AVIATION FORUM

5–9 JUNE 2017

DENVER, CO

Innovation Or Disruption — Which Comes First?

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Shaping the Future of Aerospace

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The American Institute of Aeronautics and Astronautics (AIAA) is the world's largest aerospace technical society. With nearly 30,000 individual members from 85 countries, and 95 corporate members, AIAA brings together industry, academia, and government to advance engineering and science in aviation, space, and defense. For more information, visit www.aiaa.org, or follow us on Twitter @AIAA.

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ITAR Sessions

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Peggy Hayes, NASA Armstrong Flight Research Center

Lighter-Than-Air Systems Technology

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Modeling and Simulation Technologies

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Multidisciplinary Design and Optimization

Scott Ferguson, North Carolina State University

Samy Missoum, University of Arizona

Plasmadynamics and Lasers

Sergey B. Leonov, University of Notre Dame

Thermophysics

Mark Ewing, Orbital ATK

Kelly Stephani, University of Illinois at Urbana-Champaign

Theoretical Fluid Mechanics

Zvi Rusak, Rensselaer Polytechnic Institute

Complex Aerospace Systems Exchange (CASE)

David Maroney, The MITRE Corporation

Danielle Soban, Queen's University Belfast

Cybersecurity Symposium

Jeffrey Carr, Principal Consultant, 20k League

DEMAND for UNMANNED®

Organized by the Unmanned Systems Program Committee

Transformational Electric Flight Workshop and Expo

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Welcome

Welcome to Denver and the 2017 AIAA Aviation and Aeronautics Forum and Exposition (AIAA AVIATION Forum)! This year's program is designed around the idea that innovation and disruption are transforming our industry. We are confident our program will address these transformations through a mix of plenary sessions, Forum 360 sessions, and special programming — by week's end we will all have a better understanding of these complex forces.

We have a great set of plenary sessions this week that examine a wide range of subjects, including the current pace of change in our industry, aviation innovation in an evolving environment, how robotics is impacting autonomous systems, and a vision for on-demand mobility that could transform society. Our Forum 360 programming will take you one step beyond the plenaries, exploring a range of subjects such as the renewed interest in supersonic transportation, the promise and potential of electric aircraft propulsion, the impact of digital technologies on the way we design and operate aviation systems, and where NASA's aeronautics programs are headed in the future.

On Monday, don't miss our Cybersecurity Symposium, which examines "When the Unfortunate Happens." You'll be able to consider the range of cyber threats that challenge our community, and then learn practical ways to go about insulating your business from those threats.

For those of you interested in the explosive growth of unmanned aerials systems (UAS), our dynamic DEMAND for UNMANNED symposium on Tuesday and Wednesday will allow you to learn more about how drones are transforming our society, driving demand for more autonomous systems, impacting the national airspace system, and catalyzing the machine intelligence revolution.

Electric flight is the next "big thing" in aviation and AIAA is at the forefront of this significant shift. Beginning on Wednesday afternoon, our Transformational Electric Flight Workshop and Expo will explore emerging trends in electric propulsion that offer the potential to fundamentally transform aircraft configurations and operational concepts.

Additionally, AIAA AVIATION Forum also offers you a dynamic technical program, with over 2,000 individual presentations on the latest advancements in aviation and aeronautics science and technology. The forum will challenge your perceptions, increase your knowledge, and show you how you and your peers are shaping the future of aerospace. Thank you for choosing to be here this week.

2017 AIAA AVIATION Forum is proud to feature:

- AIAA/CEAS Aeroacoustics Conference
- Aerodynamic Decelerator Systems Technology Conference
- Aerodynamic Measurement Technology and Ground Testing Conference
- Applied Aerodynamics Conference
- Atmospheric Flight Mechanics Conference
- Atmospheric and Space Environments Conference
- Aviation Technology, Integration, and Operations Conference
- Balloon Systems Conference
- Complex Aerospace Systems Exchange
- Computational Fluid Dynamics Conference
- Cybersecurity Symposium
- DEMAND for UNMANNED®
- Flight Testing Conference
- Fluid Dynamics Conference
- Lighter-Than-Air Systems Technology Conference
- Modeling and Simulation Technologies Conference
- Multidisciplinary Analysis and Optimization Conference
- Plasmadynamics and Lasers Conference
- Theoretical Fluid Mechanics Conference
- Thermophysics Conference
- Transformational Electric Flight Workshop and Expo

The 2018 AIAA AVIATION Forum will be held on 25–29 June 2018 in Atlanta, GA.

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Forum Schedule

Time	Event	Program Page	Location
	Saturday, 3 June		
0700–0830 hrs	**Continuing Education and Workshop Registration**		Governor's Square Foyer
0800–1700 hrs	**1st AIAA Geometry and Mesh Generation Workshop**	**11**	Governor's Square 12
0800–1700 hrs	**3rd AIAA CFD High-Lift Prediction Workshop**	**11**	Governor's Square 14
0800–1700 hrs	**Optimal Design in Multidisciplinary Systems Course**	**11**	Governor's Square 10
0800–1700 hrs	**Practical Methods for Aircraft and Rotorcraft Flight Control Design and Hands-on Training Using CONDUIT® Course**	**11**	Governor's Square 11
	Sunday, 4 June		
0700–0830 hrs	**Continuing Education and Workshop Registration**		Governor's Square Foyer
0800–1700 hrs	**1st AIAA Geometry and Mesh Generation Workshop**	**11**	Governor's Square 12
0800–1700 hrs	**3rd AIAA CFD High-Lift Prediction Workshop**	**11**	Governor's Square 14
0800–1700 hrs	**Optimal Design in Multidisciplinary Systems Course**	**11**	Governor's Square 10
0800–1700 hrs	**Practical Methods for Aircraft and Rotorcraft Flight Control Design and Hands-on Training Using CONDUIT® Course**	**11**	Governor's Square 11
1500–1900 hrs	**Forum Registration**	**151**	Plaza Foyer
1600–1800 hrs	**Meet the Employers**	**11**	Majestic Ballroom
1800–1900 hrs	**Student Welcome Reception**	**11, 142**	Windows
	Monday, 5 June		
0700–1730 hrs	**Forum Registration**	**151**	Plaza Foyer
0730–0800 hrs	**Coffee Service**	**142**	Plaza Foyer
0730–0800 hrs	**Speakers' Briefing**	**153**	Session Rooms
0800–1730 hrs	**Technical Papers Help Desk**		Plaza Foyer
0800–0900 hrs	**Plenary: Need for Speed**	**12**	Plaza Ballroom
0900–0930 hrs	**Coffee Service**	**142**	Meeting Room Foyers
0930–1130 hrs	**Forum 360: Perspectives and Progress on Green Aviation**	**13**	Grand Ballroom I
0930–1230 hrs	**Technical Sessions**	**34–45**	Session Rooms
0930–1645 hrs	**Cybersecurity Symposium**	**18**	Grand Ballroom II
1230–1400 hrs	**Lunch Break**		
1400–1600 hrs	**Forum 360: X-Planes: Discovery Through Flight**	**13**	Grand Ballroom I
1400–1730 hrs	**Technical Sessions**	**45–56**	Session Rooms
1600–1630 hrs	**Coffee Service**	**142**	Meeting Room Foyers
1600–1830 hrs	**Rising Leaders in Aerospace: Speed Mentoring and Reception**	**137**	South Convention Lobby
1630–1730 hrs	**Aerodynamics Award Lecture**	**138**	Grand Ballroom I
1730–1830 hrs	**Fluid Dynamics Award Lecture**	**138**	Grand Ballroom I
1730–1830 hrs	**Aeroacoustics Lecture**	**138**	Governor's Square 14
1830–1930 hrs	**Wright Brothers Lecture in Aeronautics**	**138**	Plaza Ballroom

Forum Schedule

Time	Event	Program Page	Location
	Tuesday, 6 June		
0600–0700 hrs	**Stay Fit at AVIATION**	**136**	Sheraton Hotel Lobby
0700–1730 hrs	**Forum Registration**	**151**	Plaza Foyer
0700–1730 hrs	**ITAR Sessions Registration**	**151**	Plaza Foyer
0730–0800 hrs	**Coffee Service**	**142**	Plaza Foyer
0730–0800 hrs	**Speakers' Briefing**	**153**	Session Rooms
0800–1730 hrs	**Technical Papers Help Desk**		Plaza Foyer
0800–0900 hrs	**Plenary: Innovation in the Age of the Third Aerospace Revolution**	**12**	Plaza Ballroom
0900–0930 hrs	**Coffee Service**	**142**	Meeting Room Foyers
0930–1130 hrs	**Forum 360: The Evolving Culture of Aviation**	**13**	Grand Ballroom I
0930–1230 hrs	**Complex Aerospace Systems Exchange**	**15**	Governor's Square 14
0930–1230 hrs	**Technical Sessions**	**57-66**	Session Rooms
0930–1700 hrs	**DEMAND for UNMANNED®**	**19**	Grand Ballroom II
1200–1330 hrs	**Rising Leaders in Aerospace: Lunch and Learn**	**137**	Grand Ballroom I
1230–1400 hrs	**Awards Luncheon—Celebrating Achievements in Aerospace Sciences**	**138**	Plaza Ballroom
1300–1630 hrs	**Exposition**	**143–149**	Plaza Exhibit/Foyer
1400–1600 hrs	**Forum 360: Supersonic Transport**	**13**	Grand Ballroom I
1400–1600 hrs	**CFD Flow Visualization Showcase**	**136**	Plaza Exhibit/Foyer
1400–1700 hrs	**Complex Aerospace Systems Exchange**	**15**	Governor's Square 14
1400–1730 hrs	**Technical Sessions**	**67–77**	Session Rooms
1600–1630 hrs	**Coffee Service**	**142**	Plaza Exhibit/Foyer
1730–1830 hrs	**Aeroacoustics Lecture**	**139**	Grand Ballroom I
1730–1830 hrs	**Plasmadynamics and Lasers Award Lecture**	**140**	Majestic Ballroom
1730–1830 hrs	**Aerodynamic Measurement Technology Award Lecture**	**140**	Director's Row E
1830–2000 hrs	**Welcome Reception**	**142**	Plaza Exhibit/Foyer

Forum Schedule

Time	Event	Program Page	Location
	Wednesday, 7 June		
0700–1730 hrs	**Forum Registration**	**151**	Plaza Foyer
0700–1730 hrs	**ITAR Sessions Registration**	**151**	Plaza Foyer
0730–0800 hrs	**Coffee Service**	**142**	Plaza Foyer
0730–0800 hrs	**Speakers' Briefing**	**153**	Session Rooms
0800–1730 hrs	**Technical Papers Help Desk**		Plaza Foyer
0800–0900 hrs	**Plenary: Beyond the Robots: Toward Situated Autonomy**	**12**	Plaza Ballroom
0845–0930 hrs	**Coffee Service**	**142**	Plaza Exhibit/Foyer
0845–1600 hrs	**Exposition**	**143–149**	Plaza Exhibit/Foyer
0930–1100 hrs	**Rising Leaders in Aerospace: Panel Session**	**137**	Grand Ballroom II
0930–1130 hrs	**Forum 360: Human–Machine Interaction**	**13**	Grand Ballroom I
0930–1230 hrs	**Complex Aerospace Systems Exchange**	**16**	Governor's Square 14
0930–1230 hrs	**Technical Sessions**	**77–88**	Session Rooms
0930 – 1730 hrs	**DEMAND for UNMANNED®**	**20**	Grand Ballroom I & II
1230 – 1400 hrs	**Awards Luncheon—Celebrating Achievements in Aircraft and Atmospheric Systems**	**140**	Plaza Ballroom
1400–1600 hrs	**Forum 360: Aircraft Electric Propulsion: Transforming Aviation**	**14**	Grand Ballroom I
1400–1600 hrs	**AIAA Standards Open Forum**	**136**	Biltmore
1400–1700 hrs	**Complex Aerospace Systems Exchange**	**16**	Governor's Square 14
1400–1730 hrs	**Transformational Electric Flight Workshop and Expo**	**21**	Grand Ballroom I & II
1400–1730 hrs	**Technical Sessions**	**89–100**	Session Rooms
1600–1630 hrs	**Coffee Service**	**142**	Meeting Room Foyers
1600–1730 hrs	**Certification Using Analysis and Simulation**	**136**	Grand Ballroom I
1730–1830 hrs	**DEMAND for UNMANNED® & Transformational Electric Flight Workshop Reception**	**20, 21**	South Convention Lobby
1730–1830 hrs	**Thermophysics Award Lecture**	**140**	Governor's Square 17
1730–1830 hrs	**Multidisciplinary Design Optimization Award Lecture**	**141**	Windows
1800–2100 hrs	**ADS and Balloons Banquet**	**141**	Plaza Ballroom A-B
1800–2100 hrs	**Aeroacoustics Banquet**	**141**	Plaza Ballroom D-E

Forum Schedule

Time	Event	Program Page	Location
	Thursday, 8 June		
0600–0700 hrs	**Stay Fit at AVIATION**	**136**	Sheraton Hotel Lobby
0700–1730 hrs	**Forum Registration**	**151**	Plaza Foyer
0700–1730 hrs	**ITAR Sessions Registration**	**151**	Savoy Room foyer
0730–0800 hrs	**Coffee Service**	**142**	Plaza Foyer
0730–0800 hrs	**Speakers' Briefing**	**153**	Session Rooms
0800–1730 hrs	**Technical Papers Help Desk**		Plaza Foyer
0800–0900 hrs	**Plenary: Innovation and Disruption Opportunities for Civil and Military Transport Acquisitions & Operations**	**12**	Plaza Ballroom
0845–0930 hrs	**Coffee Service**	**142**	Plaza Exhibit/Foyer
0845–1400 hrs	**Exposition**	**143–149**	Plaza Exhibit/Foyer
0930–1130 hrs	**Forum 360: Internet of Things (IoT) as Applied to Aircraft Systems for Industrial Drones**	**14, 17**	Grand Ballroom I
0930–1230 hrs	**ITAR Restricted Session**	**23**	Savoy
0930–1230 hrs	**Technical Sessions**	**101–111**	Session Rooms
0930–1730 hrs	**Transformational Electric Flight Workshop and Expo**	**21–22**	Grand Ballroom II
1230 – 1400 hrs	**Luncheon in the Exposition Hall**	**142**	Plaza Exhibit/Foyer
1400–1600 hrs	**Forum 360: Realization of a Digital Twin & Thread**	**14, 17**	Grand Ballroom I
1400–1730 hrs	**ITAR Restricted Session**	**23**	Savoy
1400–1730 hrs	**Technical Sessions**	**112–122**	Session Rooms
1600–1630 hrs	**Coffee Service**	**142**	Meeting Room Foyers
1600–1730 hrs	**Complex Aerospace Systems Exchange**	**17**	Governor's Square 14
1730–1830 hrs	**Chanute Flight Test Award Lecture**	**141**	Grand Ballroom I
1800–1930 hrs	**Complex Aerospace Systems Exchange Networking Social**	**17**	Tower Court D
	Friday, 9 June		
0700–1730 hrs	**Forum Registration**	**151**	Plaza Foyer
0700–1200 hrs	**ITAR Sessions Registration**	**151**	Savoy Room foyer
0730–0800 hrs	**Coffee Service**	**142**	Plaza Foyer
0730–0800 hrs	**Speakers' Briefing**	**153**	Session Rooms
0800–1730 hrs	**Technical Papers Help Desk**		Plaza Foyer
0800–0900 hrs	**Plenary: Urban On-Demand Aerial Ridesharing—The Next Commercial Aviation Market**	**12**	Plaza Ballroom
0800–1530 hrs	**Transformational Electric Flight Workshop and Expo**	**22**	Grand Ballroom II
0900–0930 hrs	**Coffee Service**	**142**	Meeting Room Foyers
0930–1130 hrs	**Forum 360: NASA Aeronautics New Aviation Horizons**	**14**	Grand Ballroom I
0930–1230 hrs	**Technical Sessions**	**123–130**	Session Rooms
0930–1230 hrs	**ITAR Restricted Session**	**23**	Savoy
1230–1400 hrs	**Lunch Break**		
1400–1730 hrs	**Technical Sessions**	**131–135**	Session Rooms
1600–1630 hrs	**Coffee Service**	**142**	Meeting Room Foyers

Pre-Forum Activities

Continuing Education

Stay at the top of your game with AIAA's continuing education offerings. You will leave with invaluable knowledge and solutions that you can put to immediate use.

