engineering
Dan Bodony
Professor
University of Illinois at Urbana-Champaign

NASA Embarks on the Quantum Computing Path
Rupak Biswas
Deputy Director, Exploration Technology Directorate
NASA Ames Research Center

Distributed Electric Propulsion: An Emerging Technology for Aircraft
Mark Moore
Design Engineer
NASA Langley Research Center

Emerging Technologies and Potential Impact for the NASA Mission
W. Keith Belvin
Chief Technologist
NASA Langley Research Center

Wednesday, 15 January 2014		
270-PANEL-7 **1400 - 1630 hrs**	**International Session - Status of Pressure Gain Combustion for Propulsion, Research & Applications I**	**Maryland Ballroom 1**

Chaired by: Venkat Tangirala, General Electric Global Research Center, NY and Chris Brophy, Naval Postgraduate School, Monterey, CA
Sponsor: AIAA - Pressure Gain Combustion Working Group for Program Committee

Panelists:

Dr. François Falempin
Chief Engineer for Advanced Powered Airframe, MDNA
France

Jiro Kasahara
Professor, Nagoya University
Nagoya, Japan

K. Kailasanath
Director, Laboratories for Computational Physics & Fluid Dynamics
Naval Research Laboratory
Washington, DC

Jeong-Yeol Choi
Professor, Department of Aerospace Engineering
Pusan National University
Busan Republic of Korea

Wednesday, 15 January 2014							
271-PC-15	**Detonation and PDEs I**						**Chesapeake Conf Rm H**
Chaired by: A. STARIKOVSKIY, Princeton University; T. NGUYEN, Aerojet Rocketdyne and T. NGUYEN, Aerojet Rocketdyne							
1400 hrs AIAA-2014-1012 **Experiments and development of Long-test-duration Hypervelocity Detonation-driven Shock Tunnel (LHDst)** Z. Jiang, Chinese Academy of Sciences, Beijing, China	1430 hrs AIAA-2014-1013 **Propellant Plenum Dynamics in a Two-dimensional Rotating Detonation Experiment** M. Fotia, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2014-1014 **Towards Efficient, Unsteady, Three-Dimensional Rotating Detonation Engine Simulations** D. Schwer, A. Corrigan, K. Kailasanath, Naval Research Laboratory, Washington, DC	1530 hrs AIAA-2014-1015 **Periodic Exhaust Flow through a Converging-Diverging Nozzle Downstream of a Rotating Detonation Engine** B. Rankin, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2014-1016 **Study on Detonation-Engine Momentum-and-Thrust loss Measurement by Ballistic Pendulum and Laser Displacement Method** T. Ashida, University of Tsukuba, Tsukuba, Japan; J. Kasahara, Nagoya University, Nagoya, Japan			

Wednesday, 15 January 2014							
272-PC-16	**Spray and Droplet Combustion I**						**Chesapeake Conf Rm G**
Chaired by: C. BRUNO, United Technologies Research Center and H. EL-ASRAG, Massachusettes Institute of Technology							
1400 hrs AIAA-2014-1017 **Modeling of Fuel Vapor Jet Eruption Induced by Local Droplet Heating** J. Sim, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; H. Im, University of Michigan, Ann Arbor, Ann Arbor, MI; S. Chung, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia	1430 hrs AIAA-2014-1018 **Effect of Turbulence Modeling on Spray Dynamics for an Evaporating Acetone Spray Jet** H. El-Asrag, Ansys, Inc., Lebanon, NH; M. Braun, Ansys, Inc., Darmstadt, Germany; M. Sami, Ansys, Inc., Austin, TX	1500 hrs AIAA-2014-1019 **Experimental Study of Initial Diameter Effects on Convection-free Droplet Combustion in the Standard Atmosphere for n-Heptane, n-Octane, and n-Decane: International Space Station and Ground-based Experiments** Y. Liu, J. Rah, K. Trenou, Cornell University, Ithaca, NY; M. Hicks, NASA Glenn Research Center, Cleveland, OH; C. Avedisian, Cornell University, Ithaca, NY	1530 hrs AIAA-2014-1020 **Direct Numerical Simulations of Heptane Spray Autoignition in Methane-air Mixtures Relevant to Dual-fuel Engines** E. Demosthenous, G. Borghesi, E. Mastorakos, R. Cant, University of Cambridge, Cambridge, United Kingdom	1600 hrs AIAA-2014-1021 **Liquid Spray Characterization in Flow Field with Centripetal Acceleration** D. Richardson, Air Force Research Laboratory, Wright-Patterson AFB, OH; A. Brinker, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH; A. Lynch, D. Blunck, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2014-1022 **Flame stability analysis in an ultra compact combustor using a probability density function approach for large-eddy simulation of spray combustion** C. Heye, V. Raman, University of Texas, Austin, Austin, TX		

Wednesday, 15 January 2014							
273-PC-17	**Turbulent Combustion Modeling II**						**Chesapeake Conf Rm I**
Chaired by: O. GULDER, UTIAS University of Toronto and M. MUELLER, Princeton University							
1400 hrs AIAA-2014-1023 **Large-eddy simulations of a highly turbulent counterflow premixed burner** K. Kemenov, W. Calhoon, CRAFT Tech, Huntsville, AL	1430 hrs AIAA-2014-1024 **A High-Order Finite-Volume Scheme for Large-Eddy Simulation of Turbulent Premixed Flames** L. Tobaldini Neto, C. Groth, University of Toronto, Toronto, Canada	1500 hrs AIAA-2014-1025 **Direct numerical simulation of bluff-body-stabilized premixed flames** P. Arias, B. Lee, H. Im, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia	1530 hrs AIAA-2014-1026 **Numerical Simulation of a Scramjet using a Storage/ Retrieval Chemistry Scheme** Y. Zhang, CD-adapco, Melville, NY	1600 hrs AIAA-2014-1027 **Modeling Supersonic Turbulent Reacting Flows with a Variable Turbulent Prandtl and Schmidt Numbers Model** J. Wang, F. Chen, H. Liu, Shanghai Jiao Tong University, Shanghai, China	1630 hrs AIAA-2014-1028 **A flame-generated-manifold chemistry based transport PDF model for gas-turbine combustor simulations** A. Gupta, J. Zhu, M. Anand, Rolls-Royce Group plc, Indianapolis, IN; R. Eggels, Rolls-Royce Group plc, Dahlewitz, Germany		

Wednesday, 15 January 2014							
274-PDL-9	**Non-Equilibrium Effects in Discharges**						**Azalea 3**
Chaired by: S. STARIKOVSKAYA, Ecole Polytechnique, Paris							
1400 hrs AIAA-2014-1029 **Formation of vibrational distribution function of electronically-excited N2(A , v) molecules in nitrogen discharge plasma** N. Popov, Moscow State University, Moscow, Russia	1430 hrs AIAA-2014-1030 **Experimental and numerical study of fast gas heating and O atom production in a capillary nanosecond discharge** A. Klochko, A. Salmon, Ecole Polytechnique, Paris, France; N. Popov, Moscow State University, Moscow, Russia; J. Booth, École Polytechnique, Paris, France; M. Kushner, Z. Xiong, University of Michigan, Ann Arbor, Ann Arbor, MI; et al.	1500 hrs AIAA-2014-1031 **Thermal Ionization Instability Development in Air Plasma Generated by Repetitive NS Dielectric Barrier Discharge** A. Starikovskiy, M. Shneider, Princeton University, Princeton, NJ; D. Marinov, S. Starikovskaya, École Polytechnique, Palaiseau, France	1530 hrs AIAA-2014-1032 **High Energy Plume Impingement on Spacecraft Systems** J. Young, R. Sedwick, University of Maryland, College Park, College Park, MD; S. Dumpala, K. Rajan, Iowa State University, Ames, IA	1600 hrs AIAA-2014-1033 **Study of Catalytic Effects at Reentry Vehicle** V. Bityurin, A. Bocharov, Russian Academy of Sciences, Moscow, Russia	1630 hrs AIAA-2014-1034 **An Examination of Nitric Oxide Kinetics in a Plasma Afterglow with Significant Vibrational Loading** D. Burnette, I. Shkurenkov, I. Adamovich, W. Lempert, Ohio State University, Columbus, OH		

Wednesday, 15 January 2014							
275-SCS-3	Packaging & Deployment of Gossamer Systems						Chesapeake Conf Rm 6
Chaired by: S. PELLEGRINO, California Institute of Technology and G. GRESCHIK, TentGuild Engineering Co							
1400 hrs No Presentations	1500 hrs AIAA-2014-1035 **Strain Energy Deployment of Telescope Outer Barrel Assemblies** M. Silver, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA; P. Warren, Physical Sciences, Inc., Andover, MA	1530 hrs AIAA-2014-1036 **Elastic Spiral Folding for Flat Membrane Apertures** W. Reynolds, T. Murphey, Air Force Research Laboratory, Kirtland AFB, NM	1600 hrs AIAA-2014-1037 **Self-Supporting Membrane Structures with Curved Creases for Smooth Packaging and Deployment** N. Lee, S. Pellegrino, California Institute of Technology, Pasadena, CA	1630 hrs AIAA-2014-1038 **Deployment mechanics of highly compacted thin membrane structures** M. Arya, S. Pellegrino, California Institute of Technology, Pasadena, CA	1700 hrs AIAA-2014-1039 **Stepwise Deployment of Membrane Space Structures with Rolled-up Booms: Experiments and Simulations** N. Okuizumi, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; N. Katsumata, Muroran Institute of Technology, Muroran, Japan; M. Natori, H. Yamakawa, Waseda University, Shinjuku, Japan	

Wednesday, 15 January 2014							
276-SD-11	Adaptive Aeroelastic Wing Shaping Control II						Chesapeake Conf Rm C
Chaired by: K. GRIFFIN, Southwest Research Institute and F. NITZSCHE, Carleton University							
1400 hrs No Presentations	1500 hrs AIAA-2014-1040 **Flight Dynamic Modeling and Stability Analysis of Flexible Wing Generic Transport Aircraft** N. Nguyen, NASA Ames Research Center, Moffett Field, CA; E. Ting, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; D. Nguyen, University of California, Berkeley, Berkeley, CA; K. Trinh, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	1530 hrs AIAA-2014-1041 **Aeroelastic Wing Shaping Control Subject to Actuation Constraints** S. Swei, N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1600 hrs AIAA-2014-1042 **Optimal and Decentralized Controller Designs for an Elastically Shaped Aircraft** W. Nobleheart, A. Chakravarthy, Wichita State University, Wichita, KS; N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1630 hrs AIAA-2014-1043 **Lyapunov Stability Analysis of an Aeroleastic Torsion Model** A. Ishihara, Carnegie Mellon University, Moffett Field, CA; N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1700 hrs AIAA-2014-1044 **A Preliminary Study for Optimal Longitudinal-Mode Flight Control through Distributed Aeroelastic Shaping** C. Ippolito, NASA Ames Research Center, Moffett Field, CA; E. Ting, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; N. Nguyen, NASA Ames Research Center, Moffett Field, CA; K. Trinh, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	

Wednesday, 15 January 2014							
277-SOF-3	Software Systems						National Harbor Conf Rm 14
Chaired by: D. LAVALLEE, JHU/Applied Physics Laboratory and J. PARKER, NASA-Goddard Space Flight Center							
1400 hrs AIAA-2014-1045 **libm3l and lsipdx - Utilities for Inter-Process Data Transfer and Synchronization** A. Jirasek, A. Rizzi, Royal Institute of Technology (KTH), Stockholm, Sweden	1430 hrs AIAA-2014-1046 **Situational and Terrain Awareness and Warning System Implementation on Android Smartphone for Manned Aviation Applications** D. Bershadsky, L. Dressel, E. Johnson, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2014-1047 **QuickSAT-ARLX: An Open Source Space Hypervisor** A. Santangelo, sci_Zone, Rio Rancho, NM	1530 hrs AIAA-2014-1048 **Biometrics Based Identification and Authentication in Aerospace Applications** S. Adhikari, N. Wheeler, Sysoft Corporation, Readington, NJ	1600 hrs AIAA-2014-1049 **Verification of Video Frame Latency Telemetry for UAV Systems Using A Secondary Optical Method** S. Siewert, M. Ahmad, Trellis Logic, LLC, Anchorage, AK; K. Yao, AAI Corporation, Hunt Valley, MD	1630 hrs AIAA-2014-1050 **A Modular Software Platform for Unmanned Aerial Vehicle Autopilot Systems** G. Ward, G. Bakirtzis, R. Klenke, Virginia Commonwealth University, Richmond, VA	1700 hrs AIAA-2014-1051 **A Proposed Approach for Use of Assurance Cases in Certification of Airborne Software** A. Bateman, J. Cooper, Barron Associates, Inc., Charlottesville, VA; K. Wasson, J. Knight, Dependable Computing, Inc., Charlottesville, VA; M. DeVore, Barron Associates, Inc., Charlottesville, VA; A. Hocking, Dependable Computing, Inc., Charlottesville, VA	

Wednesday, 15 January 2014						
278-STR-13	**Shell Bucking-Charles Rankin Special Session II**					**Chesapeake Conf Rm E**
Chaired by: M. HILBURGER, NASA-Langley Research Center and D. JEGLEY, NASA Langley Research Center						
1400 hrs No Presentations	1500 hrs AIAA-2014-1052 **Buckling Testing and Analysis of Honeycomb Sandwich Panel Arc Segments of a Full-Scale Fairing Barrel: Comparison of In- and Out-of-Autoclave Facesheet Configurations** E. Pineda, D. Myers, NASA Glenn Research Center, Cleveland, OH; D. Kosareo, Vantage Partners, LLC, Brook Park, OH; B. Zalewski, ZIN Technologies, Inc., Middleburg Heights, OH; S. Kellas, G. Dixon, NASA Langley Research Center, Hampton, VA; et al.	1530 hrs AIAA-2014-1053 **Buckling Design and Analysis of a Payload Fairing 1/6th Cylindrical Arc-Segment Panel** D. Kosareo, Vantage Partners, LLC, Brook Park, OH; S. Oliver, NASA Marshall Space Flight Center, Huntsville, AL; B. Bednarcyk, E. Pineda, NASA Glenn Research Center, Cleveland, OH	1600 hrs AIAA-2014-1055 **Static and Dynamic Tests of Composite Cylindrical Shells under Axial Compression** C. Bisagni, Technical University of Milan, Milan, Italy	1630 hrs AIAA-2014-1056 **Structural Performance of Advanced Composite Tow-Steered Shells With Cutouts** K. Wu, B. Stanford, NASA Langley Research Center, Hampton, VA; J. Turpin, Kansas Space Grant Consortium, Wichita, KS; R. Martin, NASA Langley Research Center, Hampton, VA		

Wednesday, 15 January 2014						
279-STR-14	**Advances in Fatigue Analysis**					**Chesapeake Conf Rm B**
Chaired by: S. ENGELSTAD, Lockheed Martin Aeronautics and M. ENRIGHT, Southwest Research Institue						
1400 hrs No Presentations	1500 hrs AIAA-2014-1057 **Experimental Evaluation of StRATUS** M. Falugi, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2014-1058 **A New Ductility Criterion for Fatigue-Creep Life Prediction of High Temperature Components** S. Zhu, H. Huang, Y. Liu, L. He, D. Meng, University of Electronic Science and Technology, Chengdu, China	1600 hrs AIAA-2014-1059 **A Continuum Damage and Discrete Crack module for Fatigue Damage Prediction of Laminated Composite Structures** X. Fang, N. Simon, J. Lua, Global Engineering and Materials, Inc., Princeton, NJ	1630 hrs AIAA-2014-1060 **Stress Concentration Factor in Sheet Metal with Permanent Plastic Deformation** W. Chan, K. Lawrence, M. Ramasamy, University of Texas, Arlington, Arlington, TX		

Wednesday, 15 January 2014						
280-STR-15	**Advanced Structures**					**Chesapeake Conf Rm F**
Chaired by: L. HARDAWAY, Ball Aerospace & Technologies Corporation and M. SCHULTZ, NASA Langley Research Center						
1400 hrs No Presentations	1500 hrs AIAA-2014-1061 **Mechanical Behavior of Composite Lattice Cylinders** T. Aoki, T. Yokozeki, University of Tokyo, Tokyo, Japan; K. Terashima, T. Kamita, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan	1530 hrs AIAA-2014-1062 **Advanced Grid-Stiffened Composite Shells for Heavy-Lift Helicopter Blade Spars** S. Narayanan Nampy, United Technologies Corporation, Chula Vista, CA; E. Smith, C. Bakis, Pennsylvania State University, University Park, PA	1600 hrs AIAA-2014-1063 **Evaluation of Initial Curvature Effect on the Snap-through Load of Bi-stable Composites** J. Lee, J. Ryu, M. Cho, S. Kim, K. Cho, Seoul National University, Seoul, South Korea	1630 hrs AIAA-2014-1064 **Nonlinear Finite Element Analysis of a Composite Non-Cylindrical Pressurized Aircraft Fuselage Structure** A. Przekop, Analytical Mechanics Associates, Inc., Hampton, VA; H. Wu, P. Shaw, The Boeing Company, Seal Beach, CA		

Wednesday, 15 January 2014							
281-TES-2	**Advances in Renewable Energy and Efficiency**						**Maryland Ballroom B**
Chaired by: B. SLOAN, Iowa State University and E. KHALIL, Cairo University							
1400 hrs AIAA-2014-1065 **Energy Efficient Designs of Low Carbon Buildings** E. Khalil, Cairo University, Cairo, Egypt	1430 hrs AIAA-2014-1066 **Strategic Roadmap for Water Energy Nexus** E. Khalil, Cairo University, Cairo, Egypt	1500 hrs AIAA-2014-1067 **Green Engineering in Clean Rooms and Surgical operating Theatres** E. Khalil, Cairo University, Cairo, Egypt	1530 hrs AIAA-2014-1068 **Role of Toluene on Hydrocarbon Formation at Thermal Stage of 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	1600 hrs AIAA-2014-1069 **Flow Field Velocity Measurement Around a Horizontal-Axis Wind Turbine** R. Amano, S. Shen, University of Wisconsin, Milwaukee, Milwaukee, WI	1630 hrs AIAA-2014-1070 **Performance of Wind Turbine Blades with Several Designs** R. Amano, A. Alsultan, A. Gupta, University of Wisconsin, Milwaukee, Milwaukee, WI	1700 hrs AIAA-2014-1071 **Thermochemical Characterization of Materials using a Novel Laser-Heating Technique** C. Presser, A. Nazarian, J. Conny, National Institute of Standards and Technology, Gaithersburg, MD	

Wednesday, 15 January 2014							
282-TP-8	**Cryogenics**						**National Harbor Conf Rm 11**
Chaired by: E. SILK, NASA-Goddard Space Flight Center and P. YEE, The Aerospace Corporation							
1400 hrs Oral Presentation (Invited) **Space Cryogenics Between 1 and 10 Kelvin** E. Silk, NASA Goddard Space Flight Center, Greenbelt, MD	1430 hrs AIAA-2014-1072 **Modeling and Design of a Non-Moving part 4He Superfluid Circulator for Cooling of Large Superconducting Magnets in Space Science Applications** A. Jahromi, F. Miller, University of Wisconsin, Madison, Madison, WI	1500 hrs AIAA-2014-1073 **A Wide Temperature Range, Reliable, Compact Cryogenic Thermal Switch** W. Chen, D. Fogg, Creare, Inc., Hanover, NH	1530 hrs AIAA-2014-1074 **Flow Visualization of Liquid Hydrogen Line Chill Down Tests** E. Rame, J. Hartwig, J. McQuillen, NASA Glenn Research Center, Cleveland, OH	1600 hrs AIAA-2014-1075 **Demonstration of a 10 K Turbo-Brayton Cryocooler for Space Applications** J. Breedlove, K. Cragin, M. Zagarola, Creare, Inc., Hanover, NH			

Wednesday, 15 January 2014							
283-TP-9	**Non-Equilibrium Flows II**						**National Harbor Conf Rm 10**
Chaired by: D. PYTEL, Lockheed Martin Space Systems and J. BATSON, Lockheed Martin Space Systems							
1400 hrs AIAA-2014-1076 **Comparison of Vibrational Relaxation Modeling for Strongly Non-Equilibrium Flows** T. Deschenes, M. Braunstein, Spectral Sciences, Inc., Burlington, MA; I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1430 hrs AIAA-2014-1077 **Hybrid Monte Carlo - generalized polynomial chaos sampling of quasi-classical trajectories for rapid nonequilibrium reacting flow simulations** M. Kulakhmetov, A. Alexeenko, Purdue University, West Lafayette, IN	1500 hrs AIAA-2014-1078 **Three Dimensional Simulation of Shock Layer Ionization for RAM-C II Flight Tests** S. Surzhikov, Russian Academy of Sciences, Moscow, Russia	1530 hrs AIAA-2014-1079 **Analysis of rovibrational relaxation in nitrogen via direct atomic simulation** P. Valentini, P. Norman, C. Zhang, T. Schwartzentruber, University of Minnesota, Minneapolis, Minneapolis, MN				

Wednesday, 15 January 2014							
284-WE-10	**Blade and Turbine Design II**						**Woodrow Wilson B**
Chaired by: D. CAIRNS, Montana State University and R. DAMIANI, NREL							
1400 hrs AIAA-2014-1080 **PIV-Based Analysis of 2D and 3D Flow Phenomena of Vertical Axis Wind Turbine Aerodynamics** G. Tescione, D. Ragni, C. He, C. Simao Ferreira, G. van Bussel, Delft University of Technology, Delft, The Netherlands	1430 hrs AIAA-2014-1081 **Cross-sectional Analysis of Composite Beams with Distributed Loads** W. Yu, Utah State University, Logan, UT	1500 hrs AIAA-2014-1082 **Structural Optimization of Multi-Megawatt, Offshore Vertical Axis Wind Turbine Rotors** M. Schelbergen, L. Bernhammer, C. Simao Ferreira, E. Ferede, Delft University of Technology, Delft, The Netherlands	1530 hrs AIAA-2014-1083 **Effects of Defects Part A: Treatment of Manufacturing Defects as Uncertainty Variables in a Wind Blade Probabilistic Design Framework** T. Riddle, D. Cairns, J. Nelson, Montana State University, Bozeman, MT	1600 hrs AIAA-2014-1084 **Effects of Defects: Part B — A Comparison of Progressive Damage Modeling of Fiberglass/ Epoxy Composite Structures with Manufacturing Induced Flaws** J. Nelson, D. Cairns, T. Riddle, Montana State University, Bozeman, MT	1630 hrs AIAA-2014-1085 **An Experimental Investigation on the Aeromechanics and Near Wake Characteristics of Dual-Rotor Wind Turbines (DRWTs)** A. Ozbay, W. Tian, H. Hu, Iowa State University, Ames, IA		