Saturday, 3–Sunday, 4 June

0800–1700 hrs **Governor's Square 12**

New Workshop!

1st AIAA Geometry and Mesh Generation Workshop

(Organized by: AIAA Meshing, Visualization, and Computational Environments Technical Committee)

This two-part workshop will assess the current state of the art in geometry preprocessing and mesh generation technology and software as applied to aircraft and spacecraft systems. It will help identify and develop understanding of areas of needed improvement (performance, accuracy, applicability) in geometry processing and mesh generation technology software. And it will provide a foundation for documenting best practices for geometry preprocessing and mesh generation.

0800–1700 hrs **Governor's Square 14**

3rd AIAA CFD High-Lift Prediction Workshop

(Organized by: AIAA Applied Aerodynamics Technical Committee)

This workshop will assess the numerical prediction capability of current-generation CFD technology/codes for swept, medium-to-high-aspect ratio wings for landing/take-off (high-lift) configurations. Other objectives include developing practical modeling guidelines for CFD prediction of high-lift flow fields, advancing the understanding of high-lift flow physics to enable development of more accurate prediction methods and tools, and enhancing CFD prediction capability for practical high-lift aerodynamic design and optimization.

0800–1700 hrs **Governor's Square 10**

Optimal Design in Multidisciplinary Systems Course

(Instructors: Joaquim Martins, Jaroslaw Sobieski)

When you are designing or evaluating a complicated engineering system such as an aircraft or a launch vehicle, can you effectively reconcile the multitude of conflicting requirements, interactions, and objectives? This course discusses the underlying challenges in such an environment, and introduces you to methods and tools that have been developed over the years.

0800–1730 hrs **Governor's Square 11**

New Course!

Practical Methods for Aircraft and Rotorcraft Flight Control Design and Hands-on Training Using CONDUIT® Course

(Instructors: Mark Tischler, Tom Berger)

This course will review best practices in selection of handling-qualities and flight control specifications, simulation modeling and fidelity assessment, and flight control design and analysis methods and demonstrate how flight dynamics and control theory is brought to practice by reviewing historical aircraft and rotorcraft flight control design case studies and lessons learned.

Sunday, 4 June

1600–1800 hrs **Majestic Ballroom**

Meet the Employers

AIAA's "Meet the Employers" event at the 2017 AVIATION Forum offers students and young professional attendees the opportunity to meet AIAA corporate members. This is a fun and dynamic environment where students and professionals interact with organizations regarding employment opportunities.

The first hour will consist of briefs presented by five organizations. Participating companies/organizations will present an organizational overview and opportunities available, then have follow-on discussions with the attendees. The following hour will be roundtable meet-and-greet sessions, with organizations hosting a table and attendees switching every 10 minutes. There is no charge to participate and no RSVP is required.

1800–1930 hrs **Windows**

Student Welcome Reception

Be sure to kick off the eve of your 2017 AVIATION Forum right at the student welcome reception. This reception will provide you with some great networking and mingling opportunities, and many helpful tips and pointers to get the most from participating in the forum and with AIAA. This is an excellent way to meet fellow students who you are sure to see again throughout the week, as well as to meet seasoned AIAA leaders who will be there to welcome you.

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Plenary Sessions

Monday, 5 June

0800–0900 hrs **Plaza Ballroom**

Need for Speed

Rob Weiss, Executive Vice President and General Manager, Advanced Development Programs, Lockheed Martin Aeronautics

Tuesday, 6 June

0800–0900 hrs **Plaza Ballroom**

Innovation in the Age of the Third Aerospace Revolution

Paul Eremenko, Chief Technology Officer, Airbus

Wednesday, 7 June

0800–0900 hrs **Plaza Ballroom**

Beyond the Robots: Toward Situated Autonomy

David Mindell, Founder and CEO, Humatics Corporation, and Professor, Massachusetts Institute of Technology

Thursday, 8 June

0800–0900 hrs **Plaza Ballroom**

Innovation and Disruption Opportunities for Civil and Military Transport Acquisitions & Operations

Moderator: **Scott Fancher,** Senior Vice President, Program Management, Integration & Development Programs, The Boeing Company

Panelists:

Aaron Robinson, Senior Manager, Environmental Strategy and Sustainability, United Airlines

Naveed Hussain, Vice President, Aeromechanics Technology, The Boeing Company

Donna Senft, Chief Scientist, Air Mobility Command, U.S. Air Force

Friday, 9 June

0800–0900 hrs **Plaza Ballroom**

Urban On-Demand Aerial Ridesharing — The Next Commercial Aviation Market

Mark D. Moore, Director of Aviation, Uber Engineering

Forum 360 Sessions

FORUM 360°

Monday, 5 June

0930–1130 hrs **Grand Ballroom I**

Perspectives and Progress on Green Aviation

Moderator: **John Tylko,** Chief Innovation Officer, Aurora Flight Sciences

Panelists:

Fay Collier, Project Manager, Environmentally Responsible Aviation, NASA Langley Research Center

Mark Drela, Terry J. Kohler Professor, Department of Aeronautics and Astronautics, Massachusetts Institute of Technology

Alan H. Epstein, Vice President, Technology and Environment, Pratt & Whitney

Robert H. Liebeck, Chief Scientist, Blended-Wing-Body Airplane Program, Boeing Defense, Space, and Security

1400–1600 hrs **Grand Ballroom I**

X-Planes: Discovery Through Flight

Moderator: **Starr Ginn,** Deputy Aeronautics Research Director, NASA Armstrong Flight Research Center

Panelists:

Edward L. Burnett, Senior Fellow, Modeling, Simulation, and Controls, Lockheed Martin Corporation

Robert E. Curry, Chief Scientist, NASA Dryden Flight Research Center

Bill Gray, Chief Pilot, U.S. Air Force Test Pilot School

Nils Larson, Chief, Flight Crew Branch, NASA Armstrong Flight Research Center

Art Tomassetti, Director, F-35B U.S. Marine Corps Program Manager, Lockheed Martin Corporation

Daniel G. Murri, NASA Technical Fellow for Flight Mechanics, NASA Langley Research Center

Dana Purifoy, Director of Flight Operation, NASA Armstrong Flight Research Center

Tuesday, 6 June

0930–1130 hrs **Grand Ballroom I**

The Evolving Culture of Aviation

Moderator: **Glenn Roberts,** Chief Engineer, Center for Advanced Aviation System Development, The MITRE Corporation

Panelists:

Van Espahbodi, Co-Founder & COO, Starburst Accelerator

Jonathan Evans, Co-President, Skyward, A Verizon Company

Jesse Kallman, President, Airbus Aerial

Wes Ryan, Manager, Programs and Procedures (Advanced Technology), Small Airplane Directorate, Federal Aviation Administration

1400–1600 hrs **Grand Ballroom I**

Supersonic Transport

Moderator: **Peter Coen,** Project Manager, Commercial Supersonic Technology, NASA Langley Research Center

Panelists:

Michael Buonanno, Deputy Chief Engineer, QueSST X-Plane, Lockheed Martin Corporation

Robert A. Cowart, Director, Supersonic Technology Development, Gulfstream Aerospace Corporation

Vik Kachoria, President and CEO, Spike Aerospace, Inc.

Blake Scholl, Founder and CEO, Boom Supersonic

Gurdip Singh Ubhi, Business Development Executive, Rolls-Royce Corporation

Wednesday, 7 June

0930–1130 hrs **Grand Ballroom I**

Human–Machine Interaction

Moderator: **Dale Richards,** Senior Research Fellow, Human Factors, Coventry University

Panelists:

Danette Allen, NASA Senior Technologist for Intelligent Flight Systems, NASA Langley Research Center

Andrew Lacher, Senior Principal, Unmanned and Autonomous Research Strategist, The MITRE Corporation

David Mindell, Founder and CEO, Humatics Corporation, and Professor, Massachusetts Institute of Technology

(continued)

Forum 360 Session

Wednesday, 7 June

1400–1600 hrs **Grand Ballroom I**

Aircraft Electric Propulsion: Transforming Aviation

Moderator: **Andrew R. Gibson,** President, Business Development/Aerospace Engineer, Empirical Systems Aerospace

Panelists:

Mike Hirschberg, Executive Director, AHS International – The Vertical Flight Technical Society

Amy Jankovsky, Subproject Manager, Hybrid Gas-Electric Propulsion, NASA Glenn Research Center

Matt Knapp, Founder and Aero CTO, Zunum Aero

Joseph Oldham, Director, San Joaquin Valley Clean Transportation Center, CALSTART

Thursday, 8 June

0930–1130 hrs **Grand Ballroom I**

Internet of Things (IoT) as Applied to Aircraft Systems for Industrial Drones

Moderator: **David Loda,** Executive Director, NCPS Research LLC

Panelists:

Wu Hui, General Manager, (HRG) HIT Special Robot Group Co. Ltd., China

Zhennan Cao, President, STARC Solutions Ltd., China

Barry Alexander, Captain, Boeing 747-800, Atlas Air Cargo

Academic Scholar: Sam Kogan, Founder/CEO, Gen5 Group, LLC

1400–1600 hrs **Grand Ballroom I**

Realization of a Digital Twin & Thread

Moderators:

Melanie Lorang, Associate Technical Fellow, The Boeing Company

Mat French, Systems Engineer & Architect, Senior Specialist, Rolls-Royce North American Technologies, Inc.

Panelists:

Edward M. Kraft, Associate Executive Director, Research, University of Tennessee Space Institute

Dave Kasik, Retired Senior Technical Fellow, The Boeing Company

Steve Wellborn, Senior Technical Fellow, Rolls-Royce

Don A. Kinard, Senior Fellow (Manufacturing), Lockheed Martin Aeronautics

Academic Scholar: COL Tim West, Senior Materiel Leader, Test Operations Division, Arnold Engineering Development Complex

Friday, 9 June

0930–1130 hrs **Grand Ballroom I**

NASA Aeronautics New Aviation Horizons

Moderator: **Rich Wahls,** Strategic Technical Advisor, Advanced Air Vehicles Program, Aeronautics Research Mission Directorate, NASA Langley Research Center

Panelists:

Brent Cobleigh, Project Manager, Flight Demonstrations and Capabilities Project, Integrated Aviation Systems Program, NASA Armstrong Flights Research Center

Peter Coen, Project Manager, Commercial Supersonic Technology, NASA Langley Research Center

Fay Collier, Project Manager, Environmentally Responsible Aviation, NASA Langley Research Center

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

Ed Waggoner, Director, Integrated Aviation Systems Program, NASA

Complex Aerospace Systems Exchange

CASE
Complex Aerospace Systems Exchange

As the name implies, CASE is an exchange of ideas among professionals on some of the most pertinent issues of the day facing the aerospace industry and the field of systems engineering.

Tuesday, 6 June

0930–1230 hrs **Governor's Square 14**

Model-Based Systems Engineering

Model-based systems engineering (MBSE) has become one of the hottest topics in the engineering of complex aerospace systems. Why? Models have been a staple of engineering for centuries. Now we have wrappers, modelling languages, and block diagrams such as UML, SysML, and Modelica that attempt to pull the models together from diverse disciplines. Opinions vary widely about the current state of MBSE and what the future holds. This session will be an open discussion on these issues informed by a panel of experts from academia, industry, and government.

Chair: **Paul Collopy,** Professor/Department Chair, Industrial & Systems Engineering and Engineering Management, University of Alabama in Huntsville

Panelists:

Dale Thomas, Professor/Eminent Scholar, Industrial & Systems Engineering and Engineering Management, University of Alabama in Huntsville

Troy Peterson, Vice President, System Strategy, Inc.

William Othon, Associate Chief, Aeroscience and Flight Mechanics Division, NASA Johnson Space Center

Academic Scholar: Bryan Mesmer, Assistant Professor, Industrial & systems Engineering and Engineering Management, University of Alabama in Huntsville

1400–1700 hrs **Governor's Square 14**

Incremental/Agile Methods—Fit for Demands of Complex Aerospace Systems?

This CASE session emphasizes exchange between attendees and panelist/organizers concerning challenging questions about emerging "incremental and agile" methods for engineering systems. Are the experiences of the agile software community the only guide?

Session issues include:

- Are the methods compatible or incompatible with aerospace?
- What relation do the methods have to systems complexity?
- Are the methods needed by aerospace? What problems are we solving? Has something changed?
- Are the methods already practiced by aerospace? Old hat or new?
- What is the method? Examples? Successes, Problems?
- When is the method a good fit? When is it not a good fit?
- How are these methods different from agile software approaches, if at all?
- Other related questions that need increased exposure?

Members of the Provocateur's Panel include thought leaders, practitioners, and researchers in the general agile systems engineering space, both inside and outside the aerospace domain. Attendees are expected to bring their questions, concerns, and observations, and actively participate in this session.

Chair: **Sophia Bright,** IT Director, Strategy Design & Execution, The Boeing Company

Panelists:

Rick Dove, CEO, Paradigm Shift, International

Avinash Pinto, Principal Systems Engineer, The MITRE Corporation/ FAA Center for Advanced Aviation System Development

Jimmie McEver, Senior Scientist, Asymmetric Operations Sector, Johns Hopkins University Applied Physics Laboratory

Ray Carnes, Chief Architect, The Boeing Company

Academic Scholar: William D. "Bill" Schindel, President, ICTT System Sciences

Complex Aerospace Systems Exchange

Wednesday, 7 June

0930–1230 hrs **Governor's Square 14**

Adaptive Verification and Validation (V&V)

Several technical trends have driven the need to develop new approaches to verification and validation. These include the rapid pace of changing technology, which has made the traditional stage-gated acquisition model untenable; a proliferation of nontraditional procurement methods (capabilities acquired as services, for example) that frustrate traditional developmental and operational test processes; rapidly evolving external threats to the system; and finally, the very nature of dispersed digitally rich systems. These trends all combine to make system requirements change dynamically even after deployment, and require life-cycle attention to verification and validation as well as continuous monitoring of system performance throughout the operational life of the system. In this panel session we will hear from practitioners who are engaged in a variety of initiatives intended to address these challenges and develop new approaches to verification and validation over the life cycle.

Chair: **Laura McGill,** Vice President, Engineering, Raytheon Missile Systems

Panelists:

Villy Angelico, Lead for Cost Effective V&V, The Boeing Company

Maj. Gen. Matthew Malloy, Commander, Air Force Operational Test and Evaluation Center

Derrick Hinton, Acting Director, Test Resource Management Center (TRMC), Department of Defense

James Eiele, Lead for Verification, Validation & Accreditation, Department of Navy

Academic Scholar: Wilson Felder, Distinguished Service Professor, Stevens Institute of Technology

1400–1700 hrs **Governor's Square 14**

Complex Adaptive Systems Approaches to Cybersecurity

Increasingly, transactions and interchanges of all types are conducted in or facilitated by computing and digital networking ecosystems. The ability of malicious actors to corrupt and misuse these environments and exchanges can (and does) cause great harm at the individual/organization level. Further, as digital presences are becoming central to participation in 21st-century economic and social enterprises and endeavors, malicious cyber activity has the potential to disrupt processes and economies at the societal level. Current cybersecurity activities, based on closing vulnerabilities and stopping individual attacks, are reactive and appear inherently inadequate to address these challenges. Cybersecurity is not just a technology problem – rather it is a large-scale complex sociotechnical challenge in which success depends on understanding and leveraging the interdependencies and multiple levels and domains that problem touches. This panel will explore ways in which cybersecurity is a complex systems problem and will discuss how complex adaptive systems thinking and complexity-aware approaches can help.

Chair: **Jimmie McEver,** Senior Scientist, Asymmetric Operations Sector, Johns Hopkins University Applied Physics Laboratory

Panelists:

Tim Evans, Founder, Adlumin

Russ Syphert, Chief Information Security Officer/Vice President, Technology and Analytics, Cyber Business Analytics

Academic Scholar: Zina Ben Miled, Associate Professor, Electrical and Computer Engineering, Purdue University

Complex Aerospace Systems Exchange

Thursday, 8 June

0930–1130 hrs **Grand Ballroom I**

Internet of Things (IoT) as Applied to Aircraft Systems for Industrial Drones

The Internet of Things has been rapidly changing the way products communicate amongst themselves and the factory in a number of industries. Using two-way autonomous machine data communications, it is now possible to connect aircraft subsystems via digital threads to regularly update digital twin models based on real-world operations both onboard and at the factory. This session will explore how aerospace manufacturers have been addressing the need for real-time data communications with their deployed products in the field as a means to rapidly update designs, AOG (Aircraft on Ground) avoidance, improved product reliability, spare parts forecasting and other MRO-related functions, and how lessons learned can be leveraged in the application of IoT to the emerging unmanned flight industry for commercial industrial and environmental markets.

- What are the implications of IoT autonomous drones in the markets of environmental monitoring and agricultural, particularly in oil and gas pipelines/facilities and large farming operations?
- How can lessons learned in commercial aircraft manufacturing be applied to the emerging drone market for industrial monitoring uses?
- What other complexities or emergent behaviors do we anticipate and what impact will industrial drones have on our society?

Moderator: **David Loda,** Executive Director, NCPS Research LLC

Panelists:

Wu Hui, General Manager, (HRG) HIT Special Robot Group Co. Ltd., China

Zhennan Cao, President, STARC Solutions Ltd., China

Barry Alexander, Captain, Boeing 747-800, Atlas Air Cargo

Academic Scholar: Sam Kogan, Founder/CEO, Gen5 Group, LLC

1400–1600 hrs **Grand Ballroom I**

Realization of a Digital Twin & Thread

Explore multiple perspectives toward a digital twin of each fielded product. We will explore a growing need for a unifying language enabling the digital capture of complex system behavior and its interactions with the environment from the physical system that span all phases of its life-cycle and multi-organizational elements.

This is a continuation of the AIAA CASE forum that places greater emphasis on the effective transfer of information through a dynamic exchange of ideas and practical applications through complexity science for complex systems.

Moderators:

Melanie Lorang, Associate Technical Fellow, The Boeing Company

Mat French, Systems Engineer & Architect, Senior Specialist, Rolls-Royce North American Technologies, Inc.

Panelists:

Edward M. Kraft, Associate Executive Director, Research, University of Tennessee Space Institute

Dave Kasik, Retired Senior Technical Fellow, The Boeing Company

Steve Wellborn, Senior Technical Fellow, Rolls-Royce

Don A. Kinard, Senior Fellow (Manufacturing), Lockheed Martin Aeronautics

Academic Scholar: COL Tim West, Senior Materiel Leader, Test Operations Division, Arnold Engineering Development Complex

1600–1730 hrs **Governor's Square 14**

Complexity in Aviation Roundtable

This fast-paced session is open to all AVIATION/CASE 2017 attendees. The purpose of this facilitated session is to provide a high-level overview in rapid-fire format of what the best minds in system complexity are thinking about and/or working on. The session is a discussion-based roundtable format with 10-minute time slots for CASE Scholars and any others who wish to explain new ideas, philosophies, breakthroughs, studies to an interactive audience on the topic of complexity in aviation. The time slots are assigned just before the roundtable begins. After a brief overview, the presenter will ask for discussion points or questions from the audience. Once time is called, the next presenter will take the stage, and so on. This is a great capstone activity to CASE 2017.

Chair: **Javier Calvo-Amodio,** Assistant Professor, Industrial and Manufacturing Engineering, Oregon State University

1800–1930 hrs **Tower Court D**

CASE Networking Social

Cybersecurity Symposium

Monday, 5 June

0930 – 1645 hrs **Grand Ballroom II**

For program updates, visit **www.aviation.aiaa.org/cyber**

No matter how many challenges your aviation company is facing, the silver lining is that you don't work for Baudelaire Aerospace. However, you may still have a few things in common. For example:

- Do you rely on third-party vendors to provide key services like accounting, customer support, software development, or manufacturing?
- Do you have research contracts with foreign universities?
- Do you have overseas offices and a corporate intranet that connects with foreign telecommunications providers?

If you answered yes to any of these questions, here's another one for you:

Is learning how to defend your valuable intellectual property from cyberattacks worth a day out of your schedule?

Join us to hear about Baudelaire Aerospace, a medium-sized, diversified corporation operating in multiple business segments around the world, and the series of unfortunate events that devastated this once promising enterprise.

You will learn from experts on some of the most common cyber threats:

- Malicious insiders
- Compromised vendors
- Doing business outside of the United States
- Exploited electronic devices, and more

Through facilitated discussions, you will use the example of Baudelaire Aerospace to discuss real-world examples of cyber challenges, learn how to safeguard your assets, and walk away with best practices that can be implemented back at the office.

Symposium Organizer: **Jeffrey Carr,** Principal Consultant, 20K League

Expert Facilitators:

Melissa Irace, Managing Director for Professional Services & Research, CBA

Russ Syphert, Vice President for Technology and CISCO, CBA

David Shaw, Founder & CEO, CBA

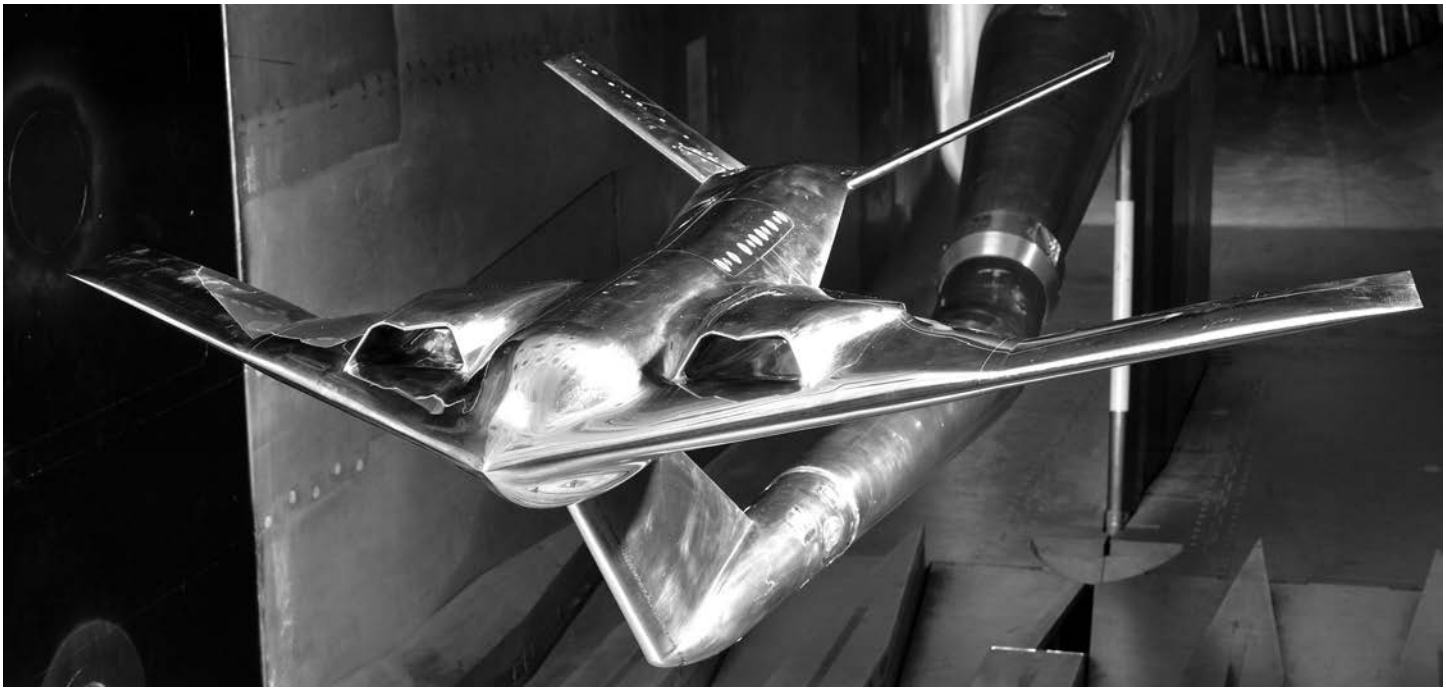
Stephen Cobb, Sr., Security Researcher, ESET

Cameron Camp, Security Researcher, ESET

Cynthia James, General Manager, KGSS

Schedule

0930–1030 hrs	**Intro/Orientation**
1030–1330 hrs	**Breakouts and working lunch (boxed lunch)**
1330–1345 hrs	**Break**
1345–1500 hrs	**Report outs in plenary**
1515–1645 hrs	**GBA TTX**



DEMAND for UNMANNED®

Within months of the FAA requiring drone registrations for sUAS, the number of drone registrations quickly exceeded those of piloted aircraft. When AIAA coined the term "demand for unmanned," we had an intimation of the many communities that desired to use sUAS for recreational, business, and national defense and security reasons, but we didn't have a clear understanding of how much pent-up demand existed. Now in its second year, the DEMAND for UNMANNED® UAS symposium brings the UAS and aviation system stakeholders together to discuss and collaborate on research challenges and advancement strategies. Engineers, researchers, developers, pilots, and regulators from academia, government, and industry will explore how unmanned systems are catalysts for autonomy, robotics, and machine intelligence, and how they are transforming the nature of civil and military aviation.

For program updates, visit **www.aviation.aiaa.org/DEMANDforUNMANNED**

DEMAND for UNMANNED Host: **I. J. Hudson,** Former Technology Reporter, NBC4 Washington (WRC-TV)

Tuesday, 6 June

0930–1130 hrs **Grand Ballroom I**

The Evolving Culture of Aviation

We've seen a dramatic increase in "new entrants" to global airspace systems. The demand for unmanned and the need to accommodate UAS has grown as commercial and recreational opportunities are enabled by rapidly evolving technology. Similarly, commercial space operations are growing, and researchers are envisioning even more disruptive technologies, such as personal air transportation solutions. Regulators and operators must perform a delicate balancing act: accommodating dramatic changes in the users and types of uses of airspace, while maintaining the safety and security of the system. Key stakeholders on both sides will discuss how new users are adapting their solutions to meet safety and certification criteria, and how our current systems and processes can be modified to accommodate these rapid changes more easily while also maintaining safety and efficiency

Moderator: **Glenn Roberts,** Chief Engineer, Center for Advanced Aviation System Development, The MITRE Corporation

Speakers:

Jonathan Evans, Co-President, Skyward, A Verizon Company

Jesse Kallman, President, Airbus Aerial

Van Espahbodi, Co-Founder and COO, Starburst Accelerator

Wes Ryan, Manager, Programs and Procedures (Advanced Technology), Small Airplane Directorate, Federal Aviation Administration

1415–1545 hrs **Grand Ballroom II**

The Verification and Validation of Intelligent Machines

Robotics are used extensively in many industrial sectors. While many of today's robots still perform only a single function, or at best several functions, the move is to increase capability where the machine or robot, using AI software, is continuously teaching itself to improve its function or even perform new functions. This panel will explore how aerospace needs to evolve its thinking and approach to the verification and validation of such machines, or robots, and what this might mean to the smart, autonomous, UAVs of the future.

Moderator: **Mike Francis,** Chief, Advanced Programs and Senior Fellow, Autonomous and Intelligent Systems, United Technologies Research Center

Speakers:

Noah Flood, Aviation & Autonomy Consultant, Delta Air Lines, Inc.

Fritz Langford, Chief Engineer, Autonomous Aerial Cargo/Utility System, Aurora Flight Sciences

Paul Nielsen, Director and CEO, Software Engineering Institute

Scott Strimple, Director of Training and Education, The Drone Flight School

Alessandro Pinto, Project Leader, Embedded Intelligence at United Technologies Research Center

1600–1700 hrs **Grand Ballroom II**

Unique Applications Session Lightning Talks

Hear from individuals and entrepreneurs about exciting concepts, ideas, and products including long-duration/high-altitude vehicle technologies, airplane maps to aid commercial pilots, UAS traffic management systems with potential for beyond-visual-line-of-sight operations, flight safety technologies including airplane maps to aid commercial pilots, safety risk management, and utilizing industry best practices and standards to make each mission count.

Speakers:

Chris Kucera, Director of Air Operations, Analytical Graphics Inc.