Wednesday, 15 January 2014							
285-WE-11	Wind Farm and Turbine-Wake Interaction II						Woodrow Wilson C
Chaired by: J. WHITE, Sandia National Laboratories and B. JAYARAMAN							
1400 hrs AIAA-2014-1086 **Wind Farm simulations using a Full Rotor Model for Wind Turbines** J. Sitaraman, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY; E. Duque, Intelligent Light, Rutherford, NJ	1430 hrs AIAA-2014-1087 **Sensitivity Analysis of Wind Plant Performance to Key Turbine Design Parameters: A Systems Engineering Approach** K. Dykes, A. Ning, R. King, P. Graf, G. Scott, P. Veers, National Renewable Energy Laboratory, Golden, CO	1500 hrs AIAA-2014-1088 **Scaled Wind Farm Technology Facility Overview** J. Berg, J. Bryant, B. LeBlanc, D. Maniaci, B. Naughton, J. Paquette, Sandia National Laboratories, Albuquerque, NM; et al.	1530 hrs AIAA-2014-1089 **Implementing the Dynamic Wake Meandering Model in the NWTC Design Codes** Y. Hao, M. Lackner, University of Massachusetts, Amherst, Amherst, MA; R. Keck, University of Oslo, Oslo, Norway; S. Lee, M. Churchfield, P. Moriarty, National Renewable Energy Laboratory, Golden, CO	1600 hrs AIAA-2014-1090 **Wind Turbine Performance Losses in Array Operation as a Function of Turbine Spacing and Upstream Wake Number** B. Ennis, Purdue University, West Lafayette, IN; D. Adams, Vanderbilt University, Nashville, TN; S. Fleeter, Purdue University, West Lafayette, IN			

Wednesday, 15 January 2014		
286-NW-9 1500 - 1530 hrs	Wednesday Afternoon Networking Coffee Break	Exhibit Hall

Wednesday, 15 January 2014		
287-LECT-7 1730 - 1830 hrs	von Karman Lecture: Space Transportation: Past, Present, and . . . ??	Potomac Ballroom C

Antonio L. Elias
Executive Vice President and Chief Technical Officer
Orbital Sciences Corporation

Thursday

Thursday, 16 January 2014		
288-NW-10 0700 - 0800 hrs	Thursday Morning Networking Breakfast	Exhibit Hall

Thursday, 16 January 2014		
289-SB-7 0730 - 0800 hrs	Thursday Morning Speakers' Briefing	Session Rooms

Thursday, 16 January 2014		
290-PLNRY-4 0800 - 0930 hrs	Thursday Morning Keynote and Plenary Panel	Potomac Ballroom A&B

Keynote

Talent, the Coin of the Realm
C.D. Mote, Jr.
President
National Academy of Engineering

Plenary Panel: Future of Aerospace Education and Professional Development

Moderator: Alton Romig, Vice President, Engineering and Advanced Systems, Chief Skunk, Lockheed Martin Aeronautics

Panelists:

Ed Hoffman
Chief Knowledge Officer and APPEL Director
NASA

Leland Nicolai
Emeritus Member
Lockheed Martin Aeronautics

David Radcliffe
Kamyar Haghighi Head of Engineering Education and Epistemology
Professor of Engineering Education
Purdue University

Kate Stambaugh
Space Systems Engineer
JHU/Applied Physics Laboratory

Thursday, 16 January 2014		
291-NW-11 0930 - 1000 hrs	Thursday Morning Networking Coffee Break	Exhibit Hall

Thursday, 16 January 2014							
292-AFM-10	Planetary Reentry II						National Harbor Conf Rm 13
Chaired by: S. KOMADINA, Northrop Grumman Aerospace Systems							
1000 hrs AIAA-2014-1091 **Trajectory and Thermal Analysis for Disk-shaped Dust Particles through a Shock Layer** Y. Toki, Y. Ogino, N. Ohnishi, K. Sawada, Tohoku University, Sendai, Japan	1030 hrs AIAA-2014-1092 **Supersonic Inflatable Aerodynamic Decelerators for use on Sounding Rocket Payloads** M. Miller, B. Steinfeldt, R. Braun, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2014-1093 **An Analytical Approach to Modeling Supersonic Retropropulsion Flow Field Components** C. Cordell, R. Braun, Georgia Institute of Technology, Atlanta, GA	1130 hrs AIAA-2014-1094 **Mars Science Laboratory Aerodatabase Trajectory Reconstruction and Uncertainty Assessment** P. Kutty, C. Karlgaard, Analytical Mechanics Associates, Inc., Hampton, VA	1200 hrs AIAA-2014-1095 **Asymmetrically Stacked Tori Hypersonic Inflatable Aerodynamic Decelerator Design Study for Mars Entry** B. Harper, R. Braun, Georgia Institute of Technology, Atlanta, GA			

Thursday, 16 January 2014							
293-AMT-7	Advances in Coherent Anti-Stokes Raman Scattering and Other Spectroscopic Techniques						Maryland Ballroom 1
Chaired by: S. NAIK, Purdue University and S. KEARNEY, Sandia National Laboratories							
1000 hrs AIAA-2014-1096 **Development of Combined Dual-Pump Vibrational and Pure-Rotational Coherent Anti-Stokes Raman Scattering (DPVCARS and PRCARS) System** A. Satija, R. Lucht, Purdue University, West Lafayette, IN	1030 hrs AIAA-2014-1097 **Pure-Rotational fs/ps CARS Measurements of Temperature and Concentration using a Second-Harmonic Bandwidth Compressed Probe** S. Kearney, D. Scoglietti, Sandia National Laboratories, Albuquerque, NM	1100 hrs AIAA-2014-1098 **Dual-pump CARS of Air in a Heated Pressure Vessel up to 55 Bar and 1300 K** L. Cantu, E. Gallo, A. Cutler, George Washington University, Newport News, VA; P. Danehy, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2014-1099 **Application of a Two-color Polarization Spectroscopy Technique for Detection of Carbon Monoxide** A. Bhuiyan, A. Satija, R. Lucht, Purdue University, West Lafayette, IN	1200 hrs Oral Presentation (Invited) **Kilohertz-rate Imaging of Chemical Species using Ultrashort-Pulse Lasers."** W. Kulatilaka, S. Roy, Spectral Energies, LLC, Dayton, OH; J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH			

Thursday, 16 January 2014							
294-AMT-8	**Velocimetry**						**Maryland Ballroom 2**
Chaired by: S. BERESH, Sandia National Laboratories and K. LOWE, Virginia Tech							
1000 hrs AIAA-2014-1100 **Jupiter and Saturn's Unique Flow Structures Extracted from Images by Using Optical Flow Method** T. Liu, Western Michigan University, Kalamazoo, MI	1030 hrs AIAA-2014-1101 **Effects of Spatial Realignment in Stereo PIV Self-Calibration** S. Beresh, Sandia National Laboratories, Albuquerque, NM; B. Smith, Utah State University, Logan, UT	1100 hrs AIAA-2014-1102 **An examination of MHz rate PIV in a heated supersonic jet** B. Brock, R. Haynes, B. Thurow, Auburn University, Auburn, AL; G. Lyons, N. Murray, University of Mississippi, Oxford, Oxford, MS	1130 hrs AIAA-2014-1103 **Spectral analysis of over-expanded cold jets via 3-component point Doppler velocimetry** T. Ecker, D. Brooks, K. Lowe, W. Ng, Virginia Polytechnic Institute and State University, Blacksburg, VA	1200 hrs AIAA-2014-1104 **Time-Domain Cross-Correlation Scan DGV (CCS-DGV) for Mean-Velocity Boundary Layer Measurements** D. Cadel, T. Ecker, T. Lowe, Virginia Polytechnic Institute and State University, Blacksburg, VA			

Thursday, 16 January 2014							
295-APA-29	**Airfoil/Wing/Configuration Aerodynamics**						**Maryland Ballroom 5**
Chaired by: K. LAFLIN, Cessna Aircraft Company							
1000 hrs AIAA-2014-1105 **Sweep effects on non-linear Lifting Line Theory near Stall** S. Gallay, S. Ghasemi, E. Laurendeau, École Polytechnique de Montréal, Montréal, Canada	1030 hrs AIAA-2014-1106 **Aerodynamics and Flow Physics of a NACA 4412 Airfoil in Dynamic Ground Effect** Q. Qu, X. Jia, W. Wang, Beihang University, Beijing, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO; P. Liu, Beihang University, Beijing, China	1100 hrs AIAA-2014-1107 **A Numerical Study of the Aerodynamics of Cessna 172 Aircrafts in Echelon formation** M. Gunasekaran, R. Mukherjee, Indian Institute of Technology Madras, Chennai, India	1130 hrs AIAA-2014-1108 **A Numerical Study of the Unsteady Motion of a Wing using N-Body Approximation** V. Kumar, R. Mukherjee, Indian Institute of Technology Madras, Chennai, India	1200 hrs AIAA-2014-1109 **Numerical Study of Transient Behavior of a NACA 0008 Airfoil Equipped with a Gurney Flap Using a Control-Volume Based Finite-Element Collocated Scheme** M. Khoshlessan, S. Karimian, M. Mani, Amirkabir University of Technology, Tehran, Iran			

Thursday, 16 January 2014							
296-APA-30	**Innovative Aerodynamic Concept and Bio-inspired Designs**						**Maryland Ballroom 4**
Chaired by: K. VANDEN, USAF and C. SHENG, University of Toledo							
1000 hrs AIAA-2014-1110 **Investigation of Moving Surface Approach to Viscous Drag Reduction** P. Sünder, S. Sartorius, Technical University of Munich, Munich, Germany	1030 hrs AIAA-2014-1111 **Development of Atmospheric Satellite Concept based on Sailing** W. Engblom, Embry-Riddle Aeronautical University, Daytona Beach, FL	1100 hrs AIAA-2014-1112 **Lift enhancement in formation flying in ground effect over a wavy surface** C. Chabalko, B. Balachandran, University of Maryland, College Park, College Park, MD	1130 hrs AIAA-2014-1113 **Experimental Study on the Unsteady Aerodynamics of a Robotic Hawkmoth Manduca sexta model** J. Han, J. Chang, Korea Aerospace University, Goyang, South Korea; J. Kim, J. Han, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1200 hrs AIAA-2014-1114 **A Quasi-Steady Model for the Lift on a Hovering Flexible Wing** C. Kang, University of Michigan, Ann Arbor, Ann Arbor, MI; W. Shyy, Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong			

Thursday, 16 January 2014							
297-APA-31	**Wind Tunnel and Flight Test Aerodynamics**						**Maryland Ballroom D**
Chaired by: A. MAJAMAKI, The Aerospace Corporation and C. BIDWELL, NASA Glenn Research Center							
1000 hrs AIAA-2014-1115 **NASA Orion Flush Air Data Sensing System Feasibility Determination and Development** E. Artz, N. Dona, T. Yechout, U.S. Air Force Academy, Colorado Springs, CO	1030 hrs AIAA-2014-1116 **Quantification of the Error Induced at Air Data Sensors due to Basket Engagement during Aerial Refueling** J. Masud, O. Khan, Air University, Islamabad, Pakistan	1100 hrs AIAA-2014-1117 **A Flight Test Technique for Precise Angle-of-Attack Measurements with Application to Laminar Flow Control Flight Research** A. Tucker, Air Force Research Laboratory, Wright-Patterson AFB, OH; W. Saric, H. Reed, Texas A&M University, College Station, TX	1130 hrs AIAA-2014-1118 **Numerical Investigation of Installation Effects in Open Jet Wind Tunnel Airfoil Experiments** A. Sheikh-AlShabab, P. Tucker, University of Cambridge, Cambridge, United Kingdom	1200 hrs AIAA-2014-1119 **Dynamic Stability Testing of a Reentry Lifting Capsule in a Transonic Wind Tunnel** S. Koga, A. Hidaka, R. Tagai, T. Kimura, T. Yoshinaga, S. Nagai, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; et al.			

Thursday, 16 January 2014							
298-AS-3	**Biomimitic Adaptive Flying Structures**						**Chesapeake Conf Rm D**
Chaired by: R. BARRETT-GONZALEZ, The University of Kansas and B. ARRITT, AFRL - Air Force Research Laboratory							
1000 hrs AIAA-2014-1120 **Bat-Inspired Flapping Flight** P. Chen, S. Joshi, NextGen Aeronautics, Torrance, CA; S. Swartz, K. Breuer, Brown University, Providence, RI; G. Reich, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2014-1121 **The Design of a Corrugated Skin for the FishBAC Compliant Structure** I. Dayyani, B. Woods, M. Friswell, Swansea University, Swansea, United Kingdom	1100 hrs AIAA-2014-1122 **Structural Characterization of the Fish Bone Active Camber Morphing Airfoil** B. Woods, M. Friswell, Swansea University, Swansea, United Kingdom	1130 hrs AIAA-2014-1123 **Inertial Effects Due to Passive Wing Morphing in Ornithopters** A. Wissa, J. Hubbard, University of Maryland, College Park, College Park, MD; Y. Tummala, M. Frecker, Pennsylvania State University, University Park, PA; M. Northrup, University of Maryland, College Park, College Park, MD				

Thursday, 16 January 2014							
299-FD-35	**Active and Passive Flow Control IV**						**Azalea 2**
Chaired by: D. WILLIAMS, Illinois Institute of Technology and S. ANDERS, NASA Langley Research Center							
1000 hrs AIAA-2014-1124 **Interaction of a Finite Span Synthetic Jet near the Tip of a Sweptback Wing** J. Vasile, M. Amitay, Rensselaer Polytechnic Institute, Troy, NY	1030 hrs AIAA-2014-1125 **Understanding Leading Edge Stall Physics by Acoustic Excitation** C. Bernardini, S. Benton, J. Bons, Ohio State University, Columbus, OH	1100 hrs AIAA-2014-1126 **Applications of String-type DBD Plasma Actuators for Flow Control in Turbomachineries** T. Segawa, T. Matsunuma, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan	1130 hrs AIAA-2014-1127 **Pulsed dielectric barrier discharge for manipulation of turbulent flow downstream a backward-facing-step** N. Benard, P. Sujar-Garrido, K. Bayoda, J. Bonnet, E. Moreau, National Center for Scientific Research (CNRS), Chasseneuil, France				

Thursday, 16 January 2014							
300-FD-36	**Applications of GPUs for CFD**						**Azalea 3**
Chaired by: H. LUO, North Carolina State University and R. AGARWAL, Washington University in St Louis							
1000 hrs AIAA-2014-1128 **Numerical Simulations of Newtonian and Non-Newtonian Fluids on GPU** K. Jin, P. Vanka, University of Illinois, Urbana-Champaign, Urbana, IL; R. Agarwal, Washington University in St. Louis, St. Louis, MO	1030 hrs AIAA-2014-1129 **OpenACC-based GPU Acceleration of a 3-D Unstructured Discontinuous Galerkin Method** Y. Xia, L. Luo, H. Luo, North Carolina State University, Raleigh, NC	1100 hrs AIAA-2014-1130 **Performance Assessment of Multi-block LES Simulations using Directive-based GPU Computation in a Cluster Environment** L. Luo, J. Edwards, H. Luo, North Carolina State University, Raleigh, NC	1130 hrs AIAA-2014-1131 **Directive-Based GPU Programming for Computational Fluid Dynamics** B. Pickering, C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA				

Thursday, 16 January 2014							
301-FD-37	**Boundary Layer Transition**						**National Harbor Conf Rm 3**
Chaired by: R. RADESPIEL, Technische Universitat Braunschweig and M. MALIK, NASA-Langley Research Center							
1000 hrs AIAA-2014-1132 **Nonlinear Development and Secondary Instability of Traveling Crossflow Vortices** F. Li, M. Choudhari, NASA Langley Research Center, Hampton, VA; L. Duan, National Institute of Aerospace, Hampton, VA; C. Chang, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2014-1133 **Enhancement of a Correlation-Based Transition Turbulence Model for Simulating Crossflow Instability** J. Choi, O. Kwon, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1100 hrs AIAA-2014-1134 **DNS Study on Mechanism of Formation of Lambda Rotational Core in Late Boundary Layer Transition** Y. Yan, A. Kaur, C. Liu, University of Texas, Arlington, Arlington, TX	1130 hrs AIAA-2014-1135 **Predictions of Transition on a Hovering Tilt-Rotor Blade** M. Zhao, Z. Xiao, S. Fu, Tsinghua University, Beijing, China				

Thursday, 16 January 2014							
302-FD-38	**Shock Boundary Layer Interactions II**						**Woodrow Wilson D**
Chaired by: D. GAITONDE, The Ohio State University and M. PARK, NASA-Langley Research Center							
1000 hrs AIAA-2014-1136 **Shock Wave Laminar Boundary Layer Interaction Over a Double Wedge in a High Mach Number Flow** M. Badr, D. Knight, Rutgers University, New Brunswick, NJ	1030 hrs AIAA-2014-1137 **Numerical Prediction of Shock-Boundary Layer Interaction between a Pair of Fins in Hypersonic Flow** V. Bhagwandin, Army Research Laboratory, Aberdeen Proving Ground, MD	1100 hrs AIAA-2014-1138 **Flow Separation Associated with 3-D Shock-Boundary Layer Interaction (SBLI)** R. Morajkar, R. Klomparens, W. Eagle, J. Driscoll, M. Gamba, University of Michigan, Ann Arbor, Ann Arbor, MI	1130 hrs AIAA-2014-1139 **Influence of entropy layer on the flow over a wedge and a pair of wedges on the plate** I. Egorov, V. Borovoy, N. Palchekovskaya, A. Skuratov, I. Struminskaya, TsAGI, Zhukovsky, Russia				

Thursday, 16 January 2014							
303-FD-39	**Synthetic Jets**						**Maryland Ballroom 6**
Chaired by: E. WHALEN, Boeing Engineering Operations & Technology and C. MCGINLEY, NASA Langley Research Center							
1000 hrs AIAA-2014-1140 **Numerical Investigation of Flow Structures and Interactions due to a Pitched Synthetic Jet in a Laminar Boundary Layer** J. Li, O. Sahni, Rensselaer Polytechnic Institute, Troy, NY	1030 hrs AIAA-2014-1141 **Interaction of a Finite Span Synthetic Jet with a Laminar Boundary Layer: Effect of Jet Geometry and Orientation** T. Van Buren, C. Leong, M. Amitay, Rensselaer Polytechnic Institute, Troy, NY	1100 hrs AIAA-2014-1142 **Phase-Averaging Methods for a Naturally Oscillating Flow Field** S. Gaertlein, R. Woszidlo, F. Ostermann, C. Nayeri, C. Paschereit, Technical University of Berlin, Berlin, Germany	1130 hrs AIAA-2014-1143 **The Time-Resolved Internal and External Flow Field Properties of a Fluidic Oscillator** F. Ostermann, R. Woszidlo, S. Gaertlein, C. Nayeri, C. Paschereit, Technical University of Berlin, Berlin, Germany	1200 hrs AIAA-2014-1144 **Design, Modeling and Testing of Synthetic Jet Actuators for MAV Flight Control** S. Bhatt, V. Golubev, Y. Tang, Embry-Riddle Aeronautical University, Daytona Beach, FL			

Thursday, 16 January 2014							
304-GNC-17	**Fault Detection, Isolation and Reconstruction**						**National Harbor Conf Rm 8**
Chaired by: F. MORA-CAMINO, ENAC and D. ALAZARD, Institut Supérieur de l'Aéronautique et de l'Espace							
1000 hrs AIAA-2014-1145 **Adaptive Hybrid Unscented Kalman Filter for Aircraft Sensor Fault Detection, Isolation and Reconstruction** P. Lu, L. Van Eykeren, E. Van Kampen, Q. Chu, Delft University of Technology, Delft, The Netherlands; B. Yu, Concordia University, Montréal, Canada	1030 hrs AIAA-2014-1146 **MPC Based Handling Qualities Assessment for a Transportation Aircraft with Failed Actuators** L. Zhong, F. Mora-Camino, French Civil Aviation University, Toulouse, France	1100 hrs AIAA-2014-1147 **Sensor Fault Detection and Isolation for Redundant Air Data Sensors** L. Van Eykeren, Q. Chu, Delft University of Technology, Delft, The Netherlands	1130 hrs AIAA-2014-1148 **Fault Tolerant LPV Control of the GTM UAV with Dynamic Control Allocation** B. Vanek, T. Peni, Z. Szabo, J. Bokor, Hungarian Academy of Sciences, Budapest, Hungary	1200 hrs AIAA-2014-1149 **Reduced Order and Prioritized Reference Governors for Limit Protection in Aircraft Gas Turbine Engines** Y. Tian, I. Kolmanovsky, University of Michigan, Ann Arbor, Ann Arbor, MI			

Thursday, 16 January 2014							
305-GT-7	**Hypersonic Test techniques with an Emphasis on Heat Shield Ablation**						**Maryland Ballroom 3**
Chaired by: J. EVERHART, NASA-Langley Research Center and D. NOBLE, Georgia Institute of Technology							
1000 hrs AIAA-2014-1150 **Experiment Method of Lightweight Charring Ablators** H. Gao, China Academy of Aerospace Aerodynamics, Beijing, China	1030 hrs AIAA-2014-1151 **Remote Recession Sensing of Ablative Heat Shield Materials** M. Winter, University of Kentucky, Lexington, Lexington, KY; M. Stackpoole, NASA Ames Research Center, Moffett Field, CA; A. Nawaz, Sierra Lobo, Inc., Moffett Field, CA; G. Gonzales, ERC, Inc., Moffett Field, CA; T. Ho, Santa Clara University, Moffett Field, CA	1100 hrs AIAA-2014-1152 **Development of Naphthalene PLIF for Visualizing Ablation Products from a Space Capsule Heat Shield** C. Combs, N. Clemens, University of Texas, Austin, Austin, TX; P. Danehy, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2014-1153 **Detection of Nitrogen Flow Condensation in a Hypersonic Wind-Tunnel using a Static Pressure Probe** G. Grossir, P. Rambaud, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1200 hrs AIAA-2014-1154 **Entry, Descent and Landing Aerothermodynamics: NASA Langley Experimental Capabilities and Contributions** B. Hollis, K. Berger, S. Berry, G. Brauckmann, G. Buck, M. DiFulvio, NASA Langley Research Center, Hampton, VA; et al.			