Rob Parenti, Senior Technical Marketing Engineer, Alta Devices

Matt Fanelli, In-house Counsel, Skyward IO

Aaron Greenwald, President, Unmanned Safety Institute

DEMAND for UNMANNED®

Wednesday, 7 June

0800–0900 hrs **Plaza Ballroom**

Beyond the Robots: Toward Situated Autonomy

Speaker: David Mindell, Founder and CEO, Humatics Corporation, and Professor, Massachusetts Institute of Technology

0930–1130 hrs **Grand Ballroom I**

Human–Machine Interaction

Moderator: **Dale Richards,** Senior Research Fellow, Human Factors, Coventry University

Panelists:

Danette Allen, NASA Senior Technologist for Intelligent Flight Systems, NASA Langley Research Center

Andrew Lacher, Senior Principal, Unmanned and Autonomous Research Strategist, The MITRE Corporation

David Mindell, Founder and CEO, Humatics Corporation, and Professor, Massachusetts Institute of Technology

1400–1530 hrs **Grand Ballroom II**

Solutions to UAS Air Traffic Management (UTM) Challenges

The NASA Unmanned Aircraft System Traffic Management (UTM) will one day enable and unmanned aircraft system operations in civilian low-altitude airspace. While Part 107 has fueled a rapid growth in UAS operations in uncontrolled airspace under 400 ft., these are still by and large UAS operations in uncongested areas. There is a need for establishing infrastructure that will enable and safely manage the widespread use of low-altitude, congested airspace UAS operations, regardless of the type of UAS. Plan to attend this newsmaker event and hear about real-time results of NASA's flight demonstration of this highly automated UAS air traffic management system. Participants include the D4U Host, IJ Hudson, John Cavolowsky, the NASA Airspace Operations and Systems Program Director, and participants from the NASA UTM team live via webcast from NASA Ames Research Center.

1600–1730 hrs **Tower Court A**

UAS Airship Carrier Concepts: CONOPS for Long-Duration Airborne UAS Operations

Michael O'Neal, Director of Modeling and Simulation, U.S. Marine Corps Systems Command

Oleg Yakimenko, Director of the Autonomous Systems Engineering and Integration Laboratory at the Systems Engineering Department, Naval Postgraduate School

Paul Adams, Airship Pilot, TP-Aerospace Inc.

1730–1830 hrs **South Convention Lobby**

DEMAND for UNMANNED & Transformational Electric Flight Workshop Reception

Transformational Electric Flight Workshop and Expo

The 2017 Transformational Electric Flight Workshop will be held in conjunction with the 4th AHS/AIAA/SAE/NASA Transformative Vertical Flight Workshop (June 7–9). This workshop will provide an opportunity for the AIAA community to gather and learn about many of the exciting developments in the aeronautics field occurring because of electric propulsion. From small unmanned aircraft to personal transportation to high-altitude long-endurance unmanned aircraft to commercial transports, electric propulsion technologies are opening up new missions and beginning to revolutionize traditional missions. Engage with many of the pioneers in the field, make new connections, hear the latest from regulators and researchers, and learn how electric propulsion may impact your job and your everyday life.

For program updates, visit **www.aviation.aiaa.org/ElectricFlight**

*This workshop and expo require a separate registration fee. It is included in the registration fees as indicated.

Wednesday, 7 June

1400–1600 hrs **Grand Ballroom I**

Aircraft Electric Propulsion: Transforming Aviation

Panelists will discuss how aircraft electric propulsion is enabling change in aviation as we know it.

Moderator: **Andrew R. Gibson,** President, Business Development/Aerospace Engineer, Empirical Systems Aerospace

Panelists:

Mike Hirschberg, Executive Director, AHS International—The Vertical Flight Technical Society

Amy Jankovsky, Subproject Manager, Hybrid Gas-Electric Propulsion, NASA Glenn Research Center

Matt Knapp, Founder and Aero CTO, Zunum Aero

Joseph Oldham, Director, San Joaquin Valley Clean Transportation Center, CALSTART

1630–1700 hrs **Grand Ballroom II**

Transformational Electric Flight Workshop and Expo Overview

1700–1730 hrs **Grand Ballroom II**

Transformative Electric Flight Workshop Introduction & Updates

Speaker: **Michael Dudley,** Director, NASA Aeronautics Research Institute

1730–1830 hrs **South Convention Lobby**

Transformational Electric Flight Workshop & DEMAND for UNMANNED Reception

Thursday, 8 June

0800–0900 hrs **Plaza Ballroom**

Innovation and Disruption Opportunities for Civil and Military Transport Acquisitions & Operations

Panelists will provide their perspectives on how innovation and disruption are changing their operations, as well as strategies for future operations and acquisitions. Sustainability of aviation as a viable and affordable mode of transportation requires disruptive technologies that provide positive benefits, such as reduced fuel consumption, reduced emissions, and cost-competitive supersonic capability. Civil transport operators are looking for more efficient aircraft that meet regulatory standards at lower operating costs. They also may be looking for more efficiency from the entire air transportation system, innovations in avionics that enhance safety or crew-airplane interactions, or improvements to the cabin systems that enhance the passenger experience. Both military and civilian operators are examining the benefits of these new technologies.

Moderator: **Scott Fancher,** Senior Vice President, Program Management, Integration & Development Programs, The Boeing Company

Panelists:

Naveed Hussain, Vice President, Aeromechanics Technology, The Boeing Company

Aaron Robinson, Senior Manager, Environmental Strategy and Sustainability, United Airlines

Donna Senft, Chief Scientist, Air Mobility Command, U.S. Air Force

0930–1200 hrs **Grand Ballroom II**

Electric Aircraft Prototyping

Speakers:

Tine Tomažič, Director of R&D, Pipistrel

Geoffrey Bower, Chief Engineer, A^3 by Airbus Group

Sean Clarke, Principal Investigator for NASA's X-57 Maxwell experimental aircraft and Advanced Systems Development Engineer, NASA Armstrong Flight Research Center

Francesco Giannini, Aircraft Designer, Advanced Concepts, Aurora Flight Sciences

David Josephson, Engineer/CEO, Josephson Engineering, Inc.

1200–1330 hrs **Grand Ballroom II**

Urban VTOL Panel Discussion Luncheon

Moderator: **Brian J. German,** Associate Professor, Daniel Guggenheim School of Aerospace Engineering, Georgia Institute of Technology

Speakers:

JoeBen Bevirt, Founder, Joby Aviation

Geoffrey Bower, Chief Engineer, A^3 by Airbus Group

Gregory J. Bowles, Vice President, Global Innovation & Policy, General Aviation Manufacturers Association

Mark D. Moore, Director of Aviation, Uber Engineering

Tine Tomažič, Director of R&D, Pipistrel

David Josephson, Engineer/CEO, Josephson Engineering, Inc.

1400 – 1600 hrs **Grand Ballroom II**

Transformative Vertical Flight Workshop Breakout Sessions

1630 – 1730 hrs **South Convention Lobby**

Transformative Vertical Flight Workshop Reception

Friday, 9 June

0800–0900 hrs **Plaza Ballroom**

Urban On-Demand Aerial Ridesharing — The Next Commercial Aviation Market

Speaker: Mark D. Moore, Director of Aviation, Uber Engineering

Energy Storage Technologies

0930–1200 hrs **Grand Ballroom II**

Speakers:

Nick Borer, Advanced Air Vehicle Configurator Technical Lead, Aeronautics Systems Analysis Branch, NASA Langley Research Center

Randy Dunn, Vice President, Engineering and Co-founder, Electric Power Systems

Jun Liu, Director of the Energy Processes and Materials Division, Energy and Environment Directorate, Pacific Northwest National Laboratory

1200–1300 hrs **Grand Ballroom II**

Transformative Vertical Flight Workshop Luncheon

Speaker: **Paul Brooks,** Managing Director, Prismatic Ltd.

1300–1530 hrs **Grand Ballroom II**

Certification Panel Discussion

Panelists will discuss changes to the FAA's Part 23 regulations as well as consensus standards development efforts and what they mean for electric flight.

Speakers:

Gregory J. Bowles, Vice President, Global Innovation & Policy, General Aviation Manufacturers Association

Tom Gunnarson, Lead of Regulatory Affairs, Zee.Aero

Matt Knapp, Founder and Aero CTO, Zunum Aero

Wes Ryan, Manager, Programs and Procedures (Advanced Technology), Small Airplane Directorate, Federal Aviation Administration

ITAR Restricted Sessions

AIAA offers individuals the opportunity to present information that is covered by the U.S. International Traffic in Arms Regulations (ITAR), in U.S. Only sessions during the forum. These sessions provide an opportunity for discussion of topics and presentations that is not possible in an open session.

Featured ITAR Technical Sessions are Located in Savoy, at the Sheraton Denver Downtown

Thursday, 8 June		
ITAR-01	**Unmanned Aircraft Design**	**0930–1230 hrs**
ITAR-02	**Aerodynamic Database Modeling and Topics in CFD**	**1400–1730 hrs**
Friday, 9 June		
ITAR-03	**Flow Control, Flight Testing and Other Topics**	**0930–1230 hrs**

ITAR Session Specifics

Access to ITAR Sessions

All attendees, presenters, and session chairs participating in ITAR sessions will need to register for the forum (using one of the options that includes access to sessions), and then complete the ITAR registration process, including validating U.S. citizenship as well as government or contractor status. The following are the documents required to register for the ITAR sessions:

Proof of U.S. Citizenship (Required by all)

One of the following is required for those registering for ITAR sessions

- Valid U.S. passport
- Birth certificate
- Certificate of citizenship

CAC cards are not proof of U.S. citizenship

And one of the following:

U.S. Government Attendees*

- AIAA AVIATION forum badge
- Proof of U.S. citizenship
- CAC card or other proof of government employment

Non-U.S. Government Attendees

- AIAA AVIATION forum badge
- Proof of U.S. citizenship
- Corporate badge, or business card and photo ID
- Copy of approved and active DD2345 contractor certificate** ^^

Availability of Manuscripts from ITAR Sessions

For those who are registered to attend the ITAR sessions, a DVD containing the papers from the ITAR sessions will be available for purchase onsite during the forum for $25. Those purchasing the DVD must be available to pick it up on Friday, 9 June 2017, between 1100–1300 hrs at the ITAR Registration Desk. All DVDs must be picked up in person. There will be no sale or distribution of these papers after the event. Note this forum has a "no paper, no podium" and "no podium, no paper" policy and it is therefore not possible to get all papers until after the last presentation has occurred.

Session Admittance

ITAR badges must be worn during the sessions.

Photo IDs and ITAR badges will be checked upon entrance to the ITAR session room(s).

**Please note that if your paycheck comes from someone other than the U.S. government, for example a university, you will need to follow the process of the Non-U.S. Government Attendees.*

*** If you are not familiar with the DD2345, please check with your corporate security officer.*

^^DD2345 certificates are office location specific.

~CAC cards are not proof of U.S. citizenship.

Technical Sessions at a Glance

Abbreviation	Title	Date	Start Time	Location
	Aeroacoustics			
7-AA-1	**Acoustic/Fluid Dynamic Interactions I: Propagation and Feedback**	**5-Jun**	**0930 hrs**	Plaza Court 7
8-AA-2	**Active Noise Control**	**5-Jun**	**0930 hrs**	Plaza Court 6
9-AA-3	**Airframe/High-Lift Noise I: Nose Landing Gear**	**5-Jun**	**0930 hrs**	Plaza Court 4
10-AA-4	**Airframe/High-Lift Noise II: Main Landing Gear**	**5-Jun**	**0930 hrs**	Plaza Court 5
11-AA-5	**CAA I: Landing Gear/Jet**	**5-Jun**	**0930 hrs**	Plaza Court 8
12-AA-6	**Duct Acoustics I: Liners**	**5-Jun**	**0930 hrs**	Governor's Square 10
13-AA-7	**Jet Noise I: Supersonic**	**5-Jun**	**0930 hrs**	Governor's Square 12
14-AA-8	**Turbomachinery Noise I: Tonal Noise**	**5-Jun**	**0930 hrs**	Governor's Square 11
46-AA-9	**Airframe/High-Lift Noise III: Trailing Edge Noise - General**	**5-Jun**	**1400 hrs**	Plaza Court 4
47-AA-10	**CAA II: Methods**	**5-Jun**	**1400 hrs**	Plaza Court 8
48-AA-11	**Duct Acoustics II: Impedance Eduction**	**5-Jun**	**1400 hrs**	Governor's Square 10
49-AA-12	**General Acoustics**	**5-Jun**	**1400 hrs**	Plaza Court 7
50-AA-13	**Integration Effects and Flight Acoustics**	**5-Jun**	**1400 hrs**	Governor's Square 17
51-AA-14	**Interior Noise/Structural Acoustics**	**5-Jun**	**1400 hrs**	Plaza Court 5
52-AA-15	**Jet Noise II: CFD Supersonic**	**5-Jun**	**1400 hrs**	Governor's Square 12
53-AA-16	**Turbomachinery Noise II**	**5-Jun**	**1400 hrs**	Governor's Square 11
87-LECT-2	**Aeroacoustics Lecture**	**5-Jun**	**1730 hrs**	Governor's Square 14
94-AA-17	**Acoustic/Fluid Dynamic Interactions II**	**6-Jun**	**0930 hrs**	Plaza Court 7
95-AA-18	**Airframe/High-Lift Noise IV: High Lift Systems**	**6-Jun**	**0930 hrs**	Plaza Court 4
96-AA-19	**CAA III: Airfoils**	**6-Jun**	**0930 hrs**	Plaza Court 8
97-AA-20	**Duct Acoustics III: Liners**	**6-Jun**	**0930 hrs**	Governor's Square 10
98-AA-21	**Jet Noise III: Wavepackets I**	**6-Jun**	**0930 hrs**	Governor's Square 12
99-AA-22	**Turbomachinery Noise III**	**6-Jun**	**0930 hrs**	Governor's Square 11
135-AA-23	**Acoustic/Fluid Dynamic Interactions III: Leading Edge Serrations**	**6-Jun**	**1400 hrs**	Governor's Square 10
136-AA-24	**Airframe/High-Lift Noise V: Trailing Edge Noise Reduction**	**6-Jun**	**1400 hrs**	Plaza Court 4
137-AA-25	**CAA IV: Boundary Conditions**	**6-Jun**	**1400 hrs**	Plaza Court 8
138-AA-26	**CAA V: Integral Methods**	**6-Jun**	**1400 hrs**	Plaza Court 7
139-AA-27	**Jet Noise IV: Experiments Supersonic I**	**6-Jun**	**1400 hrs**	Governor's Square 12
140-AA-28	**Jet Noise V: Surfaces/Integration**	**6-Jun**	**1400 hrs**	Governor's Square 11
141-AA-29	**Propeller, Rotorcraft and V/STOL Noise I**	**6-Jun**	**1400 hrs**	Plaza Court 5
175-LECT-5	**Aeroacoustics Lecture**	**6-Jun**	**1730 hrs**	Grand Ballroom I
183-AA-30	**Acoustic/Fluid Dynamic Interactions IV: Wall Bounded Flows with/ without Acoustic Treatment**	**7-Jun**	**0930 hrs**	Plaza Court 7
184-AA-31	**Airframe/High-Lift Noise VI: Flap Related Noise**	**7-Jun**	**0930 hrs**	Plaza Court 4
185-AA-32	**CAA VI**	**7-Jun**	**0930 hrs**	Plaza Court 8
186-AA-33	**Duct Acoustics IV**	**7-Jun**	**0930 hrs**	Governor's Square 10
187-AA-34	**Jet Noise VI: Statistics**	**7-Jun**	**0930 hrs**	Governor's Square 12
188-AA-35/ATIO.TFPC-5	**Small Propeller-Rotor Noise I**	**7-Jun**	**0930 hrs**	Plaza Court 5
189-AA-36	**Turbomachinery Noise IV: Broadband Noise**	**7-Jun**	**0930 hrs**	Governor's Square 11
190-AA-55	**Array Methods Panel**	**7-Jun**	**0930 hrs**	Capitol
224-AA-37	**Advanced Testing Techniques I**	**7-Jun**	**1400 hrs**	Plaza Court 7
225-AA-38	**CAA VII**	**7-Jun**	**1400 hrs**	Plaza Court 8