Thursday, 16 January 2014							
306-GTE-6	**Engine Systems I**						**Azalea 1**
Chaired by: J. CONVERY, GE Aviation							
1000 hrs AIAA-2014-1155 **Evaluation of Coefficients of Restitution Using High Speed Particle Shadow Velocimetry with Application to Particle Separators for Gas Turbine Engines** S. Whitaker, B. Peterson, J. Bons, Ohio State University, Columbus, OH	1030 hrs AIAA-2014-1156 **Evaluation of Ash Particle Rebounds in a Simulated Gas Turbine Environment** M. Lawrence, S. Whitaker, J. Bons, Ohio State University, Columbus, OH	1100 hrs AIAA-2014-1157 **Synchrotron XRD Measurements of Thermal Barrier Coatings Subjected to Loads Representing Operational Conditions of Rotating Gas Turbine Blades** K. Knipe, A. Manero, S. Siddiqui, S. Sofronsky, P. Fouquet, University of Central Florida, Orlando, FL; C. Meid, German Aerospace Center (DLR), Cologne, Germany; et al.					

Thursday, 16 January 2014							
307-HSABP-4	**CFD Analysis of Scramjets II**						**Chesapeake Conf Rm 7**
Chaired by: F. MALO-MOLINA, Air Force Reseach Laboratory and C. BRUNO, United Technologies Research Center							
1000 hrs AIAA-2014-1158 **Numerical Investigation of a Supersonic Cavity Flameholder** D. Peterson, E. Hassan, Air Force Research Laboratory, Wright-Patterson AFB, OH; S. Tuttle, Naval Research Laboratory, Washington, DC; M. Hagenmaier, C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2014-1159 **Inlet Fuel Injection in a Mach 12 Shape-Transitioning Scramjet** J. Barth, V. Wheatley, M. Smart, University of Queensland, Brisbane, Australia	1100 hrs AIAA-2014-1160 **Evaluation of Mixing-Limited Quasi-Global Wind-US Model for HIFire 2 Flowpath** M. Borghi, W. Engblom, Embry-Riddle Aeronautical University, Daytona Beach, FL; N. Georgiadis, NASA Glenn Research Center, Cleveland, OH	1130 hrs AIAA-2014-1161 **Large-Eddy Simulations of a Dual-Mode Scramjet Combustor: Operating Point "A" of University of Virginia's Scramjet Experiments** W. Chan, University of Michigan, Ann Arbor, Ann Arbor, MI; M. Ihme, Stanford University, Stanford, CA	1200 hrs AIAA-2014-1162 **The Response of the Supersonic Reacting Mixing Layer to the Inflow Fluctuations** A. Tahsini, Aerospace Research Institute, Tehran, Iran			

Thursday, 16 January 2014							
308-IS-3	**Applications of Unmanned Aerial Systems**						**National Harbor Conf Rm 15**
Chaired by: K. KOCHERSBERGER, Virginia Polytechnic Institute and State University							
1000 hrs AIAA-2014-1163 **A control technique for automatic taxi in fixed wing** C. Zammit, D. Zammmit-Mangion, University of Malta, Msida, Malta	1030 hrs AIAA-2014-1164 **Project FREDE as a Stratospheric Experiment with Semi-Autonomus Control System** J. Gorski, Wroclaw University of Technology, Wroclaw, Poland	1100 hrs AIAA-2014-1165 **Development of an Optionally Piloted Vehicle using a Humanoid Robot** H. Jeong, J. Kim, D. Shim, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1130 hrs AIAA-2014-1166 **3-D Scene Understanding from Image-based Reconstructions Using a Small Unmanned Aircraft** G. Christie, L. Stiltner, K. Kroeger, K. Kochersberger, Virginia Polytechnic Institute and State University, Blacksburg, VA				

Thursday, 16 January 2014							
309-MAT-7	**Multiscale Modeling of Materials I**						**Chesapeake Conf Rm A**
Chaired by: S. WANTHAL, The Boeing Company; R. FERTIG, University of Wyoming and G. SEIDEL, Virginia Polytechnic Institute and State Universit							
1000 hrs AIAA-2014-1167 **Validation of Variational Asymptotic Micromechanics Modeling of Thermomechanical Behavior of Materials** C. Teng, W. Yu, Utah State University, Logan, UT	1030 hrs AIAA-2014-1168 **Computational Modeling and Experimental Characterization of Macroscale Piezoresistivity in Aligned Carbon Nanotube and Fuzzy Fiber Nanocomposites** A. Chaurasia, X. Ren, Y. Li, E. Sengezer, J. Burton, G. Seidel, Virginia Polytechnic Institute and State University, Blacksburg, VA	1100 hrs AIAA-2014-1169 **Effect of Fiber Volume Fraction Variation Across Multiple Length Scales on Composite Stress Variation: The Possibility of Stochastic Multiscale Analysis** R. Fertig, E. Jensen, University of Wyoming, Laramie, Laramie, WY	1130 hrs AIAA-2014-1170 **On the Constitutive Relations for Damaged Elastoplastic Materials Coupling Anisotropic Damage and Plasticity** L. Zhang, W. Yu, Utah State University, Logan, UT				

Thursday, 16 January 2014							
310-MDO-7	**Aerodynamic Optimization**						**Chesapeake Conf Rm 4**
Chaired by: T. TAKAHASHI, Santa Clara University and M. RUMPFKEIL, University of Dayton							
1000 hrs AIAA-2014-1171 **Active Subspaces for Shape Optimization** T. Lukaczyk, Stanford University, Stanford, CA; P. Constantine, Colorado School of Mines, Golden, CO; F. Palacios, J. Alonso, Stanford University, Stanford, CA	1030 hrs AIAA-2014-1172 **Four Suggestions for Better Parametric Geometries** A. Sobester, University of Southampton, Southampton, United Kingdom	1100 hrs AIAA-2014-1173 **Automated Low-fidelity Model Selection for CFD-based Aerodynamic Shape Optimization** S. Koziel, L. Leifsson, Reykjavik University, Reykjavik, Iceland	1130 hrs AIAA-2014-1174 **A General Purpose Adjoint Formulation for Inviscid 2D/3D Fluid Dynamic Optimization** G. Caramia, A. Dadone, Technical University of Bari, Bari, Italy				

Thursday, 16 January 2014							
311-NDA-7	**Nondeterministic Methods**						**Chesapeake Conf Rm 5**
Chaired by: D. VILLANUEVA, Universal Technology Corp and J. MCFARLAND							
1000 hrs AIAA-2014-1175 **A Dynamic Data Driven Approach to Online Flight Envelope Updating for Self Aware Aerospace Vehicles** D. Allaire, M. Lecerf, K. Willcox, Massachusetts Institute of Technology, Cambridge, MA; D. Kordonowy, Aurora Flight Sciences, Cambridge, MA	1030 hrs AIAA-2014-1176 **Decomposed Multilevel Optimization under Epistemic Uncertainty** B. Nesbit, M. Rais-Rohani, S. DorMohammadi, Mississippi State University, Starkville, MS	1100 hrs AIAA-2014-1177 **Data Assimilation for Turbulent Flows** H. Kato, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; S. Obayashi, Tohoku University, Sendai, Japan	1130 hrs AIAA-2014-1178 **Computational Effort vs. Accuracy Tradeoff in Uncertainty Quantification** J. Mullins, S. Mahadevan, Vanderbilt University, Nashville, TN				

Thursday, 16 January 2014		
312-PANEL-8 **1000 - 1200 hrs**	**Small Satellite Technology and its Role in Education and Professional Development Panel**	**Potomac Ballroom C**

Moderator: Simon "Pete" Worden, Center Director, NASA Ames Research Center

Panelists:

James Cutler
Assistant Professor
University of Michigan

Adarsh Deepak
CEO, Chairman
Science and Technology Corporation (STC), Taksha University

Garrett Skrobot
Mission Manager, Launch Services Program
NASA Kennedy Space Center

Bruce Yost
Program Manager, Edison Small Spacecraft Flight Demonstration Program
NASA Ames Research Center

Thursday, 16 January 2014		
313-PANEL-9 **1000 - 1230 hrs**	**Green Engineering Demands on Workforce Development**	**Woodrow Wilson A**

Moderator: Franz-Josef Kahlen, Associate Professor, Department of Mechanical Engineering, University of Cape Town

Panelists:

Shannon Flumerfelt
Director and Professor
Oakland University

Mike Bailey
Design Engineer
GE

Clark Briggs
Vice President, Aerospace & Defense Business Development
ATA Engineering, Inc.

Thursday, 16 January 2014		
314-PANEL-10 1000 - 1200 hrs	International Session - Status of Pressure Gain Combustion for Propulsion, Research & Applications II	National Harbor Conf Rm 7

Session Chairs: Dan Paxson, NASA Glenn Research Center, OH and Chris Brophy, Naval Postgraduate School, CA
Sponsor: AIAA - Pressure Gain Combustion Working Group for Program Committee

Panelists:

Sergey Frolov
Professor, Semenov Institute of Chemical Physics,
Russian Academy of Sciences
Moscow, Russian Federation

Jian-Ping Wang
Professor, Department of Mechanics and Aerospace Engineering
Peking University
Beijing, China

Ming-Hsun Wu
Professor, Department of Mechanical Engineering
National Cheng Kung University
Taiwan

Ratiba Zitoun
Professor, University of Poitiers - CNRS - ENSMA
France

Thursday, 16 January 2014							
315-PC-18	Plasma-Assisted Combustion II						Chesapeake Conf Rm G
Chaired by: Y. IKEDA, Imagineering, Inc.							
1000 hrs AIAA-2014-1179 **Time Dependent Measurements of Species Formation in Nanosecond-Pulsed Plasma Discharges in C2H4/O2/Ar Mixtures** J. Lefkowitz, B. Windom, W. MacDonald, S. Adams, Princeton University, Princeton, NJ; T. Chen, Princeton High School, Princeton, NJ; M. Uddi, Princeton University, Princeton, NJ; et al.	1030 hrs AIAA-2014-1180 **Ignition in Ethanol-Containing Mixtures after Nanosecond Discharge** I. Kosarev, S. Kindusheva, N. Aleksandrov, Moscow Institute of Physics and Technology, Moscow, Russia; A. Starikovskiy, Princeton University, Princeton, NJ	1100 hrs AIAA-2014-1181 **Hydrogen and Methane Plasma Assisted Ignition by NS discharge behind Reflected Shock Wave** A. Starikovskiy, Princeton University, Princeton, NJ	1130 hrs AIAA-2014-1182 **SI Engine with Repetitive NS Spark Plug** S. Pancheshnyi, Paul Sabatier University, Toulouse, France; A. Nikipelov, E. Anokhin, Moscow Institute of Physics and Technology, Moscow, Russia; A. Starikovskiy, Princeton University, Princeton, NJ				

Thursday, 16 January 2014							
316-PC-19	Spray and Droplet Combustion II						Chesapeake Conf Rm H
Chaired by: K. MCMANUS, GE							
1000 hrs AIAA-2014-1183 **Exploration of Near-Field Plume Properties for Aerated-Liquid Jets Using X-Ray Radiography** K. Lin, Taitech, Inc., Beavercreek, OH; C. Carter, S. Smith, Air Force Research Laboratory, Wright-Patterson AFB, OH; A. Kastengren, Argonne National Laboratory, Argonne, IL	1030 hrs AIAA-2014-1184 **A Parametric Investigation of Gelled Propellant Spray Characteristics Utilizing Impinging Jet Geometry** N. Rodrigues, P. Sojka, Purdue University, West Lafayette, IN	1100 hrs AIAA-2014-1185 **Numerical investigation of primary air-blast atomization and modal analysis of flow instabilities** J. McCaslin, O. Desjardins, Cornell University, Ithaca, NY	1130 hrs AIAA-2014-1186 **Large-eddy simulation study of injector geometry on liquid jet in cross-flow and validation with experiments** M. Owkes, Cornell University, Ithaca, NY; M. Pai, General Electric Company, Niskayuna, NY; O. Desjardins, Cornell University, Ithaca, NY	1200 hrs AIAA-2014-1187 **Novel Concept for Gas Injection at Low Pressure in an Effervescent Atomizer** J. Masud, M. Ahmed, Air University, Islamabad, Pakistan			

Thursday, 16 January 2014							
317-PC-20	**Turbulent Combustion Modeling III**						**National Harbor Conf Rm 2**
Chaired by: V. RAMAN, The University of Texas at Austin and J. O'CONNOR, Sandia National Laboratories							
1000 hrs AIAA-2014-1188 **Large Eddy Simulation of Supersonic Turbulent Combustion with FMDF** A. Irannejad, F. Jaberi, Michigan State University, East Lansing, MI; J. Komperda, F. Mashayek, University of Illinois, Chicago, Chicago, IL	1030 hrs AIAA-2014-1189 **Diffusion Flame LES Simulation Using The Partially Stirred Reactor Reaction Rate Model** N. Salvador, National Institute for Space Research (INPE), São José dos Campos, Brazil; W. Dourado, M. Mendonca, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil	1100 hrs AIAA-2014-1190 **Several Fundamental Issues in Large Eddy Simulation of Supercritical Mixing and Combustion** H. Huo, X. Wang, V. Yang, Georgia Institute of Technology, Atlanta, GA					

Thursday, 16 January 2014							
318-PDL-10	**Plasma Discharge Modeling**						**Chesapeake Conf Rm 9**
Chaired by: J. POGGIE, USAF AFRL/RBAC							
1000 hrs AIAA-2014-1191 **A Unified Hyperbolic Model for Coupled Fluid Dynamics and Electromagnetics in Aerospace Applications** R. Thompson, T. Moeller, A. Wilson, University of Tennessee Space Institute, Tullahoma, TN; C. Merkle, Purdue University, West Lafayette, IN	1030 hrs AIAA-2014-1192 **An Approximate Riemann Solver for Relativistic Two-fluid Plasmadynamics** R. Thompson, A. Wilson, T. Moeller, University of Tennessee Space Institute, Tullahoma, TN; C. Merkle, Purdue University, West Lafayette, IN	1100 hrs AIAA-2014-1193 **Numerical Simulation of Two-Dimensional Structure of Glow Discharge considering kinetics** D. Storozhev, S. Surzhikov, Russian Academy of Sciences, Moscow, Russia					

Thursday, 16 January 2014		
319-SCS-4 **1000 - 1230 hrs**	**Testing of Large, Ultra-Lightweight Spacecraft**	**Chesapeake Conf Rm 6**
Moderator: Jeanette Domber, Principal Systems Engineer and MOIRE Program Manger, Ball Aerospace & Technologies, Corporation Panelists:		
Tom Murphey Chief Technology Officer High Strain Dynamics	**Richard Pappa** Senior Research Engineer NASA Langley Research Center	**Michael McEachen** BD/IRAD Lead - Deployables ATK - Goleta
James Moore Division Vice President ManTech (Nexolve)		

Thursday, 16 January 2014							
320-SD-12	**Aircraft Design and Nonlinear Dynamics**						**Chesapeake Conf Rm B**
Chaired by: V. WICKRAMASINGHE and D. HODGES, Georgia Institute of Technology							
1000 hrs AIAA-2014-1194 **Zero-Lift Drag Prediction Including Aeroelastic Effects** J. Camberos, R. Kolonay, F. Eastep, R. Taylor, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2014-1195 **A Flutter Analysis Procedure Applicable to Conceptual Design** R. Yurkovich, Self, St. Louis, MO	1100 hrs AIAA-2014-1196 **Aeroelastic Characteristic of an Airfoil Containing Laminated Composite Plate** R. Drazumeric, B. Gjerek, F. Kosel, University of Ljubljana, Ljubljana, Slovenia; P. Marzocca, Clarkson University, Potsdam, NY					

Thursday, 16 January 2014							
321-SD-13	**Limit Cycle Oscillations (LCO) & Aircraft Flutter**						**Chesapeake Conf Rm C**
Chaired by: W. SMITH, Lockheed Martin Corporation and C. HEBERT, Sierra Nevada Corporation							
1000 hrs AIAA-2014-1197 **Visualizing a Flutter Mechanism as a Traveling Wave Through Animation of Simulation Results for the Semi-Span Super-Sonic Transport Wind-Tunnel Model** D. Christhilf, Analytical Mechanics Associates, Inc., Hampton, VA	1030 hrs AIAA-2014-1198 **Adapted K-Method for Frequency-Domain ASE Control Stability Margin Analysis** Z. Wang, P. Chen, ZONA Technology, Inc., Scottsdale, AZ	1100 hrs AIAA-2014-1199 **A Physical Understanding of Joined Wing's Limit Cycle Oscillations Driven by Structural Geometric Nonlinearities** R. Cavallaro, L. Demasi, San Diego State University, San Diego, CA	1130 hrs AIAA-2014-1200 **Numerical Study of Effect of Control Surface on Wing Flutter in Transonic Flow** K. Lai, X. Zhang, T. Kim, National University of Singapore, Singapore, Singapore				

Thursday, 16 January 2014							
322-STR-16	**Composite Mechanics Under Dynamic Load**						**Chesapeake Conf Rm E**
Chaired by: J. MIN, NASA Glenn Research Center and R. SULLIVAN, Mississippi State University							
1000 hrs AIAA-2014-1201 **Lack of statistical rigor in composite materials experimentation and lessons learned from the science of medicine** P. Gustafson, Western Michigan University, Kalamazoo, MI; J. Jastifer, Saint Alphonsus Coughlin Foot & Ankle Clinic, Boise, IN; J. Kapenga, J. McKean, Western Michigan University, Kalamazoo, MI	1030 hrs AIAA-2014-1202 **Geometrically Nonlinear Stress Recovery in Composite Laminates Subjected to Dynamic Loading** T. Hartman, Dassault Group, Providence, RI; M. Hyer, S. Case, Virginia Polytechnic Institute and State University, Blacksburg, VA	1100 hrs AIAA-2014-1203 **A Novel Structural Element Combining Load Carrying and Energy Dissipation Capability** S. Bland, R. Snyder, J. Kudva, NextGen Aeronautics, Torrance, CA; S. Barbarino, M. Pontecorvo, F. Gandhi, Rensselaer Polytechnic Institute, Troy, NY; et al.					

Thursday, 16 January 2014							
323-STR-17	**Load Analysis and Design Process**						**Chesapeake Conf Rm F**
Chaired by: H. LEE, NASA-Johnson Space Center and S. CLAY, Air Force Reseach Laboratory							
1000 hrs AIAA-2014-1204 **Flight Loads Monitoring of USFS Aerial Supervision Modules** L. Kliment, K. Rokhsaz, A. Menon, Wichita State University, Wichita, KS; J. Nelson, B. Terning, U.S. Forest Service Washington Office West, Boise, ID; E. Weinstein, FAA William J. Hughes Technical Center, Atlantic City, NJ	1030 hrs AIAA-2014-1205 **Preliminary Wing Weight Estimation Under Probabilistic Loads for a Transport Aircraft** J. Corman, D. Rancourt, C. Lee, D. Mavris, Georgia Institute of Technology, Atlanta, GA; T. Wilson, Airbus, Bristol, United Kingdom	1100 hrs AIAA-2014-1206 **Flight Loads Spectra of Two Business Jets** L. Kliment, K. Rokhsaz, A. Menon, J. Nelson, B. Terning, E. Weinstein, Wichita State University, Wichita, KS	1130 hrs AIAA-2014-1207 **The Use of Relational Design in Aircraft Product Development** M. Berceli, Gulfstream Aerospace Corporation, Savannah, GA				

Thursday, 16 January 2014		
324-TES-3 1000 - 1230 hrs	Applications of Nanomaterials for Energy Storage	Maryland Ballroom A

Chaired by: B. SLOAN, Iowa State University

Batteries and supercapacitors are gaining considerable interest for energy storage applications in memory backup devices, electric vehicles, and emergency power supplies in rural as well as urban areas. The volumetric and gravimetric specific energy density of supercapacitors and batteries can be improved further by a choice of innovative nanomaterials and their modifications. The high surface area, selective prorosity, enhanced mechanical, thermal and electrical properties of nanomaterials provide considerable improvement in the efficiencies of the electrodes and electrolytes used in these storage devices. The present talk will provide an overview of the application of nanomaterials including carbon nanotubes, graphene as well as naturally occurring halloysite nanotubes for supercapacitors, batteries and hydrogen storage. The future prospects as well as limitations of the use of these nanomaterials for portable energy storage will be discussed.