Technical Sessions at a Glance

Abbreviation	Title	Date	Start Time	Location
	Aeroacoustics			
226-AA-39	**Jet Noise VII: CFD Subsonic**	**7-Jun**	**1400 hrs**	Governor's Square 12
227-AA-40	**Jet Noise VIII: Experiments**	**7-Jun**	**1400 hrs**	Governor's Square 10
228-AA-41	**Propeller, Rotorcraft and V/STOL Noise II**	**7-Jun**	**1400 hrs**	Plaza Court 5
229-AA-42	**Turbomachinery Noise V**	**7-Jun**	**1400 hrs**	Governor's Square 11
274-AA-43	**Airframe/High-Lift Noise VII: Flight Demonstration**	**8-Jun**	**0930 hrs**	Plaza Court 4
275-AA-44	**CAA VIII: Fan/Core/Liner**	**8-Jun**	**0930 hrs**	Plaza Court 8
276-AA-45	**Duct Acoustics V**	**8-Jun**	**0930 hrs**	Governor's Square 11
277-AA-46	**Jet Noise IX: Experiments Supersonic II**	**8-Jun**	**0930 hrs**	Governor's Square 10
278-AA-47	**Jet Noise X: Wavepackets III**	**8-Jun**	**0930 hrs**	Governor's Square 12
279-AA-48/ATIO.TFPC-7	**Small Propeller-Rotor Noise II**	**8-Jun**	**0930 hrs**	Plaza Court 5
280-AA-49	**Fan Broadband Noise Prediction**	**8-Jun**	**0930 hrs**	Governor's Square 14
313-AA-50	**Acoustic/Fluid Dynamic Interactions V: Trailing Edge Serrations**	**8-Jun**	**1400 hrs**	Plaza Court 7
314-AA-51	**Advanced Testing Techniques II**	**8-Jun**	**1400 hrs**	Governor's Square 11
315-AA-52	**CAA IX: Methods**	**8-Jun**	**1400 hrs**	Plaza Court 8
316-AA-53	**Duct Acoustics VI: Liners**	**8-Jun**	**1400 hrs**	Governor's Square 10
317-AA-54	**Jet Noise XI: Analysis**	**8-Jun**	**1400 hrs**	Governor's Square 12
	Aerodynamic Decelerator Systems			
15-ADS-1	**Aerodynamic Decelerator Systems: Seminar**	**5-Jun**	**0930 hrs**	Majestic Ballroom
54-ADS-2	**Aerodynamic Decelerator Systems: Precision Aerial Delivery I**	**5-Jun**	**1400 hrs**	Majestic Ballroom
55-ADS-3	**Aerodynamic Decelerator Systems: Orion Parachute System**	**5-Jun**	**1400 hrs**	Vail
100-ADS-4/BAL-3/LTA-1	**Aerodynamic Decelerator, Balloons, and Lighter-than-Air Combined Session**	**6-Jun**	**0930 hrs**	Majestic Ballroom
142-ADS-5	**Aerodynamic Decelerator Systems: Aerial Delivery**	**6-Jun**	**1400 hrs**	Savoy
143-ADS-6	**Aerodynamic Decelerator Systems: Simulation**	**6-Jun**	**1400 hrs**	Vail
191-ADS-7	**Aerodynamic Decelerator Systems: Precision Aerial Delivery II**	**7-Jun**	**0930 hrs**	Majestic Ballroom
192-ADS-8	**Aerodynamic Decelerator Systems: Space Systems I**	**7-Jun**	**0930 hrs**	Vail
230-ADS-9	**Aerodynamic Decelerator Systems: Precision Aerial Delivery III**	**7-Jun**	**1400 hrs**	Majestic Ballroom
231-ADS-10	**Aerodynamic Decelerator Systems: Materials and Testing**	**7-Jun**	**1400 hrs**	Vail
281-ADS-11	**Aerodynamic Decelerator Systems: Plenary and Panel**	**8-Jun**	**0930 hrs**	Majestic Ballroom
318-ADS-12	**Aerodynamic Decelerator Systems: Instrumentation and Materials**	**8-Jun**	**1400 hrs**	Majestic Ballroom
319-ADS-13	**Aerodynamic Decelerator Systems: Space Systems II**	**8-Jun**	**1400 hrs**	Vail
	Atmospheric Flight Mechanics			
101-AFM-1	**Aircraft Flight Dynamics I**	**6-Jun**	**0930 hrs**	Governor's Square 17
144-AFM-2	**Aircraft Flight Dynamics II**	**6-Jun**	**1400 hrs**	Governor's Square 17
193-AFM-3	**Unmanned Aerial Systems I**	**7-Jun**	**0930 hrs**	Governor's Square 17
232-AFM-4	**Unmanned Aerial Systems II**	**7-Jun**	**1400 hrs**	Governor's Square 17
233-AFM-5/FT-5	**Flight Testing and System Identification**	**7-Jun**	**1400 hrs**	Governor's Square 15
282-AFM-6	**Angle-of-Attack and Sideslip Angle Technologies for General Aviation Flight Safety (Invited)**	**8-Jun**	**0930 hrs**	Governor's Square 17
320-AFM-7	**Launch Vehicle, Entry Vehicle, and Projectile Flight Dynamics**	**8-Jun**	**1400 hrs**	Governor's Square 17
358-AFM-8	**Aeroservoelastic (ASE) Methods**	**9-Jun**	**0930 hrs**	Governor's Square 17

Technical Sessions at a Glance

Abbreviation	Title	Date	Start Time	Location
	Aerodynamic Measurement Technology			
16-AMT-1	**Recent Developments Towards 4-D Measurements (3-Space + 1-Time) in Reacting and Non-Reacting Flows**	**5-Jun**	**0930 hrs**	Director's Row E
56-AMT-2	**MEMS and Novel Sensors**	**5-Jun**	**1400 hrs**	Director's Row E
57-AMT-3/FD-5	**Advanced Measurement Capability Needs for Understanding Hypersonic Laminar-to-Turbulent Transition**	**5-Jun**	**1400 hrs**	Governor's Square 14
102-AMT-4	**Advancements in Shear Stress Measurements (Invited)**	**6-Jun**	**0930 hrs**	Director's Row E
145-AMT-5	**Flow Visualization, Particle Measurements, and Data Acquisition Methods**	**6-Jun**	**1400 hrs**	Director's Row E
176-LECT-6	**Aerodynamic Measurement Technology Award Lecture**	**6-Jun**	**1730 hrs**	Director's Row E
194-AMT-6	**Surface Pressure Measurements**	**7-Jun**	**0930 hrs**	Director's Row E
234-AMT-7	**Gas Scalar Measurements, Molecular Tagging Velocimetry, and Thermometry**	**7-Jun**	**1400 hrs**	Director's Row E
283-AMT-8	**Volumetric Measurement Techniques**	**8-Jun**	**0930 hrs**	Director's Row E
321-AMT-9/GT-6	**The Application of Thermal Anemometer Technologies in Transonic Flows**	**8-Jun**	**1400 hrs**	Director's Row E
	Applied Aerodynamics			
17-APA-1	**Vortex/Vortical Flow Applications I**	**5-Jun**	**0930 hrs**	Century
18-APA-2	**Flow Control Applications and Demonstrations I**	**5-Jun**	**0930 hrs**	Silver
19-APA-3	**Special Session: Low Boom Activities I**	**5-Jun**	**0930 hrs**	Windows
20-APA-4	**Rotorcraft Aerodynamics**	**5-Jun**	**0930 hrs**	Colorado
21-APA-5	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques I**	**5-Jun**	**0930 hrs**	Gold
58-APA-6	**Vortex/Vortical Flow Applications II**	**5-Jun**	**1400 hrs**	Century
59-APA-7	**Flow Control Applications and Demonstrations II**	**5-Jun**	**1400 hrs**	Silver
60-APA-8	**Special Session: Carriage and Store Separation**	**5-Jun**	**1400 hrs**	Colorado
61-APA-9	**Special Session: Low Boom Activities II**	**5-Jun**	**1400 hrs**	Windows
62-APA-10	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques II**	**5-Jun**	**1400 hrs**	Gold
82-TFM-2/APA-11	**Supersonic and Hypersonic Flows**	**5-Jun**	**1400 hrs**	Spruce
86-LECT-1	**Aerodynamics Award Lecture**	**5-Jun**	**1630 hrs**	Grand Ballroom I
103-APA-12	**Weapons Aerodynamics: Missile/Projectile/Guided-Munitions**	**6-Jun**	**0930 hrs**	Colorado
104-APA-13	**Transonic and Supersonic Aerodynamics**	**6-Jun**	**0930 hrs**	Tower Court A
105-APA-14	**Flapping Flight Applications**	**6-Jun**	**0930 hrs**	Century
106-APA-15	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques III**	**6-Jun**	**0930 hrs**	Gold
107-APA-16/FD-11	**Active Flow Control: Historical Implementation and the Future Challenge Workshop (Invited)**	**6-Jun**	**0930 hrs**	Silver
146-APA-17	**High Angle of Attack and High Lift Aerodynamics**	**6-Jun**	**1400 hrs**	Century
147-APA-18	**Flow Control Applications and Demonstrations III**	**6-Jun**	**1400 hrs**	Silver
148-APA-19	**Propeller Aerodynamics I**	**6-Jun**	**1400 hrs**	Colorado
149-APA-20	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques IV**	**6-Jun**	**1400 hrs**	Gold
150-APA-21	**Special Session: Historically Significant Papers in Applied Aerodynamics (Invited)**	**6-Jun**	**1400 hrs**	Windows

Technical Sessions at a Glance

Abbreviation	Title	Date	Start Time	Location
	Applied Aerodynamics			
159-CFD-12/APA-22	**Numerical Simulations of FSI**	**6-Jun**	**1400 hrs**	Tower Court B
195-APA-23	**Innovative Aerodynamic Concepts**	**7-Jun**	**0930 hrs**	Gold
196-APA-24	**Propeller Aerodynamics II**	**7-Jun**	**0930 hrs**	Colorado
197-APA-25	**Low Speed, Low Reynolds Number Aerodynamics**	**7-Jun**	**0930 hrs**	Century
198-APA-26	**Special Session: Aerodynamic Design Optimization I**	**7-Jun**	**0930 hrs**	Silver
208-CFD-16/FD-21/APA-27	**Numerical Simulations of Turbulent and Unsteady Flows**	**7-Jun**	**0930 hrs**	Tower Court C
221-TFM-7/APA-28	**Multi-Phase Flows**	**7-Jun**	**0930 hrs**	Spruce
235-APA-29	**Unsteady Aerodynamics**	**7-Jun**	**1400 hrs**	Century
236-APA-30	**Flow Control Applications and Demonstrations IV**	**7-Jun**	**1400 hrs**	Silver
237-APA-31	**Propeller Aerodynamics III**	**7-Jun**	**1400 hrs**	Colorado
238-APA-32	**Solar and Electric Propulsion Aircraft Applications**	**7-Jun**	**1400 hrs**	Gold
247-CFD-22/APA-33	**Numerical Simulations of Unsteady Aerodynamics**	**7-Jun**	**1400 hrs**	Tower Court B
284-APA-34	**Wind Turbine Aerodynamics I**	**8-Jun**	**0930 hrs**	Colorado
285-APA-35	**Aerodynamic Testing: Wind-tunnel and Flight Testing I**	**8-Jun**	**0930 hrs**	Gold
286-APA-36	**Special Session: Aerodynamic Design Optimization II**	**8-Jun**	**0930 hrs**	Silver
289-ATIO.ACD-8/APA-37	**Sailplane Aerodynamics**	**8-Jun**	**0930 hrs**	Century
322-APA-38	**Wind Turbine Aerodynamics II**	**8-Jun**	**1400 hrs**	Colorado
323-APA-39	**Aerodynamic-Structural Dynamics Interaction I**	**8-Jun**	**1400 hrs**	Century
324-APA-40	**Aerodynamic Testing: Wind-Tunnel and Flight Testing II**	**8-Jun**	**1400 hrs**	Gold
325-APA-41	**Applied CFD and Numerical Correlations with Experimental Data I**	**8-Jun**	**1400 hrs**	Silver
359-APA-42	**Aerodynamic-Structural Dynamics Interaction II**	**9-Jun**	**0930 hrs**	Century
360-APA-43	**Special Session: Aerodynamic Design Optimization III**	**9-Jun**	**0930 hrs**	Silver
384-APA-44	**Aerodynamic-Structural Dynamics Interaction III**	**9-Jun**	**1400 hrs**	Century
385-APA-45	**Applied CFD and Numerical Correlations with Experimental Data II**	**9-Jun**	**1400 hrs**	Silver
386-APA-46	**Airfoil/Wing/Configuration Aerodynamics**	**9-Jun**	**1400 hrs**	Gold
	Atmospheric and Space Environments			
22-ASE-1	**Observations and Modeling of the Atmospheric Environment**	**5-Jun**	**0930 hrs**	Columbine
63-ASE-2/FD-6	**Dynamics of Aircraft Wake Vortices: A Continuing Journey Longer Than a Half Century (Invited)**	**5-Jun**	**1400 hrs**	Columbine
108-ASE-3	**Ice Accretion Modeling**	**6-Jun**	**0930 hrs**	Columbine
151-ASE-4	**Ice Roughness and Heat Transfer**	**6-Jun**	**1400 hrs**	Columbine
199-ASE-5	**Deicing and Icing CFD**	**7-Jun**	**0930 hrs**	Columbine
239-ASE-6	**Experimental Methods for Icing Applications**	**7-Jun**	**1400 hrs**	Columbine
287-ASE-7	**Engine Ice Crystal Icing**	**8-Jun**	**0930 hrs**	Columbine
326-ASE-8	**Wake Vortex and Turbulence I**	**8-Jun**	**1400 hrs**	Beverly
327-ASE-9	**Fundamentals of Engine Ice Crystal Icing**	**8-Jun**	**1400 hrs**	Columbine
361-ASE-10	**Wake Vortex and Turbulence II**	**9-Jun**	**0930 hrs**	Beverly
362-ASE-11	**Icing Aerodynamics**	**9-Jun**	**0930 hrs**	Columbine
387-ASE-12	**Weather Impacts To National Airspace, Unmanned Aerial System**	**9-Jun**	**1400 hrs**	Beverly
388-ASE-13	**SLD Icing and Droplet Dynamics**	**9-Jun**	**1400 hrs**	Columbine