Sivaram Arepalli
National Institute of Aerospace, Hampton, VA

Thursday, 16 January 2014		
325-TP-10	Ablation I	National Harbor Conf Rm 11

Chaired by: N. DOUGHERTY, ERC Incorporated and C. BOYACK, Raytheon Missile Systems

1000 hrs AIAA-2014-1208 **Numerical and experimental study of carbon fiber oxidation** F. Panerai, A. Martin, University of Kentucky, Lexington, Lexington, KY; N. Mansour, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2014-1209 **Simulation of Flow-tube Oxidation on the Carbon Preform of PICA** H. Weng, H. Zhang, A. Martin, University of Kentucky, Lexington, Lexington, KY	1100 hrs AIAA-2014-1210 **Effect of Microstructure on Carbon-based Surface Ablators using DSMC** S. Poovathingal, T. Schwartzentruber, University of Minnesota, Minneapolis, Minneapolis, MN				

Thursday, 16 January 2014		
326-TP-11	Direct Simulation Monte Carlo Methods II	National Harbor Conf Rm 10

Chaired by: J. BATSON, Lockheed Martin Space Systems and D. PYTEL, Lockheed Martin Space Systems

1000 hrs AIAA-2014-1211 **Development of the Ellipsoidal Statistical Bhatnagar-Gross-Krook method for Hypersonic Flows** V. Patil, D. Levin, Pennsylvania State University, University Park, PA	1030 hrs AIAA-2014-1212 **Simulation of Radiation Generated by Chemical Reactions in Weakly Ionized Shock Waves using DSMC** T. Zhu, Z. Li, N. Parsons, D. Levin, Pennsylvania State University, University Park, PA	1100 hrs AIAA-2014-1213 **Development of DSMC Chemistry Models for Nitrogen Collisions Using Accurate Theoretical Calculations** N. Parsons, T. Zhu, D. Levin, A. van Duin, Pennsylvania State University, University Park, PA	1130 hrs AIAA-2014-1214 **Experimental and Computational Investigation of Rarefied Hypersonic Aerodynamics** T. Ozawa, T. Suzuki, K. Fujita, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan				

Thursday, 16 January 2014		
327-WE-12	Wind Turbine Aeroelastics	Woodrow Wilson B

Chaired by: L. MANUEL, University of Texas at Austin

1000 hrs AIAA-2014-1215 **On Modeling Coupled Influences of Wind, Wave, and Current Loads on an Offshore Wind Turbine during a Hurricane** E. Kim, L. Manuel, University of Texas, Austin, Austin, TX	1030 hrs AIAA-2014-1216 **Computation of Two-dimensional Wind Turbine Airfoil Characteristics Using Advanced Turbulence and Transition Modeling Methods and a GPU-Accelerated Navier-Stokes Solver** T. Reinhart, S. Medida, S. Thomas, J. Baeder, University of Maryland, College Park, College Park, MD	1100 hrs AIAA-2014-1217 **Time-varying Flexible Airfoil Shape Effects on Flapping Airfoil Power Extraction** C. Hoke, J. Young, J. Lai, University of New South Wales at the Australian Defence Force Academy, Canberra, Australia	1130 hrs AIAA-2014-1218 **Improved Power Coefficient of Horizontal Axis Wind Turbines Using Optimized Lift Control** J. Cooney, T. Williams, T. Corke, University of Notre Dame, Notre Dame, IN	1200 hrs AIAA-2014-1219 **Flow-induced instability of wind turbine blades** P. Pourazarm, Y. Modarres-Sadeghi, M. Lackner, University of Massachusetts, Amherst, Amherst, MA			

Thursday, 16 January 2014							
328-WE-13	**Wind Turbine Loads, Dynamics, and Control II**						**Woodrow Wilson C**
Chaired by: B. NAUGHTON, Sandia National Laboratories							
1000 hrs AIAA-2014-1220 **Gain Scheduled Active Power Control for Wind Turbines** S. Wang, P. Seiler, University of Minnesota, Minneapolis, Minneapolis, MN	1030 hrs AIAA-2014-1221 **An Experimental Investigation on Dynamic Wind Loads Acting on a Wind Turbine Model in Atomspheric Boundary Layer Winds** W. Tian, A. Ozbay, H. Hu, Iowa State University, Ames, IA	1100 hrs AIAA-2014-1222 **Optimal control for load alleviation in wind turbines** B. Van Parys, Swiss Federal Institute of Technology, Zürich, Switzerland; B. Ng, Imperial College London, London, United Kingdom; P. Goulart, Swiss Federal Institute of Technology, Zürich, Switzerland; R. Palacios, Imperial College London, London, United Kingdom	1130 hrs AIAA-2014-1223 **Investigation of the effect of off-axis spar cap plies on damage equivalent loads in wind turbines with superelement blade definition** M. Gozcu, M. Olgun, A. Kayran, Middle East Technical University, Ankara, Turkey	1200 hrs AIAA-2014-1224 **Nonlinear Legendre Spectral Finite Elements for Wind Turbine Blade Dynamics** Q. Wang, M. Sprague, J. Jonkman, National Renewable Energy Laboratory, Golden, CO			

Thursday, 16 January 2014		
329-LNCH-3 **1200 - 1400 hrs**	**Aerospace Design and Structures Awards Lunch and Keynote Making a MUTT - Lessons from the X-56A Program**	**Potomac Ballroom A&B**

Peter Flick
Program Manager, X-56A Program, AFRL/RQ

Jeff Beranek
Chief Engineer, X-56A Program, Lockheed Martin-Skunk Works

Thursday, 16 January 2014		
330-SB-8 **1400 - 1430 hrs**	**Thursday Afternoon Speakers' Briefing**	**Session Rooms**

Thursday, 16 January 2014							
331-AA-7	**Jet Noise IV**						**Chesapeake Conf Rm I**
Chaired by: D. SUTLIFF, NASA Glenn Research Center							
1430 hrs AIAA-2014-1225 **Investigation of acoustic waves emanated from a supersonic jet using ultra-high speed whole-field optical measurements** W. Mitchell, A. Agrawal, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1500 hrs AIAA-2014-1226 **Analysis of High Speed Jet Flow Physics with Time-Resolved PIV** Z. Berger, M. Berry, P. Shea, M. Glauser, Syracuse University, Syracuse, NY; N. Jiang, S. Gogineni, Spectral Energies, LLC, Dayton, OH; et al.	1530 hrs AIAA-2014-1227 **Experimental Reynolds Stress Spectra in Hot Supersonic Round Jets** D. Brooks, T. Ecker, K. Lowe, W. Ng, Virginia Polytechnic Institute and State University, Blacksburg, VA	1600 hrs AIAA-2014-1228 **Mach-number dependence of acoustic source properties in high speed jets -- Part I: ensemble statistics of active regions** J. Lewalle, P. Kan, Syracuse University, Syracuse, NY; S. Gogineni, Spectral Energies, LLC, Dayton, OH	1630 hrs AIAA-2014-1229 **Mach-number dependence of acoustic source properties in high speed jets -- Part II: event-based description** P. Kan, J. Lewalle, Z. Berger, P. Shea, Syracuse University, Syracuse, NY; B. Kiel, Air Force Research Laboratory, Wright-Patterson AFB, OH; S. Gogineni, Spectral Energies, LLC, Dayton, OH; et al.			

Thursday, 16 January 2014		
332-ABPSI-5 **1430 - 1730 hrs**	**Educating Today's and Tomorrow's Propulsion Engineers**	**National Harbor Conf Rm 4**

Chaired by: R. SCHARNHORST, Boeing Defense, Space & Security and E. LOTH, University of Virginia

This will be a discussion about teaching current engineering students the fundamentals of propulsion.

Panelists:

Dr. Phil Ligrani
Oliver C. Parks Endowed Chair
Professor, Aerospace and Mechanical Engineering
St. Louis University

Dr. Ramesh Agarwal
Director, Aerospace Research and Education Center
Washington University

Dr. William Anderson
Professor, School of Aeronautics and Astronautics
Director, Global Engineering Program
Purdue University

Dr. Eric Loth
Rolls Royce Professor, Mechanical and Aerospace Engineering
University of Virginia

Thursday, 16 January 2014							
333-AFM-11	**Planetary Reentry III**						**National Harbor Conf Rm 8**

Chaired by: C. COX, Air Force Reseach Laboratory and P. WILLIAMS-HAYES, NASA Dryden Flight Research Center

1430 hrs AIAA-2014-1230 **A Plasma Aerocapture and Entry System for Manned Missions and Planetary Deep Space Orbiters** D. Kirtley, J. Slough, MSNW, LLC, Redmond, WA	1500 hrs AIAA-2014-1231 **RED-Data2 Commercial Reentry Recorder: Size Reduction and Improved Electronics Design** A. Sidor, R. Braun, Georgia Institute of Technology, Atlanta, GA; D. DePasquale, Terminal Velocity Aerospace, LLC, Washington, DC	1530 hrs AIAA-2014-1232 **Optimization of a Martian Aero-Gravity Assist** J. Knittel, M. Lewis, K. Yu, University of Maryland, College Park, College Park, MD					

Thursday, 16 January 2014							
334-AMT-9	**Surface Measurements**						**Maryland Ballroom 1**

Chaired by: T. IOPPOLO, Southern University and J. NAUGHTON, University of Wyoming

1430 hrs AIAA-2014-1233 **Micro-scale Untethered Sensor for Temperature Measurements** M. Manzo, T. Ioppolo, Southern Methodist University, Dallas, TX	1500 hrs AIAA-2014-1234 **Analysis of an Untethered Micro-Photonic Wall Pressure Sensor** M. Manzo, T. Ioppolo, Southern Methodist University, Dallas, TX	1530 hrs AIAA-2014-1235 **Flow Testing of a MEMS Floating Element Shear Stress Sensor** Z. Zhao, Tufts University, Medford, MA; J. Gallman, Spirit Aerosystems, Wichita, KS; K. Long, Aerospace Computing, Inc., Mountain View, CA; R. White, Tufts University, Medford, MA	1600 hrs AIAA-2014-1236 **Time-Resolved PSP Imaging of Unsteady Shock-Wave Phenomena Using a High-Speed Camera** D. Numata, K. Asai, Tohoku University, Sendai, Japan	1630 hrs AIAA-2014-1237 **Global Luminescent Oil-film Skin-Friction Meter Generalized to Three-Dimensional Geometry and Applied to FAITH Hill** N. Husen, Purdue University, West Lafayette, IN; S. Woodiga, T. Liu, Western Michigan University, Kalamazoo, MI; J. Sullivan, Purdue University, West Lafayette, IN			

Thursday, 16 January 2014							
335-AMT-10/GT-8	**Velocity and Other Measurements In Wind Tunnels**						**Maryland Ballroom 2**
Chaired by: K. KONTIS, University of Glasgow and J. WAGNER, Sandia National Laboratories							
1430 hrs AIAA-2014-1238 **Deployment of Particle Image Velocimetry into the Lockheed Martin High Speed Wind Tunnel** S. Beresh, J. Wagner, B. Pruett, R. Spillers, Sandia National Laboratories, Albuquerque, NM; M. McWithey, J. Gary, Lockheed Martin Corporation, Grand Prairie, TX; et al.	1500 hrs AIAA-2014-1239 **Development of Non-Intrusive Velocity Measurement Capabilities at AEDC Tunnel 9** J. Brooks, A. Gupta, University of Maryland, College Park, College Park, MD; M. Smith, E. Marineau, Arnold Engineering Development Center, Silver Spring, MD	1530 hrs AIAA-2014-1240 **Borescopic Laser Doppler Velocimetry Probe** K. O'Brien, S. Olcmen, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1600 hrs AIAA-2014-1241 **Spatially-resolved TDLAS measurements of temperature, H_2O column density, and velocity in a direct-connect scramjet combustor** I. Schultz, C. Goldenstein, J. Jeffries, R. Hanson, Stanford University, Stanford, CA; R. Rockwell, C. Goyne, University of Virginia, Charlottesville, Charlottesville, VA	1630 hrs AIAA-2014-1242 **Evaluation of a Thermal-Tuft Probe for Turbulent Separating and Reattaching Flows** Q. Schwaab, J. Weiss, École Polytechnique de Montréal, Montréal, Canada	1700 hrs AIAA-2014-1243 **Implementation of a Laser Hygrometer in a Transonic Wind Tunnel** N. Galyen, M. Mills, D. Plemmons, Aerospace Testing Alliance, Arnold AFB, TN		

Thursday, 16 January 2014							
336-APA-32	**Active and Passive Flow Control V**						**Maryland Ballroom A**
Chaired by: K. KARA, Khalifa University of Science, Technology & Research and B. CYBYK, JHU/Applied Physics Laboratory							
1430 hrs AIAA-2014-1244 **Enhanced Aerodynamic Performance of a Wind Turbine Airfoil Section using Plasma Actuation** I. Brownstein, Brown University, Providence, RI; C. Szlatenyi, Navatek, Ltd., North Kingstown, RI; K. Breuer, Brown University, Providence, RI	1500 hrs AIAA-2014-1245 **Effect of Strouhal Number and Reynolds Number on Flow Control Authority of DBD Plasma Actuator on NACA0012 Airfoil** T. Sulaiman, University of Tokyo, Tokyo, Japan; H. Aono, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; S. Sekimoto, University of Tokyo, Tokyo, Japan; M. Anyoji, T. Nonomura, K. Fujii, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1530 hrs AIAA-2014-1246 **A Novel Vortex Generator for Mitigation of Shock-Induced Separation** P. Sharma, S. Ghosh, Indian Institute of Technology Madras, Chennai, India	1600 hrs AIAA-2014-1247 **Aerothermodynamics of Lifting-Body Configuration in Hypersonic Flow with Aerodisk at Nose** S. Khurana, K. Suzuki, University of Tokyo, Kashiwa, Japan	1630 hrs AIAA-2014-1248 **LES Simulation of Forced High-Speed Jet** J. Kim, S. Kim, BOOLT Simulation Technology, Seoul, South Korea; M. Samimy, Ohio State University, Columbus, OH	1700 hrs AIAA-2014-1249 **Active Wave Cancelation using Plasma Actuators in Flight** C. Tropea, A. Kurz, S. Grundmann, B. Simon, Technical University of Darmstadt, Griesheim, Germany		

Thursday, 16 January 2014							
337-APA-33	**Aerodynamic-Structural Dynamics Interaction**						**Maryland Ballroom D**
Chaired by: J. AZEVEDO							
1430 hrs AIAA-2014-1250 **Effects of aspect ratio on fluid-structure interactions in membrane wings** R. Bleischwitz, B. Ganapathisubramani, R. De Kat, University of Southampton, Southampton, United Kingdom	1500 hrs AIAA-2014-1251 **Coupled CFD/CSD Simulations of Helicopter Rotors with a Free Wake Model** J. Ickes, J. Wang, Q. Zhao, C. Sheng, University of Toledo, Toledo, OH	1530 hrs AIAA-2014-1252 **Understanding Store Loads using DES and Strongly-Coupled Aeroelastic Simulations** G. Barakos, University of Liverpool, Liverpool, United Kingdom					

Thursday, 16 January 2014								
338-APA-34	**Characterization of the Physical Environments related to Space Launch System (SLS) (Invited)**							**Maryland Ballroom 4**
Chaired by: K. ABDOL-HAMID, NASA Langley Research Center and J. PINIER, NASA-Langley Research Center								
1430 hrs AIAA-2014-1253 **An Overview of the Characterization of the Space Launch Vehicle Aerodynamic Environments** J. Blevins, NASA Marshall Space Flight Center, Huntsville, AL; C. Kiris, NASA Ames Research Center, Moffett Field, CA; R. Rausch, D. Bennett, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2014-1254 **Space Launch System Ascent Static Aerodynamics Database Development** J. Pinier, D. Bennett, G. Erickson, N. Favaregh, H. Houlden, W. Tomek, NASA Langley Research Center, Hampton, VA; et al.	1530 hrs AIAA-2014-1255 **Space Launch System Base Heating Test: Sub-Scale Rocket Engine/Motor Design, Development and Performance Analysis** M. Mehta, NASA Marshall Space Flight Center, Huntsville, AL; A. Dufrene, CUBRC, Buffalo, NY; R. Kirchner, Jacobs, Huntsville, AL	1600 hrs AIAA-2014-1256 **Aerodynamic Tests of the Space Launch System for Database Development** V. Pritchett, M. Mayle, J. Blevins, NASA Marshall Space Flight Center, Huntsville, AL; W. Crosby, D. Purinton, Jacobs, Huntsville, AL	1630 hrs AIAA-2014-1257 **Overview of Space Launch System Ascent Aerothermal Environments** C. Morris, NASA Marshall Space Flight Center, Houston, TX			

Thursday, 16 January 2014								
339-AS-4	**Morphing**							**Chesapeake Conf Rm D**
Chaired by: I. CHOPRA, University of Maryland and H. MONNER, DLR - German Aerospace Center								
1430 hrs AIAA-2014-1258 **Active use of elasticity concept and adaptive structures** G. Amiryants, TsAGI, Zhukovsky, Russia	1500 hrs AIAA-2014-1259 **Application of Active Camber Morphing Concept to a Regional Aircraft** S. Ricci, A. De Gaspari, Technical University of Milan, Milan, Italy; A. Antunes, F. Odaguil, G. Rodrigues de Lima, Embraer, São José dos Campos, Brazil	1530 hrs AIAA-2014-1260 **Feasible Conceptual Design of Morphing Structures** R. De Breuker, N. Werter, Delft University of Technology, Delft, The Netherlands; C. Beaverstock, M. Friswell, Swansea University, Swansea, United Kingdom	1600 hrs AIAA-2014-1261 **Development and Wind Tunnel Test of Variable Camber Morphing Wing** T. Yokozeki, A. Sugiura, University of Tokyo, Tokyo, Japan; Y. Hirano, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1630 hrs AIAA-2014-1262 **Design of a Morphing Wing Tip** I. Chekkal, R. Cheung, C. Wales, J. Cooper, University of Bristol, Bristol, United Kingdom; N. Allen, S. Lawson, Aircraft Research Association, Ltd., Bedford, United Kingdom; et al.			

Thursday, 16 January 2014								
340-FD-40	**Active and Passive Flow Control VI**							**Chesapeake Conf Rm 8**
Chaired by: S. BANE, Purdue University- Sch of Aero and Astro and D. SMITH, Air Force Office of Scientific Research AFOSR								
1430 hrs AIAA-2014-1263 **Lift and Drag Control of NACA 23012 Airfoil Model by Surface HF Plasma Actuator** P. Kazansky, I. Moralev, A. Klimov, V. Bityurin, Russian Academy of Sciences, Moscow, Russia	1500 hrs AIAA-2014-1264 **DBD Plasma Actuator Design for Optimal Flow Control** T. Williams, A. Jemcov, T. Corke, University of Notre Dame, Notre Dame, IN	1530 hrs AIAA-2014-1265 **A Study of Physics and Control of a Flow over an Airfoil in Fully-Reverse Condition** C. Clifford, A. Singhal, M. Samimy, Ohio State University, Columbus, OH	1600 hrs AIAA-2014-1266 **Passive Control of Self-Induced Roll Oscillations Using Bleed** T. Hu, Z. Wang, I. Gursul, University of Bath, Bath, United Kingdom	1630 hrs AIAA-2014-1267 **Three-dimensional Instabilities in Vortex/Wall Interactions: Linear Stability and Flow Control** S. Benton, J. Bons, Ohio State University, Columbus, OH			

Thursday, 16 January 2014							
341-FD-41	**Applications of CFD II**						**Maryland Ballroom 6**
Chaired by: M. WEI, New Mexico State Universtiy and K. MOHSENI, University of Florida							
1430 hrs AIAA-2014-1268 **Coupled Fluid-Structure Interaction Analysis of Solid Rocket Motor with Flexible Inhibitors** H. Yang, CFD Research Corporation (CFDRC), Huntsville, AL; J. West, NASA Marshall Space Flight Center, Huntsville, AL	1500 hrs AIAA-2014-1269 **Extension of the γ-$Re_{\theta t}$ Model for Prediction of Crossflow Transition** C. Grabe, A. Krumbein, German Aerospace Center (DLR), Göttingen, Germany	1530 hrs AIAA-2014-1270 **Hydrodynamic Forces and Moments on Slender Axisymmetric Bodies with Decks in Translation** C. Marshall, T. Jeans, G. Holloway, University of New Brunswick, Fredericton, Canada; G. Watt, Defense Research and Development Canada, Dartmouth, Canada					

Thursday, 16 January 2014							
342-FD-42	**Boundary Layer Stabilization and Natural Laminar Flow**						**Woodrow Wilson D**
Chaired by: R. KIMMEL, USAF AFRL/VAAA							
1430 hrs AIAA-2014-1271 **Numerical and experimental studies of high-speed boundary-layer stability on a sharp cone with localized wall heating or cooling** A. Fedorov, V. Soudakov, I. Egorov, TsAGI, Zhukovsky, Russia; A. Sidorenko, Y. Gromyko, D. Bountin, Russian Academy of Sciences, Novosibirsk, Russia; et al.	1500 hrs AIAA-2014-1272 **Plasma-Based Flow Control for Delay of Excrescence Generated Transition** D. Rizzetta, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2014-1273 **Control of Transitional and Turbulent Flows using Plasma Driven Fluidic Devices** P. Morgan, Ohio Aerospace Institute, Cleveland, OH; M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2014-1274 **Behavior of a NLF Airfoil in Flight through Atmospheric Turbulence** A. Reeh, C. Tropea, Technical University of Darmstadt, Darmstadt, Germany	1630 hrs AIAA-2014-1275 **An assessment of Scale Effects on Boundary Layer Transition on Natural Laminar Flow Nacelles** B. Raghunathan, CD-adapco, Melville, NY; S. Raghunathan, Queen's University Belfast, Belfast, United Kingdom; J. Wang, Kingston University, London, United Kingdom			

Thursday, 16 January 2014							
343-FD-43	**Higher-Order Methods IV**						**Azalea 1**
Chaired by: X. GAO, Colorado State Univ and E. JOHNSEN, University of Michigan							
1430 hrs AIAA-2014-1276 **A Simple Method to Improve the Accuracy of Advection in Discontinuous Galerkin Methods for Navier-Stokes Simulations** E. Johnsen, A. Nair, University of Michigan, Ann Arbor, Ann Arbor, MI	1500 hrs AIAA-2014-1277 **A fourth-order finite-volume method for compressible Navier-Stokes equations with adaptive mesh refinement** X. Gao, S. Guzik, Colorado State University, Fort Collins, CO; P. Colella, Lawrence Berkeley National Laboratory, Berkeley, CA	1530 hrs AIAA-2014-1278 **A Comparison of Higher-Order Shock Capturing Schemes Within the LAVA CFD Solver** C. Brehm, M. Barad, J. Housman, C. Kiris, NASA Ames Research Center, Moffett Field, CA					

Thursday, 16 January 2014							
344-FD-44	**Wing-Vortex Interactions**						**Chesapeake Conf Rm 9**
Chaired by: C. BARNES, AFRL/RBAC and D. GARMANN, Air Force Research Laboratory							
1430 hrs AIAA-2014-1279 **Experimental Studies On The Effect Of Leading Edge Tubercles On Laminar Separation Bubble** K. Natarajan, S. Sudhakar, S. Palpandian, National Aerospace Laboratories, Bangalore, India	1500 hrs AIAA-2014-1280 **Stereo PIV Measurements of Low-Aspect-Ratio Low-Reynolds-Number Wings with Sinusoidal Leading Edges for Improved Computational Modeling** J. Melo De Sousa, Technical University of Lisbon, Lisbon, Portugal	1530 hrs AIAA-2014-1281 **Investigation of aeroelastic effects in streamwise-oriented vortex/wing interactions** C. Barnes, M. Visbal, R. Gordnier, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2014-1282 **Interaction of a streamwise-oriented vortex with a wing** D. Garmann, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2014-1283 **Experimental and Computational Investigation of the Flow through an Oscillating-Wing Power Generator** I. Fenercioglu, B. Zaloglu, Istanbul Technical University, Istanbul, Turkey; J. Young, M. Ashraf, J. Lai, University of New South Wales, Canberra, Australia; M. Platzer, AeroHydro Research & Technology Associates, Pebble Beach, CA	1700 hrs AIAA-2014-1284 **Experimental Study of Vortex Dynamics during Blade-Vortex Interactions** D. Peng, J. Gregory, Ohio State University, Columbus, OH		

Thursday, 16 January 2014							
345-GEPC-4	**Energy Efficiency for the Future USAF Transport Fleet**						**Woodrow Wilson A**
Chaired by: G. DALE, Wright-Patterson Air Force Base							
1430 hrs Oral Presentation (Invited) **From Laboratory to Flightline: Case Studies of Operationalizing Energy Efficient Technologies** D. Erbschloe, Air Force Air Mobility Command, Scott AFB, IL	1500 hrs AIAA-2014-1285 **Design of a Hybrid Wing Body for Fuel Efficient Air Mobility Operations at Transonic Flight Conditions** J. Hooker, Lockheed Martin Corporation, Marietta, GA		1600 hrs AIAA-2014-1286 **Revolutionary Configurations for Energy Efficiency** S. Wakayama, The Boeing Company, Huntington Beach, CA	1630 hrs Oral Presentation (Invited) **Hybrid Electric Distributed Propulsion Mission Analysis, Terminal Area Operations and Short Field Performance Methodology Development** B. Schiltgen, M. Green, Empirical Systems Aerospace, Inc., Pismo Beach, CA	1700 hrs Oral Presentation (Invited) **New Opportunities for Environmental Progression in Aviation** R. Kawai, D. Brown, The Boeing Company, Huntington Beach, CA		

Thursday, 16 January 2014							
346-GNC-19	**Aerospace Robotics**						**National Harbor Conf Rm 6**
Chaired by: D. CHOUKROUN, TUD-Delft University of Technology and F. MORA-CAMINO, ENAC							
1430 hrs AIAA-2014-1287 **Lie groups approach to space robots kinematics modelling** J. Lisowski, Polish Academy of Sciences, Warsaw, Poland; T. Barański, West Pomeranian University of Technology in Szczecin, Szczecin, Poland; T. Rybus, K. Seweryn, Polish Academy of Sciences, Warsaw, Poland	1500 hrs AIAA-2014-1288 **Simple Adaptive Control for Spacecraft Proximity Operations** S. Ulrich, D. Hayhurst, A. Saenz Otero, D. Miller, Massachusetts Institute of Technology, Cambridge, MA	1530 hrs AIAA-2014-1289 **Resource Aggregated Reconfigurable Control and Risk-Allocative Path Planning for On-orbit Servicing and Assembly of Satellites** C. Jewison, B. McCarthy, D. Sternberg, D. Strawser, C. Fang, Massachusetts Institute of Technology, Cambridge, MA	1600 hrs AIAA-2014-1290 **Admissible Subspace TRajectory Optimizer (ASTRO) for Autonomous Robot Operations on the Space Station** G. Chamitoff, A. Saenz Otero, J. Katz, S. Ulrich, Massachusetts Institute of Technology, Cambridge, MA	1630 hrs AIAA-2014-1291 **Optimal Airborne Trajectories for Data Collected from Emplaced Ground Sensor Arrays** N. Jodeh, T. Coon, T. Masternak, R. Cobb, J. Agte, Air Force Institute of Technology, Wright-Patterson AFB, OH			

Thursday, 16 January 2014							
347-GNC-20	**Aircraft Control and Guidance**						**National Harbor Conf Rm 12**
Chaired by: D. ALAZARD, Institut Supérieur de l'Aéronautique et de l'Espace and D. SAUSSIE, Ecole Polytechnique de Montreal							
1430 hrs AIAA-2014-1292 **Demonstration of the Optimal Control Modification for 6-DOF Control of a General Aviation Aircraft** S. Reed, J. Steck, Wichita State University, Wichita, KS; N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2014-1293 **Autopilot for a Nonlinear Non-Minimum Phase Tail-Controlled Missile** A. Siddarth, University of Washington, Seattle, WA; F. Peter, F. Holzapfel, Technical University of Munich, Munich, Germany; J. Valasek, Texas A&M University, College Station, TX	1530 hrs AIAA-2014-1294 **A Realistic Flight Path Parameterization for Calculation of Noise Minimal Trajectories using Bi-level Optimal Control** M. Richter, M. Bittner, R. Rieck, F. Holzapfel, Technical University of Munich, Garching, Germany	1600 hrs AIAA-2014-1295 **A Study on Input Design Method for Nonlinear Non-Minimum Phase Systems** T. Hironori, National Defense Academy, Yokosuka, Japan; Y. Miyazawa, Kyushu University, Fukuoka, Japan	1630 hrs AIAA-2014-1296 **Lyapunov Characteristic Exponent Maps for Multi-Body Space Systems Analysis** D. Pagnozzi, J. Biggs, University of Strathclyde, Glasgow, United Kingdom			

Thursday, 16 January 2014							
348-GNC-21	**Aircraft Guidance, Navigation and Control III**						**National Harbor Conf Rm 7**
Chaired by: H. LIU, University of Toronto and O. TEKINALP, Middle East Technical University							
1430 hrs AIAA-2014-1297 **Modified State Observer Based Adaptation for a General Aviation Aircraft - Simulation and Flight Test** V. Subba Reddiar Pappu, J. Steck, Wichita State University, Wichita, KS; K. Rajagopal, S. Balakrishnan, Missouri University of Science and Technology, Rolla, MO	1500 hrs AIAA-2014-1298 **Nonlinear Helicopter and Ship Models for Predictive Control of Ship Landing Operations** T. Ngo, C. Sultan, Virginia Polytechnic Institute and State University, Blacksburg, VA	1530 hrs AIAA-2014-1299 **Towards an Improved Metric of Refinements to Monocular Vision-aided Navigation Systems** J. Langford, E. Johnson, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2014-1300 **An enhanced automatic taxi control algorithm for fixed wing aircraft** C. Zammit, D. Zammmit-Mangion, University of Malta, Msida, Malta	1630 hrs AIAA-2014-1301 **Simulation Analysis of a Sensor Data Fusion for Close Formation Flight** D. Löbl, F. Holzapfel, Technical University of Munich, Munich, Germany	1700 hrs AIAA-2014-1302 **Design of a Full State SDRE Tracking Controller for an Unmanned Aircraft** O. Tekinalp, A. Prach, Middle East Technical University, Ankara, Turkey		

Thursday, 16 January 2014							
349-GNC-22	**Spacecraft Attitude Control**						**National Harbor Conf Rm 13**
Chaired by: L. GIULICCHI, European Space Agency and S. STARIN, NASA-Goddard Space Flight Center							
1430 hrs AIAA-2014-1303 **Fault-tolerant Control of Jump Linear Systems with Discrete Mode Observations and its Application to Spacecraft Magnetic Attitude Control** A. Sadon, Ben-Gurion University of the Negev, Beer Sheva, Israel; D. Choukroun, Delft University of Technology, Delft, The Netherlands	1500 hrs AIAA-2014-1304 **Space-Based Large Spinning Sensor Pointing and Control Design and Its Application to NASA's SMAP Spacecraft** J. Liu, The Boeing Company, El Segundo, CA	1530 hrs AIAA-2014-1305 **CMG Isolator Design with Consideration of Singularity Problem** Y. Cui, G. Zheng, Tsinghua University, Beijing, China	1600 hrs AIAA-2014-1306 **Satellite Payload Motion Control for Remote Sensing** S. Chatterjee, H. Hablani, Indian Institute of Technology Bombay, Mumbai, India				

Thursday, 16 January 2014							
350-GT-9	**Test Facility and Systems Development II**						**Maryland Ballroom 3**
Chaired by: S. RYLE and J. WEISS, Ecole de Technologie Superieure							
1430 hrs AIAA-2014-1307 **Design, Construction, and Validation of a New Wind Tunnel for the Study of Pressure-Driven Separating and Reattaching Flows** A. Mohammed Taifour, Q. Schwaab, J. Pioton, J. Weiss, University of Québec, Montréal, Canada	1500 hrs AIAA-2014-1308 **Development and Characterization of a Four Axis Positioning System to Facilitate Low Reynolds Number Research** T. Linehan, M. Shields, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1530 hrs AIAA-2014-1309 **High-Fidelity Model of Transient Turbine Facility for Off-Design Aerothermal Testing** S. Lavagnoli, V. Andreoli, V. Villace, G. Paniagua, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1600 hrs AIAA-2014-1310 **An Investigation of a Spacecraft On-orbit Advanced Refueling System** N. Silvernail, Embry-Riddle Aeronautical University, Daytona Beach, FL; D. Sathyanarayan, Duke University, Durham, NC; S. Gangadharan, Embry-Riddle Aeronautical University, Daytona Beach, FL	1630 hrs AIAA-2014-1311 **Development of a Dynamic Propulsion Test Apparatus** M. Morris, L. Daniel, J. Jacob, A. Arena, R. Gaeta, Oklahoma State University, Stillwater, OK	1700 hrs AIAA-2014-1312 **Development of a Magnetic Suspension and Balance System for Supersonic Wind Tunnels** Y. Takagi, H. Sawada, S. Obayashi, Tohoku University, Sendai, Japan		

Thursday, 16 January 2014							
351-GTE-7	**Engine Systems II**						**Azalea 2**
Chaired by: S. JAMES, Honeywell Inc. and C. CHUCK, Boeing Commercial Airplanes							
1430 hrs AIAA-2014-1313 **Engine-Integrated Solid Oxide Fuel Cells for Efficient Electrical Power Generation on Aircraft** D. Waters, C. Cadou, University of Maryland, College Park, College Park, MD	1500 hrs AIAA-2014-1314 **Fluid Dynamics of an Inertial Particle Separator** D. Barone, E. Loth, University of Virginia, Charlottesville, Charlottesville, VA; P. Snyder, Rolls-Royce Group plc, Indianapolis, IN	1530 hrs AIAA-2014-1315 **Low-Fuel Consumption Gas Turbine Engines for Extended-Range UAVs** R. Andriani, Technical University of Milan, Milan, Italy; A. Ingenito, F. Gamma, A. Agresta, University of Rome "La Sapienza", Rome, Italy					

Thursday, 16 January 2014							
352-HSABP-5	**Pressure Gain Combustion II**						**Chesapeake Conf Rm 7**
Chaired by: D. PAXSON, NASA Glenn Research Center and G. PANIAGUA, von Karman Institute							
1430 hrs AIAA-2014-1316 **RDE Integration with T63 Turboshaft Engine Components** D. Welsh, P. King, Air Force Institute of Technology, Wright-Patterson AFB, OH; F. Schauer, J. Hoke, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2014-1317 **Study on a Rotary-Valved Four-Cylinder Pulse Detonation Rocket : Thrust Measurement by Ground Test** T. Morozumi, R. Sakamoto, T. Kashiwazaki, University of Tsukuba, Tsukuba, Japan; J. Kasahara, K. Matsuoka, University of Nagoya, Nagoya, Japan; A. Matsuo, Keio University, Yokohama, Japan; et al.	1530 hrs AIAA-2014-1318 **Experimental Study of High-Frequency Fluidic Valve Injectors for Detonation Engine Applications** J. Peace, D. Joshi, F. Lu, University of Texas, Arlington, Arlington, TX	1600 hrs AIAA-2014-1319 **Study on a Rotary-Valved Four-Cylinder Pulse Detonation Rocket: Six Degree-of-Freedom Flight Measurement** K. Matsuoka, S. Takagi, J. Kasahara, Nagoya University, Nagoya, Japan; T. Morozumi, T. Kashiwazaki, Y. Fujiwara, University of Tsukuba, Tsukuba, Japan; et al.	1630 hrs AIAA-2014-1320 **Cell Width of Methane Air Mixtures at Elevated Initial Pressure and Temperature** C. Stevens, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH			

Thursday, 16 January 2014							
353-IS-4	**Intelligent Learning and Decision Making**						**National Harbor Conf Rm 15**
Chaired by: S. ADHIKARI, Sysoft							
1430 hrs AIAA-2014-1321 **Knowledge elicitation and representation for module based perceptual capabilities onboard UAVs** D. Smirnov, P. Stütz, University of the German Federal Armed Forces, Neubiberg, Germany	1500 hrs AIAA-2014-1322 **Prototyping and training of computer vision algorithms in a synthetic UAV mission test bed** G. Hummel, D. Smirnov, University of the German Federal Armed Forces, Neubiberg, Germany; A. Kronenberg, Karlsruhe University of Applied Sciences, Karlsruhe, Germany; P. Stütz, University of the German Federal Armed Forces, Neubiberg, Germany	1530 hrs AIAA-2014-1323 **Memetic Engineering as a Basis for Learning in Robotic Communities** W. Truszkowski, NASA Goddard Space Flight Center, Greenbelt, MD; C. Rouff, Near Infinity Corporation, Annapolis Junction, MD; M. Akhavannik, Patent and Trademark Office, Alexandria, VA	1600 hrs AIAA-2014-1324 **Collaborative Learning using Fuzzy Logic (CLIFF): Part 1** S. Mitchell, K. Cohen, University of Cincinnati, Cincinnati, OH	1630 hrs AIAA-2014-1325 **A Framework for Behavior Learning in Differential Games and Safe Strategies** N. Satak, University of Florida, Shalimar, Shalimar, FL; J. Hurtado, Texas A&M University, College Station, TX	1700 hrs AIAA-2014-1326 **Cost-Strategy Recognition Method for Behavior Learning: Two Players Learning Simultaneously** N. Satak, University of Florida, Shalimar, Shalimar, FL; J. Hurtado, Texas A&M University, College Station, TX		

Thursday, 16 January 2014							
354-MAT-8	**Material Testing & Characterization**						**Chesapeake Conf Rm B**
Chaired by: A. AVILA, Universidade Federal de Minas Gerais; D. POWELL, Southern Research Institute and R. NAIK, Pratt & Whitney							
1430 hrs AIAA-2014-1327 **Icephobic Coating Evaluation for Aerospace Application** C. Laforte, C. Blackburn, J. Perron, University of Québec, Saguenay, Canada; R. Aubert, Bell Helicopter Textron, Inc., Hurst, TX	1500 hrs AIAA-2014-1328 **Time-Dependent Behavior of High Strength Kevlar and Vectran Webbing** T. Jones, W. Doggett, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2014-1329 **Development of a Gigacycle Bending Fatigue Test Method** G. Kurtz, O. Scott-Emuakpor, T. George, J. Beck, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2014-1330 **Pileup Investigation on Work Hardened Copper During Sharp Tip Nanoindentation** J. Gale, A. Achuthan, Clarkson University, Potsdam, NY	1630 hrs AIAA-2014-1331 **Design, Analysis, and On-Sun Evaluation of Reflective Strips Under Controlled Buckling** D. Jaworske, NASA Glenn Research Center, Cleveland, OH; E. Sechkar, ZIN Technologies, Inc., Cleveland, OH; A. Colozza, Vantage Partners, LLC, Cleveland, OH			

Thursday, 16 January 2014							
355-MAT-9	**Multiscale Modeling of Materials II**						**Chesapeake Conf Rm A**
Chaired by: G. SEIDEL, Virginia Polytechnic Institute and State Universit; R. FERTIG, University of Wyoming and S. WANTHAL, The Boeing Company							
1430 hrs AIAA-2014-1332 **Static and dynamic fracture simulation using a novel particle method with multi-body potentials** H. Chen, Y. Liu, Arizona State University, Tempe, AZ	1500 hrs AIAA-2014-1333 **Statistical Multiscale Modeling of Bond Clusters in Smart Polymer using Coupled Molecular Dynamics and Spring-Damper Model** J. Zhang, B. Koo, Y. Liu, A. Chattopadhyay, Arizona State University, Tempe, AZ	1530 hrs AIAA-2014-1334 **A Comprehensive Evaluation of the Predictive Capabilities of Several Advanced Micromechanics Approaches** H. Sertse, L. Zhang, W. Yu, Z. Ye, Utah State University, Logan, UT	1600 hrs AIAA-2014-1335 **A Variational Asymptotic Method for Unit Cell Homogenization of Hyperelastic Heterogeneous Materials** L. Zhang, W. Yu, Utah State University, Logan, UT	1630 hrs AIAA-2014-1336 **Coupled atomistic-continuum simulations at finite temperature using a three-layer-mesh bridging domain method (TBDM)** A. Sadeghirad, Global Engineering and Materials, Inc., Princeton, NJ; F. Liu, University of Utah, Salt Lake City, Salt Lake City, UT			

Thursday, 16 January 2014							
356-MDO-8	**Optimization Applications**						**Chesapeake Conf Rm 4**
Chaired by: E. JOHNSON and R. KOLONAY, US Air Force Research Lab							
1430 hrs AIAA-2014-1337 **Optimum Design of a Fuel Efficient Mid-Size Business Jet** J. Lyddon, M. Nguyen, J. Quackenbush, T. Schadegg, T. Takahashi, Arizona State University, Tempe, AZ	1500 hrs AIAA-2014-1338 **Effect of Aerodynamic Modeling on Optimum Wing Kinematics for Hovering MAVs** Z. Yan, H. Taha, M. Hajj, Virginia Polytechnic Institute and State University, Blacksburg, VA	1530 hrs AIAA-2014-1339 **Fuel Tank Baffle Optimisation For Mechanical Damping** J. Hall, T. Rendall, C. Allen, University of Bristol, Bristol, United Kingdom	1600 hrs AIAA-2014-1340 **Multiobjective Design Exploration of an Aero-Acoustic Rocket Launch Site Design Problem with Evolutionary Computation and Large Eddy Simulations** T. Tatsukawa, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; Y. Nagata, Tokyo University of Science, Tokyo, Japan; T. Nonomura, A. Oyama, K. Fujii, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; M. Yamamoto, Tokyo University of Science, Tokyo, Japan				

Thursday, 16 January 2014							
357-MST-6	**Modeling and Simulation of Uninhabited Aircraft Systems (UAS)**						**National Harbor Conf Rm 14**
Chaired by: D. KEATING, The Charles Stark Draper Laboratory, Inc.							
1430 hrs AIAA-2014-1341 **Modeling and Simulation of Autonomous Thermal Soaring with Horizon Simulation Framework** Z. Li, E. Mehiel, California Polytechnic State University, San Luis Obispo, CA	1500 hrs AIAA-2014-1342 **Frequency-Domain System Identification and Simulation of a Quadrotor Controller** W. Wei, N. Schwartz, K. Cohen, University of Cincinnati, Cincinnati, OH	1530 hrs AIAA-2014-1343 **On the Viability of Energy Harvesting Piezoelectric Devices for Supplemental Power Generation in Uninhabited Aircraft Systems** A. Feiguel, French Institute for Advanced Mechanics, Clermont-Ferrand, France; T. Ricks, K. McWilliams, T. Lacy, O. Myers, P. Donohoe, Mississippi State University, Mississippi State, MS; et al.	1600 hrs AIAA-2014-1344 **Identification of Low Order Equivalent Transfer Function Model of Trex-700E Helicopter from Flight Test Data** M. Mohajerani, Concordia University, Montréal, Canada; H. Bolandhemmat, MicroPilot, Inc., Stony Mountain, Canada; Y. Zhang, Concordia University, Montréal, Canada; H. Loewen, MicroPilot, Inc., Stony Mountain, Canada	1630 hrs AIAA-2014-1345 **Study of Target Centric Cyclic Pursuit for MAVs using Hardware In Loop Simulator** S. Daingade, A. Borkar, A. Sinha, H. Arya, Indian Institute of Technology Bombay, Mumbai, India	1700 hrs AIAA-2014-1346 **Modeling and Simulation of Propeller Propulsion Model Using Wind Tunnel** A. kamal, A. Aly, A. Elshabka, Military Technical College, Cairo, Egypt		