Technical Sessions at a Glance

Abbreviation	Title	Date	Start Time	Location
	Aviation Technology, Integration, and Operations			
23-ATIO.ACD-1	**Aircraft Subsystems Design**	**5-Jun**	**0930 hrs**	Governor's Square 16
24-ATIO.ATM-1	**UAS Traffic Management (UTM)**	**5-Jun**	**0930 hrs**	Plaza Court 1
25-ATIO.ATM-2	**Machine Learning In ATM**	**5-Jun**	**0930 hrs**	Plaza Court 2
26-ATIO.TFPC-1	**On-Demand Mobility I: Operations and Airspace**	**5-Jun**	**0930 hrs**	Governor's Square 15
64-ATIO.ACD-2	**Aircraft En Route Performance**	**5-Jun**	**1400 hrs**	Governor's Square 16
65-ATIO.ATM-3	**UAS Traffic Management (UTM) Safety**	**5-Jun**	**1400 hrs**	Plaza Court 1
66-ATIO.ATM-4	**Human Factors in ATM**	**5-Jun**	**1400 hrs**	Plaza Court 2
67-ATIO.TFPC-2/ATIO.GA-1	**On-Demand Mobility II: Thin-Haul Aviation Markets and Operations**	**5-Jun**	**1400 hrs**	Governor's Square 15
109-ATIO.ACD-3	**Aircraft Ground and Field Performance**	**6-Jun**	**0930 hrs**	Governor's Square 16
110-ATIO.ATM-5	**Weather Impact I**	**6-Jun**	**0930 hrs**	Plaza Court 1
111-ATIO.ATM-6	**ATM Trajectory Optimization**	**6-Jun**	**0930 hrs**	Plaza Court 2
112-ATIO.GA-2	**Inflight Loss of Control Mitigation for Light Aircraft**	**6-Jun**	**0930 hrs**	Plaza Court 5
113-ATIO.TFPC-3/ATIO.VSTOL-1	**On-Demand Mobility III: VTOL and V/STOL Concepts and Technologies**	**6-Jun**	**0930 hrs**	Governor's Square 15
152-ATIO.ACD-4	**Aircraft System Design Studies**	**6-Jun**	**1400 hrs**	Governor's Square 16
153-ATIO.ATM-7	**Weather Impact II**	**6-Jun**	**1400 hrs**	Plaza Court 1
154-ATIO.ATM-8	**ATM Performance and Benefits**	**6-Jun**	**1400 hrs**	Plaza Court 2
155-ATIO.TFPC-4	**Transformational Aircraft Technologies**	**6-Jun**	**1400 hrs**	Governor's Square 15
188-AA-35/ATIO.TFPC-5	**Small Propeller-Rotor Noise I**	**7-Jun**	**0930 hrs**	Plaza Court 5
200-ATIO.ACD-5	**Aircraft Performance, Stability and Control**	**7-Jun**	**0930 hrs**	Governor's Square 16
201-ATIO.ATM-9	**Environmental Impact**	**7-Jun**	**0930 hrs**	Plaza Court 1
202-ATIO.ATM-10	**ATM Analysis**	**7-Jun**	**0930 hrs**	Plaza Court 2
203-ATIO.GA-3	**Trends in General Aviation Safety**	**7-Jun**	**0930 hrs**	Plaza Court 3
204-ATIO.TFPC-6/FT-4	**NASA X-57 Technologies and Design**	**7-Jun**	**0930 hrs**	Governor's Square 15
240-ATIO.ATM-11	**Future ATM Concepts**	**7-Jun**	**1400 hrs**	Plaza Court 2
241-ATIO.ATM-12	**UAS Operations I**	**7-Jun**	**1400 hrs**	Plaza Court 1
242-ATIO.DE-1/ATIO.ACD-6	**Design Tools and Optimization**	**7-Jun**	**1400 hrs**	Governor's Square 16
265-ATIO.ATM-25	**Airspace Technology Demonstration 3 (ATD-3) Applied Traffic Flow Management**	**7-Jun**	**1730 hrs**	Plaza Court 2
279-AA-48/ATIO.TFPC-7	**Small Propeller-Rotor Noise II**	**8-Jun**	**0930 hrs**	Plaza Court 5
288-ATIO.ACD-7	**CADWG 21 - Concept Design Tools and Processes for Bespoke, Traditional and Truly Mass Produced Aircraft**	**8-Jun**	**0930 hrs**	Governor's Square 16
289-ATIO.ACD-8/APA-37	**Sailplane Aerodynamics**	**8-Jun**	**0930 hrs**	Century
290-ATIO.ATM-13	**En Route Operations**	**8-Jun**	**0930 hrs**	Plaza Court 3
291-ATIO.ATM-14	**ATM Systems I**	**8-Jun**	**0930 hrs**	Plaza Court 2
292-ATIO.TFPC-8/ATIO.USPC-1	**UAS Missions, Concepts, and Technologies**	**8-Jun**	**0930 hrs**	Governor's Square 15
328-ATIO.ACD-9	**Requirements Definition in Aircraft Design**	**8-Jun**	**1400 hrs**	Governor's Square 16
329-ATIO.ATM-16	**Terminal and Surface Operations I**	**8-Jun**	**1400 hrs**	Plaza Court 3
330-ATIO.ATM-17	**ATM Systems II**	**8-Jun**	**1400 hrs**	Plaza Court 2
331-ATIO.ATM-18	**UAS Operations II**	**8-Jun**	**1400 hrs**	Plaza Court 1
332-ATIO.TFPC-9/ATIO.GEPC-1	**Overview of NASA Convergent Aeronautic Solutions (CAS) Project Activities**	**8-Jun**	**1400 hrs**	Governor's Square 15

Technical Sessions at a Glance

Abbreviation	Title	Date	Start Time	Location
	Aviation Technology, Integration, and Operations			
363-ATIO.ACD-10	**Unconventional Missions and Structures**	**9-Jun**	**0930 hrs**	Governor's Square 16
364-ATIO.ATM-19	**UAS Sense and Avoid I**	**9-Jun**	**0930 hrs**	Plaza Court 1
365-ATIO.ATM-20	**Operational Safety I**	**9-Jun**	**0930 hrs**	Plaza Court 2
366-ATIO.ATM-21	**Terminal and Surface Operations II**	**9-Jun**	**0930 hrs**	Plaza Court 3
367-ATIO.DE-2	**Design Processes and Education**	**9-Jun**	**0930 hrs**	Governor's Square 11
389-ATIO.ATM-22	**UAS Sense and Avoid II**	**9-Jun**	**1400 hrs**	Plaza Court 1
390-ATIO.ATM-23	**Trajectory Management**	**9-Jun**	**1400 hrs**	Plaza Court 3
391-ATIO.ATM-24	**Operational Safety II**	**9-Jun**	**1400 hrs**	Plaza Court 2
	Balloon Systems			
27-BAL-1	**Balloon Programs and Operations**	**5-Jun**	**0930 hrs**	Savoy
68-BAL-2	**Balloon Flight Performance**	**5-Jun**	**1400 hrs**	Savoy
100-ADS-4/BAL-3/LTA-1	**Aerodynamic Decelerator, Balloons, and Lighter-than-Air Combined Session**	**6-Jun**	**0930 hrs**	Majestic Ballroom
156-BAL-4/LTA-2	**Balloon and Lighter-Than-Air Combined Session**	**6-Jun**	**1400 hrs**	Majestic Ballroom
205-BAL-5	**Balloon Flight Considerations**	**7-Jun**	**0930 hrs**	Savoy
	Complex Aerospace Systems Exchange			
114-CASE-1	**Model-Based Systems Engineering**	**6-Jun**	**0930 hrs**	Governor's Square 14
157-CASE-2	**Incremental/Agile Methods—Fit for Demands of Complex Aerospace Systems?**	**6-Jun**	**1400 hrs**	Governor's Square 14
206-CASE-3	**Adaptive Verification and Validation (V&V)**	**7-Jun**	**0930 hrs**	Governor's Square 14
243-CASE-4	**Complex Adaptive Systems Approaches to Cybersecurity**	**7-Jun**	**1400 hrs**	Governor's Square 14
350-CASE-5	**Complexity in Aviation Roundtable**	**8-Jun**	**1600 hrs**	Governor's Square 14
	Computational Fluid Dynamics			
28-CFD-1	**High-Order Methods**	**5-Jun**	**0930 hrs**	Tower Court D
29-CFD-2	**Optimization for Mesh Adaptation**	**5-Jun**	**0930 hrs**	Tower Court C
30-CFD-3	**Meshing I**	**5-Jun**	**0930 hrs**	Tower Court B
69-CFD-4	**High-Order Finite Volume Methods**	**5-Jun**	**1400 hrs**	Tower Court D
70-CFD-5	**Numerical Methodologies for DNS and LES**	**5-Jun**	**1400 hrs**	Tower Court C
71-CFD-6	**Mesh Adaptation**	**5-Jun**	**1400 hrs**	Tower Court B
115-CFD-7/FD-12/TFM-3	**Future of Fluids Series: Visions for Next-Generation CFD and Turbulence Modeling**	**6-Jun**	**0930 hrs**	Windows
116-CFD-8	**High-Order Methods for Advection-Diffusion Equations**	**6-Jun**	**0930 hrs**	Tower Court D
117-CFD-9	**Numerical Methodologies for FSI Simulations**	**6-Jun**	**0930 hrs**	Tower Court C
118-CFD-10	**Meshing II**	**6-Jun**	**0930 hrs**	Tower Court B
158-CFD-11/FD-17	**Numerical Simulations of Turbulent Flows Using DNS and LES**	**6-Jun**	**1400 hrs**	Tower Court C
159-CFD-12/APA-22	**Numerical Simulations of FSI**	**6-Jun**	**1400 hrs**	Tower Court B
160-CFD-13	**Boundary and Interface Treatments**	**6-Jun**	**1400 hrs**	Tower Court A
161-CFD-14	**Data-Driven Approaches for Modeling and Parameter Estimation**	**6-Jun**	**1400 hrs**	Tower Court D
162-CFD-41	**CFD Flow Visualization Showcase**	**6-Jun**	**1400 hrs**	Plaza Exhibit/Foyer
207-CFD-15	**Special Session: Capabilities and Challenges In CFD I: Academia, Government, and Industry Perspectives**	**7-Jun**	**0930 hrs**	Windows
208-CFD-16/FD-21/APA-27	**Numerical Simulations of Turbulent and Unsteady Flows**	**7-Jun**	**0930 hrs**	Tower Court C
209-CFD-17	**Numerical Approaches for Analyzing Multiscale Flows**	**7-Jun**	**0930 hrs**	Tower Court D
210-CFD-18	**Meshing and Visualization**	**7-Jun**	**0930 hrs**	Tower Court B

Technical Sessions at a Glance

Abbreviation	Title	Date	Start Time	Location
	Computational Fluid Dynamics			
244-CFD-19	**Special Session: Towards Industrial LES and DNS for Aeronautics**	**7-Jun**	**1400 hrs**	Windows
245-CFD-20	**High-Order Discontinuous Galerkin Methods**	**7-Jun**	**1400 hrs**	Tower Court D
246-CFD-21	**Turbulence Modeling I: RANS, PANS, LES**	**7-Jun**	**1400 hrs**	Tower Court C
247-CFD-22/APA-33	**Numerical Simulations of Unsteady Aerodynamics**	**7-Jun**	**1400 hrs**	Tower Court B
293-CFD-23	**Special Session: Recent Advances in Adjoint-Based Methods for CFD**	**8-Jun**	**0930 hrs**	Windows
294-CFD-24	**Shock Capturing I**	**8-Jun**	**0930 hrs**	Tower Court D
295-CFD-25	**Error Estimation**	**8-Jun**	**0930 hrs**	Tower Court B
296-CFD-26	**Optimization and Design Using CFD**	**8-Jun**	**0930 hrs**	Tower Court C
333-CFD-27	**High-Order Finite Element Methods**	**8-Jun**	**1400 hrs**	Tower Court D
334-CFD-28	**Turbulence Modeling II: Rans and Hybrid Approaches**	**8-Jun**	**1400 hrs**	Tower Court C
335-CFD-29/TP-7	**Multiphase Flows and Heat Transfer Simulations I**	**8-Jun**	**1400 hrs**	Denver
336-CFD-30	**Methodologies for Simulations on Complex Meshes**	**8-Jun**	**1400 hrs**	Tower Court B
368-CFD-31	**Special Session: Recent Advances in Model Reduction Approaches for CFD**	**9-Jun**	**0930 hrs**	Windows
369-CFD-32	**Shock Capturing II**	**9-Jun**	**0930 hrs**	Tower Court D
370-CFD-34	**Lagrangian and Particle Methods**	**9-Jun**	**0930 hrs**	Denver
371-CFD-35	**Parallel Computing Methodologies I**	**9-Jun**	**0930 hrs**	Tower Court B
372-CFD-36	**Optimization Techniques for CFD**	**9-Jun**	**0930 hrs**	Gold
392-CFD-37	**High-Order Finite Difference Schemes**	**9-Jun**	**1400 hrs**	Tower Court D
393-CFD-38/TP-11	**Chemically Reacting Flow Simulations and Methods**	**9-Jun**	**1400 hrs**	Tower Court C
394-CFD-39/TP-12	**Multiphase Flows and Heat Transfer Simulations II**	**9-Jun**	**1400 hrs**	Denver
395-CFD-40	**Parallel Computing Methodologies II**	**9-Jun**	**1400 hrs**	Tower Court B
	Computer Systems			
31-CPS-1	**Advances in Computer Systems for Aviation**	**5-Jun**	**0930 hrs**	Vail
	Fluid Dynamics			
33-FD-1	**Boundary Layer Control**	**5-Jun**	**0930 hrs**	Capitol
34-FD-2	**Shock Boundary Interactions I**	**5-Jun**	**0930 hrs**	Beverly
35-FD-3	**Unsteady Fluid Dynamics and Unsteady Aerodynamics I**	**5-Jun**	**0930 hrs**	Tower Court A
36-FD-4	**Special Session: HIFiRE-5b Flight Test Results**	**5-Jun**	**0930 hrs**	Terrace
57-AMT-3/FD-5	**Advanced Measurement Capability Needs for Understanding Hypersonic Laminar-to-Turbulent Transition**	**5-Jun**	**1400 hrs**	Governor's Square 14
63-ASE-2/FD-6	**Dynamics of Aircraft Wake Vortices: A Continuing Journey Longer Than a Half Century (Invited)**	**5-Jun**	**1400 hrs**	Columbine
73-FD-7	**Experimental Studies or Numerical Simulations I**	**5-Jun**	**1400 hrs**	Beverly
74-FD-8	**Fluidic/Jet Based Flow Control**	**5-Jun**	**1400 hrs**	Capitol
75-FD-9	**Separation Control**	**5-Jun**	**1400 hrs**	Terrace
76-FD-10	**Unsteady Fluid Dynamics and Unsteady Aerodynamics II**	**5-Jun**	**1400 hrs**	Tower Court A
88-LECT-3	**Fluid Dynamics Award Lecture**	**5-Jun**	**1730 hrs**	Grand Ballroom I
107-APA-16/FD-11	**Active Flow Control: Historical Implementation and the Future Challenge Workshop (Invited)**	**6-Jun**	**0930 hrs**	Silver
115-CFD-7/FD-12/TFM-3	**Future of Fluids Series: Visions for Next-Generation CFD and Turbulence Modeling**	**6-Jun**	**0930 hrs**	Windows
121-FD-13/TFM-4	**Boundary Layer Stability and Transition**	**6-Jun**	**0930 hrs**	Terrace
122-FD-14	**New Models for High-Speed Flows**	**6-Jun**	**0930 hrs**	Capitol
123-FD-15	**Multiphysics and Cross-Disciplinary Fluid Dynamics I**	**6-Jun**	**0930 hrs**	Beverly
124-FD-16	**Transition Open Forum**	**6-Jun**	**0930 hrs**	Vail