Thursday, 16 January 2014							
358-NDA-8	**NASA Multidisciplinary UQ Challenge I**						**Chesapeake Conf Rm 5**
Chaired by: L. CRESPO, National Institute of Aerospace and S. KENNY, NASA Langley Research Center							
1430 hrs AIAA-2014-1347 **The NASA Langley Multidisciplinary Uncertainty Quantification Challenge** L. Crespo, S. Kenny, D. Giesy, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2014-1348 **A Probabilistic Approach to the NASA Langley Multidisciplinary Uncertainty Quantification Challenge Problem** R. Ghanem, C. Thimissetti, I. Yadegar, V. Kasharvazaddeh, University of Southern California, Los Angeles, CA; J. Red-Horse, Sandia National Laboratories, Albuquerque, NM; R. Moser, University of Texas, Austin, Austin, TX; et al.	1530 hrs AIAA-2014-1349 **A Hybrid Bayesian Solution to NASA Uncertainty Quantification Challenge** A. Srivastava, A. Subramaniyan, General Electric Company, Niskayuna, NY	1600 hrs AIAA-2014-1350 **Robust Decision Making Applied to the NASA Multidisciplinary Uncertainty Quantification Challenge Problem** K. Van Buren, F. Hemez, Los Alamos National Laboratory, Los Alamos, NM				

Thursday, 16 January 2014		
359-PANEL-11 1430 - 1630 hrs	Future Aerospace Workforce Development and Education Panel	Potomac Ballroom C

Moderator: Vigor Yang, Chair, School of Aerospace Engineering, Georgia Institute of Technology

Panelists:

Jennifer Byrne
Vice President, Corporate Engineering & Technology
Lockheed Martin Corporation

Carole Hedden
Senior Editor
Aviation Week

Jaime Peraire
H.N. Slater Professor and Department Head
Department of Aeronautics and Astronautics
Massachusetts Institute of Technology

Darryll Pines
Dean of Engineering
University of Maryland

Larry Schneider
Vice President, Chief Project Engineer - 777 Program
Boeing Commercial Airplanes

Thursday, 16 January 2014							
360-PC-21/AMT-11	Combustion Diagnostics II						Chesapeake Conf Rm G
Chaired by: C. CADOU, University of Maryland and S. NAIK, Purdue University							
1430 hrs AIAA-2014-1351 **Laser-induced breakdown spectroscopy measurements in turbulent methane flames** M. Kotzagianni, University of Patras, Patras, Greece; R. Yuan, E. Mastorakos, University of Cambridge, Cambridge, United Kingdom; S. Couris, University of Patras, Patras, Greece	1500 hrs AIAA-2014-1352 **O2 rotational temperature measurements using 2+1 radar resonance-enhanced multiphoton ionization** Y. Wu, Z. Zhang, University of Tennessee, Knoxville, Knoxville, TN	1530 hrs AIAA-2014-1353 **Advanced methods for extracting flow and combustion physics from high speed laser diagnostics** A. Wickersham, X. Li, L. Ma, Virginia Polytechnic Institute and State University, Blacksburg, VA	1600 hrs AIAA-2014-1354 **High repetition rate two-dimensional laser induced incandescence studies in a C2H4/H2/N2 non-premixed flame** P. Venkateswaran, J. Michael, D. Diaz, T. Meyer, Iowa State University, Ames, IA	1630 hrs AIAA-2014-1355 **Sooting Jet Diffusion Flame Thermometry at 5 kHz using Femtosecond Coherent Anti-Stokes Raman Scattering** C. Fineman, R. Lucht, Purdue University, West Lafayette, IN	1700 hrs AIAA-2014-1356 **Development of a Mid-IR Laser Diagnostic for Combustion Efficiency** S. Wakefield, Air Force Institute of Technology, Wright-Patterson AFB, OH; B. Sell, F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Fotia, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH		

Thursday, 16 January 2014							
361-PC-22	Plasma-Assisted Combustion III (Invited)						Chesapeake Conf Rm H
Chaired by: T. OMBRELLO, Air Force Research Laboratory and W. SUN, Georgia Institute of Technology							
1430 hrs Oral Presentation (Invited) **Experiments on Plasma-Assisted Combustion in Supersonic Airflow** S. Leonov, Ohio State University, Columbus, OH	1500 hrs Oral Presentation (Invited) **Laser fluorescence and scattering studies of plasma assisted combustion kinetics in nsec pulsed plasmas** W. Lempert, Ohio State University, Columbus, OH	1530 hrs Oral Presentation (Invited) **Fundamental processes in Plasma Assisted Combustion** A. Starikovskiy, Princeton University, Princeton, NJ	1600 hrs Oral Presentation (Invited) **Kinetics of ignition of heavy hydrocarbons by nonequilibrium plasmas of pulsed discharges at low initial temperatures** S. Starikovskaya, École Polytechnique, Paris, France	1630 hrs Oral Presentation (Invited) **Plasma activated low temperature combustion** Y. Ju, W. Sun, J. Lefkowitz, Princeton University, Princeton, NJ	1700 hrs Oral Presentation (Invited) **Plasma-assisted stabilization of lean flames using nanosecond discharges** C. Laux, École Centrale de Paris, Paris, France		

Thursday, 16 January 2014							
362-PDL-11	Plasma Diagnostics						Maryland Ballroom 5
Chaired by: I. ADAMOVICH, Ohio University							
1430 hrs AIAA-2014-1357 **Sodium Cluster Ion Recombination Rate Measurements by Radar REMPI** J. Sawyer, Z. Zhang, University of Tennessee, Knoxville, Knoxville, TN	1500 hrs AIAA-2014-1358 **Thomson Scattering Studies in He and He/H2 Nanosecond Pulse Nonequilibrium Plasmas** A. Roettgen, I. Shkurenkov, I. Adamovich, W. Lempert, Ohio State University, Columbus, OH	1530 hrs AIAA-2014-1359 **Femtosecond TALIF Imaging of Atomic Hydrogen in Pulsed, Non-Equilibrium Plasmas** J. Schmidt, W. Kulatilaka, S. Roy, Spectral Energies, LLC, Dayton, OH; K. Frederickson, W. Lempert, Ohio State University, Columbus, OH; J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2014-1360 **Absolute concentration measurements of atomic oxygen in a flame using radar REMPI** T. Chng, R. Miles, Princeton University, Princeton, NJ	1630 hrs AIAA-2014-1361 **Time-Resolved Measurements of Temperature and Species Concentrations Distributions in Ar-Based Mixtures Excited by a Nanosecond Pulse Discharge** Z. Yin, A. Pulcini, I. Adamovich, W. Lempert, Ohio State University, Columbus, OH			

Thursday, 16 January 2014							
363-SCS-5	**Mechanics, Dynamics, & Control of Gossamer Systems**						**Chesapeake Conf Rm 6**
Chaired by: H. FANG							
1430 hrs AIAA-2014-1362 **On the Existence and Characteristics of a Class of Inflatable Toroid Envelopes** G. Greschik, TentGuild Engineering Company, Boulder, CO	1500 hrs AIAA-2014-1363 **Effect of Boundary Conditions on Geometric Control for an Inflatable Pathfinder System** J. Fulcher, S. Smith, University of Kentucky, Lexington, Lexington, KY; J. Baker, University of Kentucky, Paducah, Paducah, KY	1530 hrs AIAA-2014-1364 **Multibody Dynamics for Biologically Inspired Smart Space Structure** T. Sinn, M. Vasile, University of Strathclyde, Glasgow, United Kingdom	1600 hrs AIAA-2014-1365 **Impact Tearing Behavior of Thin Aluminum Foil** K. Woo, Chungbuk University, Cheongju, South Korea; C. Jenkins, Montana State University, Bozeman, MT	1630 hrs AIAA-2014-1366 **Initial Deformation Properties of Solar Sail Membrane for Equivalent Stiffness** H. Furuya, A. Yamasaki, Y. Matsuo, Tokyo Institute of Technology, Yokohama, Japan	1700 hrs AIAA-2014-1367 **MOIRE Gossamer Space Telescope - Membrane Analysis** W. Tandy, T. Copp, L. Campbell, R. Thompson, R. Schweickart, D. Waller, Ball Aerospace & Technologies Corporation, Boulder, CO		

Thursday, 16 January 2014							
364-SD-14	**Rotorcraft**						**Chesapeake Conf Rm C**
Chaired by: A. DATTA, Science & Technology Corporation and P. FRIEDMANN, University of Michigan							
1430 hrs AIAA-2014-1368 **Passive Tailboom Vibration Control Using Fluidic Flexible Matrix Composite (F^2MC) Tubes** K. Miura, C. Rahn, E. Smith, Pennsylvania State University, University Park, PA	1500 hrs AIAA-2014-1369 **Interfacial Strain Energy Dissipation of Hybrid Nanocomposite Beams Under Axial Strain Fields** B. Glaz, J. Riddick, E. Habtour, H. Kang, Army Research Laboratory, Aberdeen Proving Ground, MD	1530 hrs AIAA-2014-1370 **Nonlinear Modeling and Analysis of Wind Turbine Blades** Y. Bichiou, A. Abdelkefi, M. Hajj, Virginia Polytechnic Institute and State University, Blacksburg, VA	1600 hrs AIAA-2014-1371 **Aerodynamics-Structural Coupled Analysis of a Bearingless Rotor using a Flexible Multi-body model** W. Eun, H. Ryu, S. Shin, Seoul National University, Seoul, South Korea; Y. Kee, D. Kim, Korea Aerospace Research Institute, Daejeon, South Korea				

Thursday, 16 January 2014							
365-STR-18	**Special Session - Composite Laminate Optimization**						**Chesapeake Conf Rm E**
Chaired by: M. RASSAIAN, Boeing Engineering Operations & Technology and A. BLOM, The Boeing Company							
1430 hrs AIAA-2014-1372 **Combining Topology and Lamination Parameter Optimisation** D. Peeters, D. van Baalen, M. Abdalla, Delft University of Technology, Delft, The Netherlands	1500 hrs AIAA-2014-1373 **Sensitivity Analysis of Out-of-Plane Composite Lamina Properties Relative to Configuration and Constitutive Properties** J. Weigand, S. TerMaath, University of Tennessee, Knoxville, Knoxville, TN	1530 hrs AIAA-2014-1374 **On Further Developments of Feasible Region of Lamination Parameters for Symmetric Composite Laminates** G. Raju, Z. Wu, P. Weaver, University of Bristol, Bristol, United Kingdom	1600 hrs AIAA-2014-1375 **Comparison of Methodologies for Optimal Design of a Composite Plate under Practical Design Constraints** R. Taylor, Optimal Structures, Keller, TX; M. Admani, Altair Engineering, Inc., Lewisville, TX; J. Strain, University of Texas, Arlington, Arlington, TX	1630 hrs AIAA-2014-1376 **Optimal Design of Postbuckling Behaviour of Laminated Composite Plates using Lamination Parameters** Z. Wu, G. Raju, S. White, P. Weaver, University of Bristol, Bristol, United Kingdom	1700 hrs AIAA-2014-1377 **Hierarchical Analysis and Optimization of Nano-Enhanced Composite Sandwich Plates** S. DorMohammadi, M. Rais-Rohani, Mississippi State University, Mississippi State, MS; M. Rouhi, Concordia University, Montréal, Canada		

Thursday, 16 January 2014							
366-STR-19	**Advances in Fracture Mechanics**						**Chesapeake Conf Rm F**
Chaired by: I. RAJU, NASA-Langley Research Center and G. MABSON, Boeing Engineering Operations & Technology							
1430 hrs AIAA-2014-1378 **A Thermodynamically Consistent Cohesive Zone Model for Mixed-Mode Fracture** L. Zhang, W. Yu, Utah State University, Logan, UT	1500 hrs AIAA-2014-1379 **Interlaminar Fracture Toughness Characterization of Z-Pinned and Flocked Composite Laminates** V. Ranatunga, Miami University, Middletown, OH; S. Clay, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2014-1380 **Crack Arrestment of Pi-Joined Bonded Composites** J. Action, S. Engelstad, Lockheed Martin Corporation, Marietta, GA	1600 hrs AIAA-2014-1381 **A Modified Interaction Integral for 3D Extended Finite Element based Crack Growth Prediction** N. Simon, M. Stuebner, X. Fang, J. Lua, Global Engineering and Materials, Inc., Princeton, NJ	1630 hrs AIAA-2014-1382 **Validation of Crack Growth Analysis Technique for a Fiber Metal Laminate** D. Wieland, Southwest Research Institute, San Antonio, TX; G. Abumeri, AlphaSTAR Corporation, Long Beach, CA; A. McCloskey, Northrop Grumman Corporation, El Segundo, CA		

Thursday, 16 January 2014							
367-TES-4	**Advances in Combustion I**						**Maryland Ballroom B**
Chaired by: B. SLOAN, Iowa State University							
1430 hrs AIAA-2014-1383 **Swirl and Lateral Jet Injection for Mixing and Combustion Efficiency** D. Lilley, Lilley & Associates, Stillwater, OK	1500 hrs AIAA-2014-1384 **Effect of Multi-Tube Fuel Injector Design on Flame Stability and NOx Pollutant Emissions from Syngas Flames** S. Sarker, S. Hossain, S. Maldonado, N. Love, A. Choudhuri, University of Texas, El Paso, El Paso, TX	1530 hrs AIAA-2014-1385 **Updates to Simulation of a Single-Element Lean-Direct Injection Combustor Using a Polyhedral Mesh Derived from Hanging-Node Elements** C. Wey, N. Liu, NASA Glenn Research Center, Cleveland, OH	1600 hrs AIAA-2014-1386 **Shear Flow and Central Recirculation Zone Interaction in Reactive Swirling Flows** N. Syred, A. Valera Medina, P. Bowen, R. Marsh, Cardiff University, Cardiff, United Kingdom	1630 hrs AIAA-2014-1387 **Acoustic Streaming Effects in High Intensity Swirl Burners** N. Syred, J. Lewis, A. Valera Medina, P. Bowen, Cardiff University, Cardiff, United Kingdom			

Thursday, 16 January 2014							
368-TP-12	**Ablation II**						**National Harbor Conf Rm 11**
Chaired by: D. KUNTZ, Sandia National Laboratories and A. MARTIN, University of Kentucky							
1430 hrs AIAA-2014-1388 **Measurement of pyrolysis products from phenolic polymer thermal decomposition** H. Wong, J. Peck, R. Edwards, Aerodyne Research, Inc., Billerica, MA; G. Reinisch, University of Texas, Austin, Austin, TX; J. Lachaud, University of California, Santa Cruz, Moffett Field, CA; N. Mansour, NASA Ames Research Center, Moffett Field, CA	1500 hrs Oral Presentation (Invited) **Model and analysis of gas flow and heat transport in porous IsoQ arc-jet samples** I. Cozmuta, Science and Technology Corporation, Moffett Field, CA; J. Lachaud, University of California, Santa Cruz, Moffett Field, CA	1530 hrs AIAA-2014-1389 **Measurement of Tube Wall Ablation in Hypervelocity Flows** M. Hildebrand, J. Huneault, J. Loiseau, A. Higgins, McGill University, Montréal, Canada					

Thursday, 16 January 2014							
369-TP-13	**Aerothermodynamics II**						**National Harbor Conf Rm 10**
Chaired by: R. AMANO, University of Wisconsin and M. HOWARD, Sandia National Laboratories							
1430 hrs AIAA-2014-1390 **Numerical Analysis on Aerothermodynamic Characteristics of Blunt-nosed Cone in Free-piston Shock Tunnel HIEST** T. Ishihara, Y. Ogino, N. Ohnishi, K. Sawada, Tohoku University, Sendai, Japan; H. Tanno, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan	1500 hrs AIAA-2014-1391 **Assessment of Residual Distribution Method Heat Flux Prediction Capabilities: Application to Atmospheric Entry Problems** H. Deconinck, J. Garicano Mena, A. Lani, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium; R. Pepe, Università degli studi della Basilicata Viale dell, Potenza, Italy	1530 hrs AIAA-2014-1392 **Numerical Investigations of Thermal Loss effects on Thermoacoustic Instabilities in a model Combustor** A. Filosa, B. Noll, R. Lückerat, German Aerospace Center (DLR), Stuttgart, Germany	1600 hrs AIAA-2014-1393 **Approximate Prediction for Aerodynamic Heating and Design for Leading-edge Bluntness on Hypersonic Vehicles** G. Yang, Y. Duan, C. Liu, J. Cai, Northwestern Polytechnical University, Xi'an, China	1630 hrs AIAA-2014-1394 **Integrated Fluid-Thermal-Structural Analysis for Predicting Aerothermal Environment of Hypersonic Vehicles** S. Zhang, F. Chen, H. Liu, Shanghai Jiao Tong University, Shanghai, China			

Thursday, 16 January 2014							
370-WE-14	Wind Turbine Monitoring and Performance						Woodrow Wilson C
Chaired by: P. SEILER, University of Minnesota							
1430 hrs AIAA-2014-1395 **Wireless Structural Health Monitoring of Wind Turbine Blades Using an Energy Harvester as a Sensor** D. Lim, S. Mantell, P. Seiler, University of Minnesota, Minneapolis, Minneapolis, MN	1500 hrs AIAA-2014-1396 **Wind Turbine Rotor Blade Monitoring using Digital Image Correlation: Assessment on a Scaled Model** J. Winstroth, J. Seume, Leibniz University of Hannover, Hannover, Germany	1530 hrs AIAA-2014-1397 **Employing Wind Farm Performance Data for Model Validation and Turbine Layout/ Geometry Optimization** B. DuPont, Oregon State University, Corvallis, OR; J. Cagan, Carnegie Mellon University, Pittsburgh, PA	1600 hrs AIAA-2014-1398 **Exploration of Modal Decomposition Techniques for Wind Turbines** A. Mittal, K. Sreenivas, L. Taylor, University of Tennessee, Chattanooga, Chattanooga, TN	1630 hrs AIAA-2014-1399 **FENSAP-ICE Simulation of Complex Wind Turbine Icing Events, and Comparison to Observed Performance Data** D. Switchenko, W. Habashi, McGill University, Montréal, Canada; T. Reid, I. Ozcer, G. Baruzzi, Newmerical Technologies International, Montréal, Canada	1700 hrs AIAA-2014-1400 **Characterizing the effects of inflow on a 2.5 MW research utility turbine** K. Howard, M. Guala, University of Minnesota, Minneapolis, Minneapolis, MN		

Thursday, 16 January 2014		
371-NW-12 1530 - 1600 hrs	Thursday Afternoon Networking Coffee Break	Foyer

Thursday, 16 January 2014		
372-LECT-8 1800 - 1900 hrs	SDM Special Session: Damping: The Turbulence of Structural Mechanics	Maryland Ballroom C

George Lesieutre
Professor and Department Head, Department of Aerospace Engineering
Pennsylvania State University

Friday

Friday, 17 January 2014		
373-NW-13 0700 - 0730 hrs	Friday Morning Networking Coffee Break	Foyer

Friday, 17 January 2014		
374-SB-9 0730 - 0800 hrs	Friday Morning Speakers' Briefing	Session Rooms

Friday, 17 January 2014							
375-AA-8	Computational Aeroacoustics						Maryland Ballroom D
Chaired by: V. GOLUBEV, Embry-Riddle Aeronautical University (ERAU)							
0800 hrs AIAA-2014-1401 **Digital Filter-based Turbulent Inflow Generation for Jet Aeroacoustics on Non-Uniform Structured Grids** N. Dhamankar, Purdue University, West Lafayette, IN; C. Martha, Intel Corporation, Santa Clara, CA; Y. Situ, K. Aikens, G. Blaisdell, Purdue University, West Lafayette, IN; A. Lyrintzis, Embry-Riddle Aeronautical University, Daytona Beach, FL; et al.	0830 hrs AIAA-2014-1402 **Numerical simulation of the effect of a low bypass cooling stream on supersonic jet noise** Y. Du, P. Morris, Pennsylvania State University, University Park, PA	0900 hrs AIAA-2014-1403 **Near-Field and Far-Field Spectral Analysis of Supersonic Jet with and without Fluidic Injection** H. Hafsteinsson, L. Eriksson, N. Andersson, Chalmers University of Technology, Göteborg, Sweden; D. Cuppoletti, E. Gutmark, University of Cincinnati, Cincinnati, OH; E. Prisell, FMV, Stockholm, Sweden	0930 hrs AIAA-2014-1404 **Acoustics propagation and wave interference by scalar wave equation** J. Shang, Wright State University, Dayton, OH	1000 hrs AIAA-2014-1405 **Comparison of Computational Aeroacoustics Prediction of Acoustic Transmission Through a Three Dimensional Stator Geometry with Experiment** D. Hixon, University of Toledo, Toledo, OH; E. Envia, M. Dahl, D. Sutliff, NASA Glenn Research Center, Cleveland, OH	1030 hrs AIAA-2014-1406 **Pressure Loading Within Rectangular Cavities With and Without a Captive Store** M. Barone, S. Arunajatesan, Sandia National Laboratories, Albuquerque, NM		

Friday, 17 January 2014							
376-AMT-12/GT-10	**Pressure and Temperature Measurements in Wind Tunnels**						**Maryland Ballroom 2**
Chaired by: M. WRENN, Aerospace Testing Alliance (ATA) and D. PLEMMONS, Aerospace Testing Alliance (ATA)							
0800 hrs No Presentations	0900 hrs AIAA-2014-1407 **Global Pressure and Temperature Measurements of Ballistic-Range Testing by PSP and TSP Techniques** H. Sakaue, Y. Iijima, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; Y. Yamada, T. Miyazaki, University of Electro-Communications, Chofu, Japan; M. Ishii, National Research Institute of Police Science, Kashiwa, Japan	0930 hrs AIAA-2014-1408 **Development of Temperature-Sensitive Paint with High Performance and Responsibility for Aerodynamic Heating Measurement** T. Horagiri, H. Nagai, Tohoku University, Sendai, Japan	1000 hrs AIAA-2014-1409 **Translational Temperature Measurements in Shock Layer by Point-measurement Laser Absorption Spectroscopy** S. Nomura, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; G. Ito, University of Tokyo, Kashiwa, Japan; K. Fujita, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; K. Komurasaki, University of Tokyo, Kashiwa, Japan	1030 hrs AIAA-2014-1410 **Design of Static Pressure Probes for Improved Free-Stream Characterization in Hypersonic Wind-Tunnels** G. Grossir, S. Paris, P. Rambaud, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium; B. Van Hove, Royal Observatory of Belgium, Brussels, Belgium	1100 hrs AIAA-2014-1411 **Quantitative Boundary-Layer Transition Measurements Using IR Thermography** B. Crawford, G. Duncan, D. West, W. Saric, Texas A&M University, College Station, TX	1130 hrs AIAA-2014-1412 **Automatic Data Processing of Pressure-Sensitive Paint Measurement in a Wind Tunnel** M. Kurita, K. Nakakita, K. Mitsuo, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; H. Yamaya, T. Nakajima, IHI Corporation, Tomioka, Japan

Friday, 17 January 2014							
377-AS-5	**Modeling Simulation**						**Chesapeake Conf Rm D**
Chaired by: W. YU, Purdue University and R. BOTEZ, Ecole de Technologie Superieure							
0800 hrs AIAA-2014-1413 **Simultaneous Optimum Design of Structure and Actuator Locations for Plate Model of High Precision Space Antenna** Y. Satou, H. Furuya, Tokyo Institute of Technology, Yokohama, Japan; N. Kogiso, Osaka Prefecture University, Sakai, Japan	0830 hrs AIAA-2014-1414 **A Process Chain for Structural Optimization of a Smart Droop Nose for an Active Blown High Lift System** A. Rudenko, H. Monner, M. Rose, German Aerospace Center (DLR), Braunschweig, Germany	0900 hrs AIAA-2014-1415 **Connectivity of Shape Memory Alloy-based Self-Folding Structures** E. Peraza Hernandez, D. Hartl, E. Akleman, K. Frei, Texas A&M University, College Station, TX	0930 hrs AIAA-2014-1416 **Cross-sectional modelling of an initially curved and pre-twisted smart beam** V. Valliappan, D. Harursampath, Indian Institute of Science, Bangalore, India; S. Roy, Indian Institute of Technology Dehli, Delhi, India; W. Yu, Purdue University, West Lafayette, IN	1000 hrs AIAA-2014-1417 **Shape Memory Alloy Actuated Morphing Cellular Frame using Bi-stable von-Mises Trusses with Variable Length Links** S. Barbarino, F. Gandhi, Rensselaer Polytechnic Institute, Troy, NY			

Friday, 17 January 2014							
378-ASE-2	**Topics in Space Environments**						**Chesapeake Conf Rm 9**
Chaired by: N. GREEN, Jet Propulsion Laboratory and E. BERING, University of Houston							
0800 hrs AIAA-2014-1418 **Developing a Model to Ascribe Physical Meaning to Feature Vector Elements Derived from Infrasound Signals from Rocket Launches** J. Seaward, M. Archambault, F. Ham, Florida Institute of Technology, Melbourne, FL	0830 hrs AIAA-2014-1419 **Spacecraft deep charging numerical evaluation basing FengYun-2 satellite high energy electron data** C. Yang, Chinese Academy of Sciences, Beijing, China	0900 hrs AIAA-2014-1420 **The Best GEO Daytime Spacecraft Charging Index - Part II** D. Ferguson, Air Force Research Laboratory, Kirtland AFB, NM; V. Davis, SAIC, San Diego, CA; A. Wheelock, Air Force Research Laboratory, Kirtland AFB, NM	0930 hrs AIAA-2014-1421 **Solar Array in Dense Plasma** B. Vayner, Ohio Aerospace Institute, Cleveland, OH	1000 hrs AIAA-2014-1422 **ISS Space Plasma Laboratory: An ISS instrument package for investigating the opening/closing of solar and heliospheric magnetic fields** E. Bering, G. Edeen, University of Houston, Houston, TX; S. Antiochos, C. DeVore, B. Thompson, NASA Goddard Space Flight Center, Greenbelt, MD; M. Carter, Ad Astra Rocket Company, Webster, TX; et al.			

Friday, 17 January 2014							
379-FD-45	**CFD Methods for Unsteady Flows**						**Chesapeake Conf Rm G**
Chaired by: D. PELLETIER, École polytechnique de Montréal and A. KATZ							
0800 hrs AIAA-2014-1423 **A numerical study of the influence of aspect ratio and gap on 3D galloping of square prisms** S. Corbeil-Letourneau, S. Etienne, A. Hay, D. Pelletier, A. Garon, École Polytechnique de Montréal, Montréal, Canada	0830 hrs AIAA-2014-1424 **An Unsteady Preconditioning Scheme Based on Convective-Upwind Split-Pressure (CUSP) Artificial Dissipation** A. Katz, D. Folkner, Utah State University, Logan, UT; V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA	0900 hrs AIAA-2014-1425 **Unsteady Simulation Paradigms for Trailing Edge Ejection** R. Watson, P. Tucker, University of Cambridge, Cambridge, United Kingdom	0930 hrs AIAA-2014-1426 **Least Squares Shadowing for Sensitivity Analysis of Turbulent Fluid Flows** P. Blonigan, S. Gomez, Q. Wang, Massachusetts Institute of Technology, Cambridge, MA	1000 hrs AIAA-2014-1427 **An Efficient Flexible GMRES Solver for the Fully-coupled Time-spectral Aeroelastic System** N. Mundis, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY	1030 hrs AIAA-2014-1428 **The Discontinuous Galerkin method for partially ionized gas compressible flows under the influence of electromagnetic fields** K. Panourgias, J. Ekaterinaris, Embry-Riddle Aeronautical University, Daytona Beach, FL	1100 hrs AIAA-2014-1429 **A Modified AUSM+-up Scheme for Simulation of Flow Around Rotary Blades** J. Xu, W. Song, Z. Han, X. Yang, Northwestern Polytechnical University, Xi'an, China	1130 hrs AIAA-2014-1430 **Experimental and Numerical Study of the Flow Field of a Translating Droplet** P. Zhang, A. DeVoria, K. Mohseni, University of Florida, Gainesville, Gainesville, FL

Friday, 17 January 2014							
380-FD-46	**Error Estimation and Control**						**Azalea 3**
Chaired by: C. ROY, Virginia Tech and R. STARKEY, University of Colorado Boulder							
0800 hrs AIAA-2014-1431 **A Discrete Error Transport Equation Source Model for Mesh Adaptation** N. Currier, K. Franko, Sandia National Laboratories, Albuquerque, NM	0830 hrs AIAA-2014-1432 **Error Transport Equation Boundary Conditions for the Euler and Navier-Stokes Equations** T. Phillips, C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA	0900 hrs AIAA-2014-1433 **Interpolation Method needed for Numerical Uncertainty Analysis of Computational Fluid Dynamics** C. Groves, NASA Kennedy Space Center, Cape Canaveral, FL; M. Ilie, University of Central Florida, Orlando, FL; P. Schallhorn, NASA Kennedy Space Center, Cape Canaveral, FL	0930 hrs AIAA-2014-1434 **Optimal Error Control using Discrete Adjoint Error Estimates in Unsteady Flow Problems** B. Flynt, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY	1000 hrs AIAA-2014-1435 **Verification of the Unified Coordinate System by the Method of Manufactured Solutions** C. Woods, R. Starkey, University of Colorado, Boulder, Boulder, CO			

Friday, 17 January 2014							
381-FD-47	**Other CFD Methods**						**Maryland Ballroom 1**
Chaired by: R. LOHNER and P. CIZMAS, Texas A&M University							
0800 hrs AIAA-2014-1436 **The Use of Dynamic Basis Functions in Proper Orthogonal Decomposition** B. Freno, R. Fontenot, N. Matula, P. Cizmas, Texas A&M University, College Station, TX	0830 hrs AIAA-2014-1437 **On Mesh-Particle Techniques** R. Lohner, F. Camelli, George Mason University, Fairfax, VA; J. Baum, F. Togashi, O. Soto, SAIC, McLean, VA	0900 hrs AIAA-2014-1438 **A Simple Algorithm to Enforce Mass Conservation for CFD Solvers With Embedded, Moving CSD Surfaces** R. Lohner, George Mason University, Fairfax, VA; J. Baum, F. Togashi, O. Soto, SAIC, McLean, VA	0930 hrs AIAA-2014-1439 **Comparison of Lattice-Boltzmann and Finite Difference Solvers** R. Lohner, George Mason University, Fairfax, VA; A. Corrigan, Naval Research Laboratory, Washington, DC; K. Wichmann, W. Wall, Technical University of Munich, Munich, Germany	1000 hrs AIAA-2014-1440 **Gradient Calculation Methods on Arbitrary Polyhedral Unstructured Meshes for Cell-Centered CFD Solvers** E. Sozer, C. Brehm, Science and Technology Corporation, Moffett Field, CA; C. Kiris, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2014-1441 **Modifying an unstructured Roe solver for large eddy simulation** R. Watson, P. Tucker, Z. Wang, University of Cambridge, Cambridge, United Kingdom; X. Yuan, Tsinghua University, Beijing, China		

Friday, 17 January 2014							
382-FD-48	**Reacting Flows (Invited)**						**Azalea 1**
Chaired by: M. PANESI, University of Illinois at Urbana Champaign and J. SCHMISSEUR, USAF AFOSR/NA							
0800 hrs Oral Presentation **Computational Chemistry, Detailed Numerical Simulation, and Information Theory for Reacting Flows** P. Varghese, University of Texas, Austin, Austin, TX	0830 hrs Oral Presentation **In Depth Study of Dissociating Flows Using Ab Initio Models** T. Schwartzentruber, University of Minnesota, Minneapolis, Minneapolis, MN	0900 hrs Oral Presentation **Calculation of State-Specific Rate Coefficients for Non-equilibrium Hypersonics Applications** R. Jaffe, D. Schwenke, G. Chaban, NASA Ames Research Center, Moffett Field, CA	0930 hrs Oral Presentation **Construction of physics based non-equilibrium thermochemical models** M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL	1000 hrs Oral Presentation **Detailed Analyses of Oxygen Thermochemistry Based on State-Resolved Kinetics** I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2014-1442 **Modeling dissociating flows using close-coupled energy transfer models** I. Adamovich, Ohio State University, Columbus, OH	1100 hrs Oral Presentation **Phys4EntryDB: a Database for State-to-State Kinetics of Planetary Atmospheres** A. Laricchiuta, I. Armenise, M. Cacciatore, National Research Council (CNR), Bari, Italy; R. Celiberto, Technical University of Bari, Bari, Italy; F. Esposito, National Research Council (CNR), Bari, Italy; P. Gamallo, University of Barcelona, Barcelona, Spain; et al.	1130 hrs Oral Presentation **Macroscopic Models for Non-Equilibrium High Enthalpy Flows** G. Colonna, National Research Council (CNR), Bari, Italy; A. Bourdon, École Centrale de Paris, Paris, France; L. Pietanza, National Research Council (CNR), Bari, Italy; A. Guy, M. Perrin, École Centrale de Paris, Paris, France

Friday, 17 January 2014							
383-FD-49	**Shear and Slip Flows**						**Azalea 2**
Chaired by: S. GORDEYEV, University of Notre Dame							
0800 hrs AIAA-2014-1443 **The Effect of First- and Second-Order Slip Condition on Oscillatory Flows: Several Exact Solutions** Z. Zhang, R. Agarwal, Washington University in St. Louis, St. Louis, MO	0830 hrs AIAA-2014-1444 **Linear Stability Analysis of Binary Compressible Mixing Layers Modified By a Jet or a Wake Deficit** M. Mendonca, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil	0900 hrs AIAA-2014-1445 **Viscous/inviscid Interacting Shear Flow Theory with Inferences and Their Applications to CFD** Z. Gao, Y. Shen, Chinese Academy of Sciences, Beijing, China; G. Zha, University of Miami, Miami, FL	0930 hrs AIAA-2014-1446 **Experimental Investigation of Aspect-Ratio Effects in Transonic Rectangular Cavity Flows** J. Wagner, S. Beresh, K. Casper, B. Pruett, R. Spillers, J. Henfling, Sandia National Laboratories, Albuquerque, NM				

Friday, 17 January 2014							
384-FD-50	**Turbulence III: Models and Simulations**						**Chesapeake Conf Rm I**
Chaired by: M. PLESNIAK, George Washington University							
0800 hrs AIAA-2014-1447 **Multi-scale simulations of turbulent wall-bounded and wake flows** R. Ranjan, S. Menon, Georgia Institute of Technology, Atlanta, GA	0830 hrs AIAA-2014-1448 **Hybrid Turbulence Model Simulations of Internal and External Flows** A. Gross, H. Fasel, University of Arizona, Tucson, Tucson, AZ	0900 hrs AIAA-2014-1449 **DNS Study of Turbulence Structure in a Boundary Layer** C. Liu, Y. Yan, University of Texas, Arlington, Arlington, TX	0930 hrs AIAA-2014-1450 **Effects of a gain-based optimal forcing on turbulent channel flow** A. Sharma, University of Texas, Austin, Austin, TX; R. Moarref, M. Luhar, California Institute of Technology, Pasadena, CA; D. Goldstein, University of Texas, Austin, Austin, TX; B. McKeon, California Institute of Technology, Pasadena, CA				

Friday, 17 January 2014							
385-FD-51	**Unsteady Aerodynamics II**						**National Harbor Conf Rm 10**
Chaired by: K. GRANLUND, Air Force Research Laboratory and J. BUCHHOLZ, University of Iowa							
0800 hrs AIAA-2014-1451 **Experimental Investigation of Flows with Three-Dimensional Separation** M. Balthazar, A. Gross, H. Fasel, University of Arizona, Tucson, Tucson, AZ	0830 hrs AIAA-2014-1452 **The Effect of Tip Clearance on Low Reynolds Number Rotating Wings** F. Manar, A. Jones, University of Maryland, College Park, College Park, MD	0900 hrs AIAA-2014-1453 **Computational Investigation of Flow Structure and Aerodynamic Performance in Low Aspect Ratio Revolving Plates at Low Reynolds number** C. LI, H. Dong, University of Virginia, Charlottesville, Charlottesville, VA	0930 hrs AIAA-2014-1454 **Code Verification for Unsteady 3-D Fluid-Structure Interaction problems** K. Yu, S. Etienne, A. Hay, D. Pelletier, École Polytechnique de Montréal, Montréal, Canada	1000 hrs AIAA-2014-1455 **Fluid-Structure Interactions in a Tube Bundle Subject to Cross-Flow. Part A: Porous Medium Approach** E. Tixier, C. Béguin, S. Etienne, D. Pelletier, A. Hay, École Polytechnique de Montréal, Montréal, Canada; G. Ricciardi, CEA CADARACHE, Saint-Paul-Lez-Durance, France	1030 hrs AIAA-2014-1456 **Scaling Vehicle Dynamics and Fluid Dynamics in Gusting Flows** D. Williams, L. Grimaud, Illinois Institute of Technology, Chicago, IL	

Friday, 17 January 2014								
386-GEPC-5	**Legacy Fleet Fuel Efficiency - Reducing the USAF's Multi-Billion Dollar Annual Fuel Bill**							**Woodrow Wilson A**
Chaired by: G. DALE, Wright-Patterson Air Force Base								
0800 hrs Oral Presentation (Invited) **C-5 Fuel Efficiency Initiatives** M. Chang, S. Macheret, Lockheed Martin Corporation, Palmdale, CA; J. Hooker, Lockheed Martin Corporation, Marietta, GA	0830 hrs Oral Presentation (Invited) **C-130 Fuel Efficiency Improvements through Reduced Airframe Drag** J. Hooker, Lockheed Martin Corporation, Marietta, GA	0900 hrs Oral Presentation (Invited) **Legacy Drag Reduction Studies** D. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH	0930 hrs AIAA-2014-1457 **Summary of Flight Testing and Results for the Formation Flight for Aerodynamic Benefit Program** S. Bieniawski, The Boeing Company, Seattle, WA; S. Rosenzweig, The Boeing Company, Long Beach, CA; W. Blake, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2014-1458 **Computational Aerodynamic Analysis for the Formation Flight for Aerodynamic Benefit Program** J. Slotnick, The Boeing Company, Huntington Beach, CA	1030 hrs AIAA-2014-1459 **Formation Flight for Aerodynamic Benefit Simulation Development and Validation** D. Halaas, S. Bieniawski, B. Whitehead, The Boeing Company, Seattle, WA; W. Blake, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2014-1460 **Operational Analysis for the Formation Flight for Aerodynamic Benefit Program** T. Flanzer, S. Bieniawski, The Boeing Company, Seattle, WA	1130 hrs Oral Presentation (Invited) **Assessment of Formation Flight Benefits to the C-130 and C-5 Mobility Fleets** M. Niestroy, Lockheed Martin Corporation, Fort Worth, TX

Friday, 17 January 2014							
387-GNC-23	**Guidance, Navigation, and Control Concepts in Air Traffic Management**						**National Harbor Conf Rm 15**
Chaired by: L. WEITZ, The MITRE Corporation							
0800 hrs AIAA-2014-1461 **Application of Complexity Map to Reduce Air Traffic Complexity in a Sector** Y. Hong, Y. Kim, Seoul National University, Seoul, South Korea; K. Lee, Korea Aerospace University, Goyang, South Korea	0830 hrs AIAA-2014-1462 **Optimizing Metering for Trajectory Timing Uncertainty** W. Kirkman, T. Gaydos, L. Weitz, MITRE Corporation, McLean, VA	0900 hrs AIAA-2014-1463 **Application of MINLP Techniques to Conflict Resolution of Multiple Aircraft** M. Richter, M. Hochstrasser, Technical University of Munich, Garching, Germany; L. Walter, French-German Research Institute of Saint-Louis (ISL), Saint-Louis, France; M. Bittner, F. Holzapfel, Technical University of Munich, Garching, Germany	0930 hrs AIAA-2014-1464 **Evaluating Tradeoff between Environmental Impact and Operational Costs for Enroute Air Traffic** N. Chen, B. Sridhar, NASA Ames Research Center, Moffett Field, CA; H. Ng, University of California, Santa Cruz, Moffett Field, CA; J. Li, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	1000 hrs AIAA-2014-1465 **Probabilistic Airport Capacity Prediction Incorporating Weather Forecast Uncertainty** R. Kicinger, J. Chen, Metron Aviation, Inc., Dulles, VA; M. Steiner, J. Pinto, National Center for Atmospheric Research, Boulder, CO	1030 hrs AIAA-2014-1466 **Co-evolutionary Approach to Improve Robustness of Routing Algorithms against Disruptive Events on the Airport Surface** R. Kicinger, M. Ganji, J. Chen, R. Reddy, Metron Aviation, Inc., Dulles, VA; M. Ellejmi, EUROCONTROL, Brétigny/Orge, France		

Friday, 17 January 2014							
388-GNC-24	**Mini/Micro Air Vehicles II**						**National Harbor Conf Rm 7**
Chaired by: S. WASLANDER, University of Waterloo and M. OPPENHEIMER, AFRL/RBCA							
0800 hrs AIAA-2014-1467 **Quarter Cycle Modulation of a Minimally Actuated Biomimetic 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	0830 hrs AIAA-2014-1468 **Yaw Dynamics Identification of an Insect-Inspired Flapping Wing Micro Air Vehicle** I. Faruque, University of Maryland, College Park, College Park, MD; P. Samuel, Daedalus Flight Systems, Rockville, MD; J. Humbert, University of Maryland, College Park, College Park, MD	0900 hrs AIAA-2014-1469 **Control of Wing Stroke Plane Angle for Stabilizing of a Hovering Flapping-Wing Air Vehicle** J. Lee, J. Kim, J. Han, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	0930 hrs AIAA-2014-1470 **Longitudinal flight control of flapping wing micro air vehicles** S. Tahmasian, C. Woolsey, H. Taha, Virginia Polytechnic Institute and State University, Blacksburg, VA	1000 hrs AIAA-2014-1471 **Analytical Formulation Of Heave-Yaw Modes For A Coaxial Rotor Micro Aerial Vehicle** P. Singh, C. Venkatesan, Indian Institute of Technology Kanpur, Kanpur, India	1030 hrs AIAA-2014-1472 **Velocity Obstacle Method for Non-cooperative Autonomous Collision Avoidance System for UAVs** Y. Jenie, E. Van Kampen, C. de Visser, Q. Chu, Delft University of Technology, Delft, The Netherlands		

Friday, 17 January 2014								
389-GNC-25	**Missile Guidance, Navigation, and Control**							**National Harbor Conf Rm 8**
Chaired by: R. CAICEDO, The Boeing Company and S. WELLS, Raytheon Missile Systems								
0800 hrs AIAA-2014-1473 **Partial Integrated Guidance and Control with Input Constraints and Impact Angle** X. Wang, J. Wang, Peking University, Beijing, China	0830 hrs AIAA-2014-1474 **Pitch/Yaw Channels Control Design for a 155mm Projectile with Rotating Canards, using a H∞ Loop-Shaping Design Procedure** F. Sève, S. Theodoulis, P. Wernert, French-German Research Institute of Saint-Louis (ISL), Saint-Louis, France; M. Zasadzinski, M. Boutayeb, University of Lorraine, Longwy, France	0900 hrs AIAA-2014-1475 **An Alternative Attitude Control Strategy for SCRAMSPACE 1 Experiment** S. Banerjee, M. Creagh, R. Boyce, University of Queensland, Brisbane, Australia	0930 hrs AIAA-2014-1476 **A Dynamic Pressure Estimation Algorithm for Cruise Missiles** G. Tusun, H. Caglar, Roketsan Missiles Industries, Inc., Ankara, Turkey	1000 hrs AIAA-2014-1477 **Guidance Augmentation for Improved Target Visibility** L. Cancemi, M. Innocenti, L. Pollini, University of Pisa, Pisa, Italy	1030 hrs AIAA-2014-1478 **Capture Conditions in a Pursuit-Evasion Game between Players with Second-Order Dynamics** Y. Liu, York University, Toronto, Canada; N. Qi, Harbin Institute of Technology, Harbin, China; J. Shan, York University, Toronto, Canada; X. Shi, Harbin Institute of Technology, Harbin, China	1100 hrs AIAA-2014-1479 **Multiple Shooting Condensing for Online Gain Scheduling in Interceptor Guidance** L. Walter, French-German Research Institute of Saint-Louis (ISL), Saint-Louis, France; F. Holzapfel, Technical University of Munich, Garching, Germany; E. Kostina, University of Marburg, Marburg, Germany; G. Schlöffel, French-German Research Institute of Saint-Louis (ISL), Saint-Louis, France	1130 hrs AIAA-2014-1480 **Real-Time Optimal Gain Scheduling for Nonlinear Dynamic Inversion** L. Walter, G. Schlöffel, S. Fleischmann, French-German Research Institute of Saint-Louis (ISL), Saint-Louis, France; F. Holzapfel, F. Peter, Technical University of Munich, Garching, Germany