Technical Sessions at a Glance

Abbreviation	Title	Date	Start Time	Location
	Fluid Dynamics			
158-CFD-11/FD-17	**Numerical Simulations of Turbulent Flows Using DNS and LES**	**6-Jun**	**1400 hrs**	Tower Court C
164-FD-18	**High Speed Laminar-Turbulent Transition I**	**6-Jun**	**1400 hrs**	Terrace
165-FD-19	**Experimental Studies or Numerical Simulations II**	**6-Jun**	**1400 hrs**	Beverly
166-FD-20	**Low-Re Flows and Bio-Inspired Flows**	**6-Jun**	**1400 hrs**	Capitol
208-CFD-16/FD-21/APA-27	**Numerical Simulations of Turbulent and Unsteady Flows**	**7-Jun**	**0930 hrs**	Tower Court C
212-FD-22	**Experimental Studies or Numerical Simulations III**	**7-Jun**	**0930 hrs**	Tower Court A
213-FD-23	**Multiphysics and Cross-Disciplinary Fluid Dynamics II**	**7-Jun**	**0930 hrs**	Beverly
214-FD-24	**Special Session: Research Frontiers in Bio-Inspired Propulsion I**	**7-Jun**	**0930 hrs**	Terrace
249-FD-25	**Applications of Fluid Mechanics**	**7-Jun**	**1400 hrs**	Capitol
250-FD-26	**Experimental Studies or Numerical Simulations IV**	**7-Jun**	**1400 hrs**	Beverly
251-FD-27	**Special Topics in Fluid Dynamics**	**7-Jun**	**1400 hrs**	Tower Court A
252-FD-28	**Special Session: Research Frontiers in Bio-inspired Propulsion II**	**7-Jun**	**1400 hrs**	Terrace
298-FD-29	**Stall and Wake Control**	**8-Jun**	**0930 hrs**	Beverly
299-FD-30	**Supersonic and Hypersonics Flows**	**8-Jun**	**0930 hrs**	Tower Court A
300-FD-31	**Special Session: NASA's Revolutionary Computational Aerosciences**	**8-Jun**	**0930 hrs**	Terrace
338-FD-32	**Three-Dimensional Boundary-Layer Instability**	**8-Jun**	**1400 hrs**	Terrace
339-FD-33	**Modal Analysis: Applications and New Approaches (Invited)**	**8-Jun**	**1400 hrs**	Windows
340-FD-34	**High Speed Flow Control**	**8-Jun**	**1400 hrs**	Capitol
341-FD-35	**Shock Boundary Interactions II**	**8-Jun**	**1400 hrs**	Tower Court A
374-FD-37	**Subsonic Boundary-Layer Receptivity and Instability**	**9-Jun**	**0930 hrs**	Terrace
375-FD-38	**Experimental Studies or Numerical Simulations V**	**9-Jun**	**0930 hrs**	Tower Court A
396-FD-39	**Surface Features in High-Speed Transition**	**9-Jun**	**1400 hrs**	Terrace
397-FD-40	**High Speed Laminar-Turbulent Transition II**	**9-Jun**	**1400 hrs**	Tower Court A
	Flight Testing			
37-FT-1	**Flight Testing of Unmanned Aircraft Systems**	**5-Jun**	**0930 hrs**	Director's Row J
125-FT-2	**Flight Test Airworthiness Workshop**	**6-Jun**	**0930 hrs**	Director's Row J
167-FT-3	**Flight Testing**	**6-Jun**	**1400 hrs**	Director's Row J
204-ATIO.TFPC-6/FT-4	**NASA X-57 Technologies and Design**	**7-Jun**	**0930 hrs**	Governor's Square 15
233-AFM-5/FT-5	**Flight Testing and System Identification**	**7-Jun**	**1400 hrs**	Governor's Square 15
352-LECT-10	**Chanute Flight Test Award Lecture**	**8-Jun**	**1730 hrs**	Grand Ballroom I
	Ground Testing			
38-GT-1	**NASA Aeronautics Evaluation and Test Capabilities Project**	**5-Jun**	**0930 hrs**	Governor's Square 17
77-GT-2	**Data Acquisition, Modeling, and Simulation**	**5-Jun**	**1400 hrs**	Director's Row J
215-GT-3/TP-5	**Collaborative Efforts in Ground-Based Experiments and Modeling (Invited)**	**7-Jun**	**0930 hrs**	Director's Row J
253-GT-4	**Hypersonics Ground Testing**	**7-Jun**	**1400 hrs**	Director's Row J
301-GT-5	**Subsonic Ground Testing**	**8-Jun**	**0930 hrs**	Director's Row J
321-AMT-9/GT-6	**The Application of Thermal Anemometer Technologies in Transonic Flows**	**8-Jun**	**1400 hrs**	Director's Row E
342-GT-7	**Transonic/Supersonic Ground Testing**	**8-Jun**	**1400 hrs**	Director's Row J
376-GT-8	**Balances and Mass Properties Measurement**	**9-Jun**	**0930 hrs**	Director's Row J
398-GT-9	**High Enthalpy Ground Testing**	**9-Jun**	**1400 hrs**	Director's Row J
	Intelligent Systems			
254-IS-1	**Intelligent Systems and Autonomy**	**7-Jun**	**1400 hrs**	Plaza Court 3

Technical Sessions at a Glance

Abbreviation	Title	Date	Start Time	Location
	ITAR Restricted Sessions			
302-ITAR-1	**Unmanned Aircraft Design**	**8-Jun**	**0930 hrs**	Savoy
343-ITAR-2	**Aerodynamic Database Modeling and Topics in CFD**	**8-Jun**	**1400 hrs**	Savoy
377-ITAR-3	**Flow Control, Flight Testing and Other Topics**	**9-Jun**	**0930 hrs**	Savoy
	Lighter-Than-Air Systems			
100-ADS-4/BAL-3/LTA-1	**Aerodynamic Decelerator, Balloons, and Lighter-than-Air Combined Session**	**6-Jun**	**0930 hrs**	Majestic Ballroom
156-BAL-4/LTA-2	**Balloon and Lighter-Than-Air Combined Session**	**6-Jun**	**1400 hrs**	Majestic Ballroom
255-LTA-3	**LTA Engineering and Design**	**7-Jun**	**1400 hrs**	Savoy
303-LTA-4	**Airship Development**	**8-Jun**	**0930 hrs**	Vail
	Multidisciplinary Analysis and Optimization			
39-MDO-1	**Aerodynamic Shape Optimization I**	**5-Jun**	**0930 hrs**	Director's Row I
40-MDO-2	**Design Optimization of Complex Engineered System I**	**5-Jun**	**0930 hrs**	Director's Row H
78-MDO-3	**Aerodynamic Shape Optimization II**	**5-Jun**	**1400 hrs**	Director's Row I
79-MDO-4	**Design Optimization of Complex Engineered Systems II**	**5-Jun**	**1400 hrs**	Director's Row H
126-MDO-5	**Aerodynamic Shape Optimization III**	**6-Jun**	**0930 hrs**	Director's Row I
127-MDO-9	**Selected Papers Panel**	**6-Jun**	**0930 hrs**	Director's Row H
168-MDO-7	**Shape and Topology Optimization**	**6-Jun**	**1400 hrs**	Director's Row I
169-MDO-8	**Emerging Methods, Algorithms and Software Development II**	**6-Jun**	**1400 hrs**	Director's Row H
216-MDO-6	**Emerging Methods, Algorithms and Software Development I**	**7-Jun**	**0930 hrs**	Director's Row I
217-MDO-10	**Non-Deterministic Design Methods and Applications**	**7-Jun**	**0930 hrs**	Director's Row H
256-MDO-11	**Aerodynamic Shape Optimization IV**	**7-Jun**	**1400 hrs**	Director's Row I
257-MDO-12	**Aircraft Design Optimization I**	**7-Jun**	**1400 hrs**	Director's Row H
266-LECT-8	**Multidisciplinary Design Optimization Award Lecture**	**7-Jun**	**1730 hrs**	Windows
304-MDO-13	**Emerging Methods - The AGILE Project**	**8-Jun**	**0930 hrs**	Plaza Court 7
305-MDO-14	**Aeroelastic and Aero-Structures Optimization I**	**8-Jun**	**0930 hrs**	Director's Row I
306-MDO-15	**Aircraft Design Optimization II**	**8-Jun**	**0930 hrs**	Director's Row H
344-MDO-16	**Aeroelastic and Aero-Structures Optimization II**	**8-Jun**	**1400 hrs**	Director's Row I
345-MDO-17	**Aircraft Design Optimization III**	**8-Jun**	**1400 hrs**	Director's Row H
378-MDO-18	**Metamodeling and Approximation Methods**	**9-Jun**	**0930 hrs**	Director's Row I
379-MDO-19	**Aircraft Design Optimization IV**	**9-Jun**	**0930 hrs**	Director's Row H
	Modeling and Simulation Technologies			
41-MST-1	**Modeling and Simulation for Unmanned Aerial Systems**	**5-Jun**	**0930 hrs**	Governor's Square 14
80-MST-2	**Modeling and Simulation for the Air Transportation System**	**5-Jun**	**1400 hrs**	Plaza Court 6
128-MST-3	**Simulator Motion Cueing**	**6-Jun**	**0930 hrs**	Plaza Court 6
170-MST-4	**Human Factors, Perception, and Cueing**	**6-Jun**	**1400 hrs**	Plaza Court 6
218-MST-5	**Modeling and Simulation Issues for Aerodynamics and Propulsion**	**7-Jun**	**0930 hrs**	Plaza Court 6
258-MST-6	**Flight Control Modeling and Simulation**	**7-Jun**	**1400 hrs**	Plaza Court 6
307-MST-7	**Environmental Effects and Surprise in Simulation**	**8-Jun**	**0930 hrs**	Plaza Court 6
346-MST-8	**Multidisciplinary Modeling and Simulation Applications**	**8-Jun**	**1400 hrs**	Plaza Court 6
380-MST-9	**Simulator Hardware and Predictions**	**9-Jun**	**0930 hrs**	Plaza Court 6
399-MST-10	**Simulator Architecture, Delays, and Qualification**	**9-Jun**	**1400 hrs**	Plaza Court 6
	National Institute of Aerospace			
381-NIA-1	**Graduate Student Research Papers - Hosted by the National Institute of Aerospace**	**9-Jun**	**0930 hrs**	Director's Row E

Technical Sessions at a Glance

Abbreviation	Title	Date	Start Time	Location
	Plasmadynamics and Lasers			
42-PDL-1	**Plasma and Laser Physics**	**5-Jun**	**0930 hrs**	Denver
81-PDL-2	**Plasma Aerodynamics I: DBD-Based Flow Control**	**5-Jun**	**1400 hrs**	Denver
129-PDL-3	**Plasma Aerodynamics II: Flow Control**	**6-Jun**	**0930 hrs**	Denver
171-PDL-4	**Plasma/Laser Assisted Ignition and Combustion**	**6-Jun**	**1400 hrs**	Denver
177-LECT-7	**Plasmadynamics and Lasers Award Lecture**	**6-Jun**	**1730 hrs**	Majestic Ballroom
219-PDL-5	**Diagnostics and Experimental Techniques I: Aero-Optics**	**7-Jun**	**0930 hrs**	Denver
259-PDL-6	**Computational Methods: Plasma-Flow Interaction**	**7-Jun**	**1400 hrs**	Denver
308-PDL-7	**Diagnostics and Experimental Techniques II**	**8-Jun**	**0930 hrs**	Denver
	Theoretical Fluid Mechanics			
43-TFM-1	**Flow Stability and Transition**	**5-Jun**	**0930 hrs**	Spruce
82-TFM-2/APA-11	**Supersonic and Hypersonic Flows**	**5-Jun**	**1400 hrs**	Spruce
115-CFD-7/FD-12/TFM-3	**Future of Fluids Series: Visions for Next-Generation CFD and Turbulence Modeling**	**6-Jun**	**0930 hrs**	Windows
121-FD-13/TFM-4	**Boundary Layer Stability and Transition**	**6-Jun**	**0930 hrs**	Terrace
130-TFM-5	**CFD and Theory**	**6-Jun**	**0930 hrs**	Spruce
172-TFM-6	**Vortex Dynamics**	**6-Jun**	**1400 hrs**	Spruce
221-TFM-7/APA-28	**Multi-Phase Flows**	**7-Jun**	**0930 hrs**	Spruce
260-TFM-8	**Boundary Layers and Wakes**	**7-Jun**	**1400 hrs**	Spruce
309-TFM-9	**Shock - BL Interaction**	**8-Jun**	**0930 hrs**	Capitol
310-TFM-10	**Turbulence Modeling and Theory**	**8-Jun**	**0930 hrs**	Spruce
347-TFM-11	**Theoretical Aerodynamics**	**8-Jun**	**1400 hrs**	Spruce
	Thermophysics			
44-TP-1	**Reacting Flows I**	**5-Jun**	**0930 hrs**	Plaza Court 3
83-TP-2	**Ablation I**	**5-Jun**	**1400 hrs**	Plaza Court 3
131-TP-3	**Reacting Flows II**	**6-Jun**	**0930 hrs**	Plaza Court 3
173-TP-4	**Ablation II**	**6-Jun**	**1400 hrs**	Plaza Court 3
215-GT-3/TP-5	**Collaborative Efforts in Ground-Based Experiments and Modeling (Invited)**	**7-Jun**	**0930 hrs**	Director's Row J
261-TP-6	**Non-Continuum Modeling**	**7-Jun**	**1400 hrs**	Plaza Court 4
267-LECT-9	**Thermophysics Award Lecture**	**7-Jun**	**1730 hrs**	Governor's Square 17
335-CFD-29/TP-7	**Multiphase Flows and Heat Transfer Simulations I**	**8-Jun**	**1400 hrs**	Denver
348-TP-8	**Hypersonics and Thermal Management**	**8-Jun**	**1400 hrs**	Plaza Court 5
349-TP-9	**Advanced and Multiphase Modeling**	**8-Jun**	**1400 hrs**	Plaza Court 4
382-TP-10	**Arc Jet/Plasma Flows**	**9-Jun**	**0930 hrs**	Plaza Court 4
393-CFD-38/TP-11	**Chemically Reacting Flow Simulations and Methods**	**9-Jun**	**1400 hrs**	Tower Court C
394-CFD-39/TP-12	**Multiphase Flows and Heat Transfer Simulations II**	**9-Jun**	**1400 hrs**	Denver
400-TP-13	**Radiation**	**9-Jun**	**1400 hrs**	Plaza Court 5

Sunday

Sunday, 4 June 2017		
1-NW-1 1600 - 1800 hrs	**Meet the Employers**	Majestic Ballroom
AIAA's "Meet the Employers" event at the 2017 AVIATION Forum offers students and young professional attendees the opportunity to meet AIAA corporate members. This is a fun and dynamic environment where students and professionals interact with organizations regarding employment opportunities.		