Friday, 17 January 2014							
390-GT-11	**High Reynolds Number Aerodynamics and Testing (Invited)**						**Maryland Ballroom 3**
Chaired by: R. WAHLS, NASA-Langley Research Center and J. QUEST, ETW GmbH							
0800 hrs AIAA-2014-1481 **Subsonic Transonic Applied Refinements By Using Key Strategies - STARBUKS** R. Paryz, NASA Langley Research Center, Hampton, VA	0830 hrs AIAA-2014-1482 **Application of Nano-Tubes for the Detection of Boundary Layer Transition** C. Klein, U. Henne, German Aerospace Center (DLR), Göttingen, Germany	0900 hrs AIAA-2014-1483 **Real-Flight Reynolds Number Microphone-Array Measurements on a Scaled Model in ETW** T. Ahlefeldt, German Aerospace Center (DLR), Göttingen, Germany; J. Quest, European Transonic Windtunnel, Cologne, Germany	0930 hrs AIAA-2014-1484 **Assessing Model Dynamics within the Critical Alpha Range** H. Quix, J. Quest, European Transonic Windtunnel, Cologne, Germany				

Friday, 17 January 2014							
391-MDO-9	**Optimization Methods and Algorithms III**						**Chesapeake Conf Rm 6**
Chaired by: M. PATTERSON and R. GRANDHI, Wright State University							
0800 hrs AIAA-2014-1485 **A Response Surface Model Using the Sorted k-fold Approach** A. Vasu, R. Grandhi, Wright State University, Dayton, OH	0830 hrs AIAA-2014-1486 **Surrogate-assisted Self-accelerated Particle Swarm Optimization** K. Haji Hajikolaei, Simon Fraser University, Surrey, Canada; A. Safari, University of Stavanger, Stavanger, Norway; G. Wang, Simon Fraser University, Surrey, Canada; H. Lemu, University of Stavanger, Stavanger, Norway	0900 hrs AIAA-2014-1487 **A Novel Approach to Simultaneous Selection of Surrogate Models, Constitutive Kernels, and Hyper-parameter Values** A. Mehmani, S. Chowdhury, J. Zhang, Syracuse University, Syracuse, NY; A. Messac, Mississippi State University, Mississippi State, MS	0930 hrs AIAA-2014-1488 **A surrogate modeling approach to support real-time structural assessment and decision-making** L. Mainini, K. Willcox, Massachusetts Institute of Technology, Cambridge, MA	1000 hrs AIAA-2014-1489 **Thrust-Power Pareto Fronts based on Experiments for Small Flapping Wings** A. Chaudhuri, R. Haftka, P. Ifju, K. Chang, University of Florida, Gainesville, Gainesville, FL	1030 hrs AIAA-2014-1490 **Application of Multifidelity Expected Improvement Algorithms to Aeroelastic Design Optimization** P. Reisenthel, Nielsen Engineering & Research, Inc., Santa Clara, CA; T. Allen, Ohio State University, Columbus, OH		

Friday, 17 January 2014							
392-MST-7	**Modeling and Simulation of Space Systems**						**National Harbor Conf Rm 14**
Chaired by: C. IH, Boeing Defense, Space & Security							
0800 hrs AIAA-2014-1491 **Dynamic Network Modeling for Spaceflight Logistics** K. Ho, O. De Weck, J. Hoffman, Massachusetts Institute of Technology, Cambridge, MA; R. Shishko, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	0830 hrs AIAA-2014-1492 **Finding the Force—Consistent Particle Seeding for Satellite Aerodynamics** J. Parham, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA; L. Barba, Boston University, Boston, MA	0900 hrs AIAA-2014-1493 **Robotic Simulation Experiments Demonstrating Docking Proximity Operations and Contact Dynamics** A. Probe, J. Junkins, Texas A&M University, College Station, TX	0930 hrs AIAA-2014-1494 **Lean Development with the Morpheus Flight and Simulation Software** A. Brogley, L-3 Communications, Houston, TX	1000 hrs AIAA-2014-1495 **Automatic Parameter Tuning for the Morpheus Vehicle Using Particle Swarm Optimization** B. Birge, L-3 Communications, Houston, TX	1030 hrs AIAA-2014-1496 **Ground Contact Modeling for the Morpheus Test Vehicle Simulation** L. Cordova, L-3 Communications, Houston, TX		

Friday, 17 January 2014							
393-NDA-9	**NASA Multidisciplinary UQ Challenge II**						**Chesapeake Conf Rm 5**
Chaired by: L. CRESPO, National Institute of Aerospace and S. KENNY, NASA Langley Research Center							
0800 hrs AIAA-2014-1497 **Uncertainty Quantification Methods for Model Calibration, Validation, and Risk Analysis** C. Safta, K. Chowdhary, K. Sargsyan, H. Najm, B. Debusschere, Sandia National Laboratories, Livermore, CA; L. Swiler, Sandia National Laboratories, Albuquerque, NM; et al.	0830 hrs AIAA-2014-1498 **Efficient Quantification and Risk Analysis for Layered Uncertainty using Optimization: NASA UQ Challenge** A. Chaudhuri, G. Waycaster, N. Price, T. Matsumura, C. Park, R. Haftka, University of Florida, Gainesville, Gainesville, FL	0900 hrs AIAA-2014-1499 **Bayesian Framework for Multidisciplinary Uncertainty Quantification and Optimization** C. Liang, Vanderbilt University, Nashville, TN	0930 hrs AIAA-2014-1500 **A Probabilistic Treatment of Multiple Uncertainty Types: NASA UQ Challenge** J. McFarland, B. Bichon, D. Riha, Southwest Research Institute, San Antonio, TX	1000 hrs AIAA-2014-1501 **An integrated and efficient numerical framework for uncertainty quantification: application to the NASA Langley multidisciplinary Uncertainty Quantification Challenge** E. Patelli, University of Liverpool, Liverpool, United Kingdom; D. Alvarez, National University of Colombia, Manizales, Colombia; M. Broggi, M. de Angelis, University of Liverpool, Liverpool, United Kingdom	1030 hrs AIAA-2014-1502 **A Bayesian Multilevel Framework for Uncertainty Characterization and the NASA Langley Multidisciplinary UQ Challenge** J. Nagel, B. Sudret, Swiss Federal Institute of Technology, Zürich, Switzerland		

Friday, 17 January 2014							
394-PC-23	**Detonation and PDEs II**						**Chesapeake Conf Rm H**
Chaired by: W. SUN, Georgia Institute of Technology and H. HUO, General Electric							
0800 hrs AIAA-2014-1503 **Average and Instantaneous Heat Release to the Walls of an RDE** S. Theuerkauf, F. Schauer, R. Anthony, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Hoke, Innovative Scientific Solutions, Inc., Beavercreek, OH	0830 hrs AIAA-2014-1504 **Reflection Phenomena of Oblique Detonation Wave around Hypersonic Spherical Projectiles on Plane Plate** S. Sumiya, University of Tsukuba, Tsukuba, Japan; S. Maeda, University of Saitama, Saitama, Japan; J. Kasahara, University of Nagoya, Nagoya, Japan; A. Matsuo, Keio University, Yokohama, Japan	0900 hrs AIAA-2014-1505 **Numerical Investigation of Detonation Transmission Mechanism based on High-order Discontinuous Galerkin Scheme** Y. Lv, M. Ihme, Stanford University, Stanford, CA	0930 hrs AIAA-2014-1506 **Numerical Simulation of Highly Unstable Detonation Using a High Resolution Scheme** D. Cho, T. Kim, J. Choi, Pusan National University, Busan, South Korea	1000 hrs AIAA-2014-1507 **Revisiting the Zeldovich Spontaneous Propagation Concept** D. Kassoy, University of Colorado, Boulder, Boulder, CO			

Friday, 17 January 2014							
395-SCS-6	**Design, Analysis, & Test of Gossamer Systems**						**Chesapeake Conf Rm A**
Chaired by: D. LICHODZIEJEWSKI, Airborne Systems NA and J. MOORE, ManTech Nexolve Corporation							
0800 hrs AIAA-2014-1508 **Analytical Investigation of a High Precision Reflector** H. Fang, Shanghai YS Information Technology Company, Ltd., Shanghai, China; P. Huang, China Academy of Space Technology (CAST), Xi'an, China; Y. Zhou, Tongji University, Shanghai, China; L. Liu, Shanghai YS Information Technology Company, Ltd., Shanghai, China; Y. Liang, W. Jiang, China Academy of Space Technology (CAST), Xi'an, China; et al.	0830 hrs AIAA-2014-1509 **Development of the Deorbitsail flight model** O. Stohlman, V. Lappas, University of Surrey, Guildford, United Kingdom	0900 hrs AIAA-2014-1510 **MOIRE: Ground Test Bed Results for a Large Membrane Telescope** J. Domber, P. Atcheson, J. Kommers, Ball Aerospace & Technologies Corporation, Boulder, CO	0930 hrs AIAA-2014-1511 **Testing and Application of Numerically Determined Expandable and Foldable Space Structures** D. Kling, Folded Structures Company, Ringoes, NJ; J. Hinkle, R. Cook, C. Willey, ILC Dover, Frederica, DE; W. Doggett, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2014-1512 **New Conceptual Design of Near-term Realizable Space Solar Power Satellite** F. Zheng, M. Chen, Xidian University, Xi'an, China	1030 hrs AIAA-2014-1513 **Precision of Large Deployable Reflector** A. Jennings, J. Black, J. Heller, Air Force Institute of Technology, Wright-Patterson AFB, OH		

Friday, 17 January 2014							
396-SD-15	**Nonlinear Dynamics and Flapping Flight**						**Chesapeake Conf Rm C**
Chaired by: S. RIZZI, NASA-Langley Research Center and A. SCOTTI, Pilatus Aircraft Ltd							
0800 hrs AIAA-2014-1514 **Relationships between Nonlinear Normal Modes and Response to Random Inputs** J. Schoneman, M. Allen, R. Kuether, University of Wisconsin, Madison, Madison, WI	0830 hrs AIAA-2014-1515 **Analysis of the Hammering Mechanism of a Special Percussive System for Planetary Exploration** L. Vila, R. Malla, University of Connecticut, Storrs, Storrs, CT	0900 hrs AIAA-2014-1516 **Characterizing the Role of Plasticity in Structural Response to High Speed Flows** A. Gogulapati, J. LaFontaine, J. McNamara, Ohio State University, Columbus, OH	0930 hrs AIAA-2014-1517 **A Structural Dynamic Analysis of a Crane Fly Forewing** J. Rubio, P. Schilling, U. Chakravarty, University of New Orleans, New Orleans, LA	1000 hrs AIAA-2014-1518 **Substructuring with Nonlinear Reduced Order Models and Interface Reduction with Characteristic Constraint Modes** R. Kuether, M. Allen, University of Wisconsin, Madison, Madison, WI	1030 hrs AIAA-2014-1519 **A Computational Analysis for Flapping Wing by Coupling the Geometrically Exact Beam and Preconditioned Navier-Stokes Solution** H. Cho, J. Kwak, S. Shin, Seoul National University, Seoul, South Korea; N. Lee, S. Lee, Inha University, Incheon, South Korea		

Friday, 17 January 2014							
397-SD-16	**Space & Launch Vehicle Dynamics**						**Chesapeake Conf Rm B**
Chaired by: T. KINNEY, NASA-Kenndey Space Center and B. WILLIS, Boeing Defense, Space & Security							
0800 hrs AIAA-2014-1520 **In-Flight Aeroelastic Stability of the Thermal Protection System on the NASA HIAD, Part I: Linear Theory** B. Goldman, E. Dowell, Duke University, Durham, NC	0830 hrs AIAA-2014-1521 **A Structural Dynamics Analysis Methodology for Development of Earth Entry Vehicles** S. Perino, J. Bayandor, Virginia Polytechnic Institute and State University, Blacksburg, VA	0900 hrs AIAA-2014-1522 **An Investigation of Baffles and Asperities on Slosh Behavior in Propellant Tanks of Spacecraft and Launch Vehicles** A. Peddu, T. Mehta, P. Sathyanarayan, S. Gangadharan, Embry-Riddle Aeronautical University, Daytona Beach, FL	0930 hrs AIAA-2014-1523 **Prediction of Internal Cavity Vibro-Acoustic Environment for Space Vehicles** D. Inoyama, R. Agarwal, T. Stoumbos, Orbital Sciences Corporation, Dulles, VA	1000 hrs AIAA-2014-1524 **Study of piecewise linear isolator mounted on nonproportional damped structures under liftoff preload** X. Wang, T. Zheng, Tsinghua University, Beijing, China			

Friday, 17 January 2014							
398-STR-20	**Damage Mechanics/Damage Tolerance**						**Chesapeake Conf Rm F**
Chaired by: S. RUSSELL, Triumph Aerostructures and V. RANATUNGA, Miami Univeristy							
0800 hrs AIAA-2014-1525 **Damage Prediction in Composites due to Compression after Impact by Using Peridynamics** A. Borut, E. Madenci, University of Arizona, Tucson, Tucson, AZ; N. Phan, Naval Surface Warfare Center, Patuxent, MD	0830 hrs AIAA-2014-1526 **Calculation of Equivalent Initial Flaw Size Distributions for Multiple Site Damage** G. Renaud, M. Liao, Y. Bombardier, National Research Council Canada, Ottawa, Canada	0900 hrs AIAA-2014-1527 **Influence of Fiber Packing on the Deformation and Damage Development in Fiber Reinforced Laminates during Curing** P. Prabhakar, A. Waas, University of Michigan, Ann Arbor, Ann Arbor, MI	0930 hrs AIAA-2014-1528 **Rotorcraft Real Time Damage Alleviation through Load Limiting Control** C. Thaiss, C. McColl, Technical Data Analysis, Inc., Falls Church, VA; J. Horn, E. Keller, A. Ray, Pennsylvania State University, University Park, PA; R. Semidey, Naval Air Systems Command, Patuxent River, MD; et al.	1000 hrs AIAA-2014-1529 **Sequential Bayesian Approach to Probabilistic Damage Tolerance Analysis** K. Halbert, L. Fitzwater, The Boeing Company, Chicago, IL			

Friday, 17 January 2014							
399-STR-21	**Structural Joints**						**Chesapeake Conf Rm E**
Chaired by: A. SELVARATHINAM, Lockheed Martin Corporation and S. TERMAATH, University of Tennessee							
0800 hrs AIAA-2014-1530 **Internally Reinforced Adhesively Bonded Metal to Composite Joints** S. Clay, Air Force Research Laboratory, Wright-Patterson AFB, OH; V. Ranatunga, Miami University, Middletown, OH	0830 hrs AIAA-2014-1531 **Adhesively Bonded Joint Modeling using Finite Element Method for Failure Mode Prediction** T. Stoumbos, S. Setoodeh, J. Francis, D. Curtis, Orbital Sciences Corporation, Dulles, VA	0900 hrs AIAA-2014-1532 **Analytical Prediction of Failure Strength of Co-cured Composite Skin-Stiffener Joints** M. Banker, B. Varughese, National Aerospace Laboratories, Bangalore, India	0930 hrs AIAA-2014-1533 **Experimental Characterization of Full Field Creep Deformation in Adhesively Bonded Joints** S. Venkataraman, J. Casini, J. Barragan, San Diego State University, San Diego, CA	1000 hrs AIAA-2014-1534 **Delamination Arrest by Multiple Fasteners in Bonded Composite Structures** K. Lin, L. Richard, W. Liu, University of Washington, Seattle, Seattle, WA			

Friday, 17 January 2014							
400-TES-5	Advances in Combustion II						Maryland Ballroom B
Chaired by: B. SLOAN, Iowa State University and D. LILLEY							
0800 hrs AIAA-2014-1535 **Testing of a New Drag Relationship for Non-Spherical Particle Geometries Using the Two-Fluid Model** A. Chowdhury, M. Sarker, N. Love, A. Choudhuri, University of Texas, El Paso, El Paso, TX	0830 hrs AIAA-2014-1536 **Simple Empirical Thermodynamic Calculation of Volume and Temperature of Smoke from Fires** D. Lilley, Lilley & Associates, Stillwater, OK	0900 hrs AIAA-2014-1537 **Fluid Dynamics Of Combustion: A Primer** D. Lilley, Lilley & Associates, Stillwater, OK	0930 hrs AIAA-2014-1538 **Thermal Analyses of Flow Regimes In Enclosures Under Furniture Fires** E. Khalil, Cairo University, Cairo, Egypt	1000 hrs AIAA-2014-1539 **Computer Modeling of Fires: A Primer** D. Lilley, Lilley & Associates, Stillwater, OK	1030 hrs AIAA-2014-1540 **A Chemical Reactor Based on Film Boiling For Thermal Decomposition of Organic Liquids: Application to Diethyl Carbonate and Aqueous Glycerin Mixtures** W. Kuo, A. Lowery, Cornell University, Ithaca, NY; W. Tsang, National Institute of Standards and Technology, Gaithersburg, MD; C. Avedisian, Cornell University, Ithaca, NY	1100 hrs AIAA-2014-1541 **Investigation of Combustion and Altitude-Ignition Performance of a Small Hydrogen-Fueled Reversed-Flow Turbine Combustor** K. Okai, T. Himeno, T. Watanabe, University of Tokyo, Tokyo, Japan; H. Kobayashi, H. Taguchi, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	

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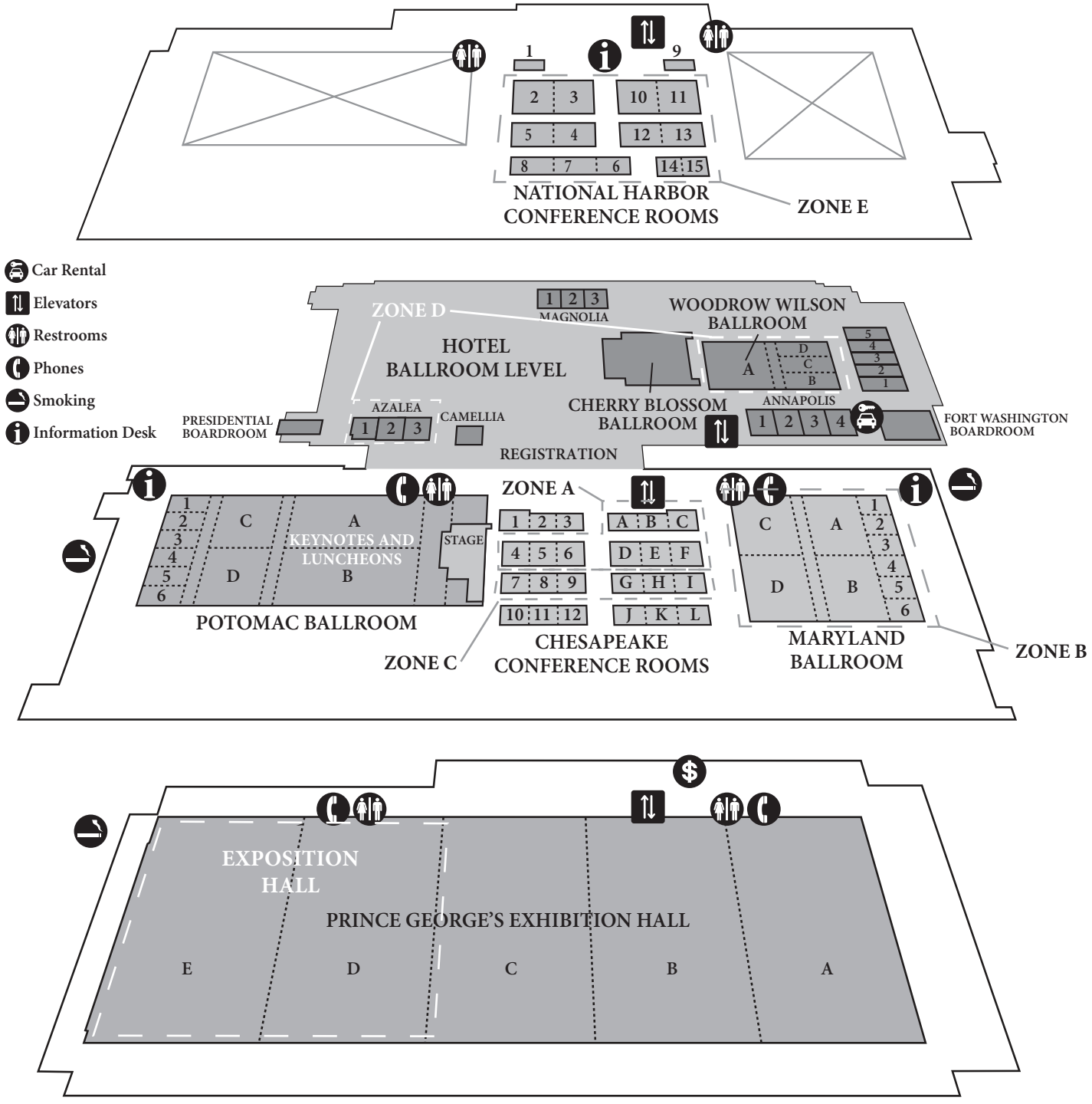

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Alumni, Clarence "Kelly" Johnson (1932 BSE, 1933 MSE, 1964 PhD - Hon), pictured in the University of Michigan wind tunnel in 1933 with early single tail Model 10 Electra; Johnson's aerodynamic testing here led to the twin tail design, later a Lockheed trademark.

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