Sunday, 4 June 2017		
2-NW-2 1800 - 1930 hrs	**Student Welcome Reception**	Windows
Mingle with your peers! This reception provides you with the opportunity to meet your fellow students and learn more about the opportunities available to you as an AIAA student member.		

Monday

Monday, 5 June 2017		
3-NW-3 0730 - 0800 hrs	**Networking Coffee Break**	Plaza Foyer

Monday, 5 June 2017		
4-SB-1 0730 - 0800 hrs	**Speakers' Briefing**	Session Rooms

Monday, 5 June 2017		
5-PLNRY-1 0800 - 0900 hrs	**Plenary**	Plaza Ballroom
Need for Speed **Rob Weiss** Executive Vice President and General Manager, Advanced Development Programs Lockheed Martin Aeronautics		

Monday, 5 June 2017		
6-NW-4 0900 - 0930 hrs	**Networking Coffee Break**	Meeting Room Foyers

Monday, 5 June 2017						
7-AA-1	**Acoustic/Fluid Dynamic Interactions I: Propagation and Feedback**					Plaza Court 7
Chaired by: P. SIJTSMA, PSA3						
0930 hrs AIAA-2017-3000 **Analysis of the acoustic/ hydrodynamic separation in an aeroacoustic 2D plane mixing layer flow** P. Druault, Pierre-and-Marie-Curie University, Paris, France	1000 hrs AIAA-2017-3001 **On Ladder-Type Structure of Acoustic Tones Radiated by Transitional Airfoils** L. Nguyen, V. Golubev, R. Mankbadi, Embry-Riddle Aeronautical University, Daytona Beach, FL; G. Yakhina, M. Roger, École Centrale de Lyon, Lyon, France; C. Pasiliao, Air Force Research Laboratory, Eglin AFB, FL; et al.	1030 hrs AIAA-2017-3002 **Flow-induced noise in corrugated pipes - why does liquid reduce whistling?** A. Eckeveld, J. Westerweel, C. Poelma, Delft University of Technology, Delft, The Netherlands				

Monday, 5 June 2017						
8-AA-2	**Active Noise Control**					**Plaza Court 6**
Chaired by: K. AHUJA, Georgia Institute of Technology and A. CAVALIERI, ITA						
0930 hrs AIAA-2017-3003 **A framework for closed-loop flow control using the parabolized stability equations.** K. Sasaki, A. Cavalieri, F. Silvestre, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; P. Jordan, National Center for Scientific Research (CNRS), Poitiers, France; G. Tissot, Institut de Mathmatiques de Toulouse, Touslouse, France; D. Biau, Paris Institute of Technology, Paris, France	1000 hrs AIAA-2017-3004 **Active Flow Control Methods for the Reduction of Trailing Edge Noise** M. Szoke , M. Azarpeyvand, University of Bristol, Bristol, United Kingdom	1030 hrs AIAA-2017-3005 **Active control of instability waves in excited and nonexcited turbulent jets** V. Kopiev, G. Faranosov, O. Bychkov, M. Zaytsev, V. Kopiev, I. Belyaev, TsAGI, Moscow, Russia; et al.				

Monday, 5 June 2017						
9-AA-3	**Airframe/High-Lift Noise I: Nose Landing Gear**					**Plaza Court 4**
Chaired by: M. POTT-POLLENSKE, DLR - German Aerospace Center						
0930 hrs AIAA-2017-3006 **Comparing flyover noise measurements to full-scale nose landing gear wind tunnel experiments for regional aircraft** R. Merino Martinez, Delft University of Technology, Delft, The Netherlands; E. Neri, Trinity College Dublin, Dublin, Ireland; M. Snellen, Delft University of Technology, Delft, The Netherlands; J. Kennedy, Trinity College Dublin, Dublin, Ireland; D. Simons, Delft University of Technology, Delft, The Netherlands; G. Bennett, Trinity College Dublin, Dublin, Ireland	1000 hrs AIAA-2017-3007 **Experimental and numerical study of wheel bay cavity noise for full scale nose landing gear** E. Neri, J. Kennedy, G. Bennett, Trinity College Dublin, Dublin, Ireland	1030 hrs AIAA-2017-3008 **The Ability of a Weakly Compressible Solver to Predict Landing Gear Noise with Flow-Acoustic Interactions** Y. Hou, D. Angland, University of Southampton, Southampton, United Kingdom; A. Scotto, Airbus, Toulouse, France	1100 hrs AIAA-2017-3009 **Aeroacoustic Simulations of a Nose Landing Gear with FUN3D: A Grid Refinement Study** V. Vatsa, M. Khorrami, D. Lockard, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2017-3010 **Noise Prediction of the LAGOON Landing Gear Using Detached Eddy Simulation and Acoustic Analogy** T. Rodarte Ricciardi, P. Azevedo, W. Wolf, University of Campinas, Campinas, Brazil; R. Speth, The Boeing Company, St. Louis, MO	1200 hrs AIAA-2017-3011 **New Unstructured Grid Strategies for Applications to Aeroacoustic Computations of the LAGOON, Landing Gear Model, Using the CEDRE Unstructured Flow Solver** F. Vuillot, F. De La Puente, S. Landier, T. Renaud, C. Benoit, L. Sanders, ONERA, Châtillon, France	

Monday, 5 June 2017						
10-AA-4	**Airframe/High-Lift Noise II: Main Landing Gear**					**Plaza Court 5**
Chaired by: E. MANOHA, ONERA						
0930 hrs AIAA-2017-3012 **Investigation of the Noise Emission of a Regional Aircraft Main Landing Gear Bay** S. Ben Khelil, P. Bardoux, J. Godard, ONERA, Meudon, France; T. Le Garrec, ONERA, Châtillon, France; J. Kennedy, G. Bennett, Trinity College Dublin, Dublin, Ireland	1000 hrs AIAA-2017-3013 **A Comparative Study of Simulated and Measured Main Landing Gear Noise for Large Civil Transports** B. Konig, E. Fares, Exa GmbH, Stuttgart, Germany; M. Khorrami, NASA Langley Research Center, Hampton, VA; P. Ravetta, AVEC, Inc., Blacksburg, VA	1030 hrs AIAA-2017-3014 **Interaction Noise from Tandem Landing Gear Wheels with Hub and Rim Cavities** M. Wang, D. Angland, Airbus, Southampton, United Kingdom; A. Scotto, Airbus, Toulouse, France	1100 hrs AIAA-2017-3015 **Passive Control of the Vortex Shedding Noise of a Cylinder at Low Reynolds Numbers Using Flexible Flaps** T. Geyer, Brandenburg University of Technology, Cottbus, Germany; L. Kamps, Technical University of Bergakademie Freiberg, Freiberg, Germany; E. Sarradj, Technical University of Berlin, Berlin, Germany; C. Brücker, City, University of London, London, United Kingdom			

Monday, 5 June 2017						
11-AA-5	CAA I: Landing Gear/Jet					Plaza Court 8
Chaired by: J. WINKLER, United Technologies Research Center						
0930 hrs AIAA-2017-3016 **Global stability analysis and base flow sensitivity of supersonic impinging jet noise** N. Hildebrand, J. Nichols, University of Minnesota, Twin Cities, Minneapolis, MN	1000 hrs AIAA-2017-3017 **Simulation of Cold Jet Installation Noise using a Stochastic Backscatter Model** R. Ewert, A. Neifeld, D. Boenke, German Aerospace Center (DLR), Braunschweig, Germany	1030 hrs AIAA-2017-3018 **On the response of a rectangular supersonic jet to a near-field located parallel flat plate** R. Gojon, Royal Institute of Technology (KTH), Stockholm, Sweden; E. Gutmark, University of Cincinnati, Cincinnati, OH; M. Mihaescu, Royal Institute of Technology (KTH), Stockholm, Sweden	1100 hrs AIAA-2017-3019 **Identification of noise sources on a realistic landing gear using numerical phased array methods applied to computational data** H. Bouchouireb, N. Pignier, Royal Institute of Technology (KTH), Stockholm, Sweden; J. Dahan, Siemens, London, United Kingdom; C. O'Reilly, S. Boij, Royal Institute of Technology (KTH), Stockholm, Sweden	1130 hrs AIAA-2017-3020 **Assessment of different meshing strategies for low Mach number noise prediction of rudimentary landing gear** M. Fuchs, Technical University of Berlin, Berlin, Germany; C. Mockett, F. Kramer, T. Knacke, CFD Software GmbH, Berlin, Germany; D. Fischer, J. Sesterhenn, Technical University of Berlin, Berlin, Germany; et al.		

Monday, 5 June 2017						
12-AA-6	Duct Acoustics I: Liners					Governor's Square 10
Chaired by: L. ENGHARDT, DLR - German Aerospace Center and W. EVERSMAN, Missouri University of Science and Technology						
0930 hrs AIAA-2017-3021 **Evaluation of Spanwise Variable Impedance Liners with Three-Dimensional Aeroacoustics Propagation Codes** M. Jones, W. Watson, D. Nark, N. Schiller, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2017-3022 **Variable-Depth Liner Evaluation Using Two NASA Flow Ducts** M. Jones, D. Nark, W. Watson, B. Howerton, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-3023 **A Requirements-Driven Optimization Method for Acoustic Liners using Analytic Derivatives** J. Berton, NASA Glenn Research Center, Cleveland, OH; L. Lopes, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2017-3024 **Comparison of perforated liners impedance experimental techniques** P. Serrano, University of Southampton, Southampton, United Kingdom; A. Spillere, J. Cordioli, Federal University of Santa Catarina, Florianopolis, Brazil; P. Murray, R. Astley, University of Southampton, Southampton, United Kingdom	1130 hrs AIAA-2017-3025 **Non-intrusive measurements of velocity field over a lined wall in a turbulent duct flow for drag impact assessment** F. Mery, C. Conte, O. Léon, E. Piot, ONERA, Toulouse, France	1200 hrs AIAA-2017-3026 **Numerical Study on Sound Absorption Characteristics of A Non-locally Reacting Liner** C. Chen, X. Li, Beihang University, Beijing, China; F. Thiele, Technical University of Berlin, Berlin, Germany	

Monday, 5 June 2017						
13-AA-7	Jet Noise I: Supersonic					Governor's Square 12
Chaired by: S. LELE, Stanford University and J. LIU, Naval Research Laboratory						
0930 hrs AIAA-2017-3027 **Effect of Heating Supersonic Jet Noise: Inferences from Available Data** S. Sinha, S. Lele, Stanford University, Stanford, CA	1000 hrs AIAA-2017-3028 **On the Application of Shock-Associated Noise Models to PIV Measurements of Screeching Axisymmetric Cold Jets** D. Tan, Monash University, Melbourne, Australia; A. Kalyan, V. Gryazev, Queen Mary University of London, London, United Kingdom; M. Wong, D. Honnery, D. Edgington-Mitchell, Monash University, Melbourne, Australia; et al.	1030 hrs AIAA-2017-3029 **Supersonic Jet Noise: an Investigation into Noise Generation Mechanisms using Large Eddy Simulation and High-Resolution PIV Data** A. Markesteijn, Queen Mary University of London, London, United Kingdom; V. Semiletov, University of Cambridge, Cambridge, United Kingdom; S. Karabasov, Queen Mary University of London, London, United Kingdom; D. Tan, M. Wong, D. Honnery, Monash University, Clayton, Australia; et al.	1100 hrs AIAA-2017-3030 **Supersonic jet noise predictions using a unified asymptotic approximation for the adjoint vector Green's function and LES data** M. Afsar, University of Strathclyde, Glasgow, United Kingdom; A. Sescu, V. Sassanis, Mississippi State University, Starkville, MS; S. Lele, Stanford University, Stanford, CA	1130 hrs AIAA-2017-3031 **On the Effects of Nozzle Lip Thickness on the Azimuthal Mode Selection of a Supersonic Impinging Flow** J. Weightman, O. Amili, D. Honnery, D. Edgington-Mitchell, J. Soria, Monash University, Clayton, Australia		

Monday, 5 June 2017						
14-AA-8	**Turbomachinery Noise I: Tonal Noise**					**Governor's Square 11**
Chaired by: H. ATASSI, University of Notre Dame and H. NAMGOONG, Rolls-Royce plc						
0930 hrs AIAA-2017-3032 **Diffraction of Tonal Noise by Chevrons in a Turbofan Exhaust** M. Williamschen, G. Gabard, University of Southampton, Southampton, United Kingdom; H. Bériot, Siemens, Leuven, Belgium	1000 hrs AIAA-2017-3033 **Fan OGV/ESS Interaction Tone Noise Analysis Using Linearized Navier-Stokes Equations** H. Namgoong, Rolls-Royce Group plc, Derby, United Kingdom; L. Arisetti, QuEST, Bengalaru, India	1030 hrs AIAA-2017-3034 **Inlet and Aft Tonal Noise Predictions of a Full-Scale Turbofan Engine with Bifurcation and Inlet Distortion** J. Winkler, C. Reimann, R. Reba, United Technologies Corporation, East Hartford, CT; A. Ali, C. Gumke, Pratt & Whitney, East Hartford, CT				

Monday, 5 June 2017		
15-ADS-1 **0930 - 1230 hrs**	**Aerodynamic Decelerator Systems: Seminar**	**Majestic Ballroom**
Panelists: **Kenny Breuer** Brown University **Charbel Farhat** Stanford University **Manoochehr Koochesfahani** Michigan State University **Bart Smith** Utah State University		

Monday, 5 June 2017						
16-AMT-1	**Recent Developments Towards 4-D Measurements (3-Space + 1-Time) in Reacting and Non-Reacting Flows**					**Director's Row E**
Chaired by: J. MILLER, USAF/AFRL/RQTC						
0930 hrs Oral Presentation **Characterization of Unsteady Flow Structure, Pressure Field, and Turbulence in Complex wall-bounded Systems (Invited)** J. Katz, Johns Hopkins University, Baltimore, MD	1000 hrs Oral Presentation **Recent Advancements Towards Four-Dimensional Particle Image Velocimetry at Delft (Invited)** A. Sciacchitano, F. Scarano, Delft University of Technology, Delft, The Netherlands	1030 hrs Oral Presentation **Simplifying 4D Diagnostics with Plenoptic Cameras (Invited)** B. Thurow, Auburn University, Auburn, AL	1100 hrs Oral Presentation **Advances in multidimensional and high-speed imaging of sprays (Invited)** T. Meyer, N. Rahman, A. Douglawi, M. Slipchenko, Purdue University, West Lafayette, IN; B. Halls, J. Gord, Air Force Research Laboratory, Dayton, OH; et al.	1130 hrs Oral Presentation **4D Laser-Based Scalar Measurements: Advantages, Challenges, and Limitations (Invited)** B. Halls, Spectral Energies, LLC, Dayton, OH; T. Meyer, Purdue University, West Lafayette, IN; S. Roy, Spectral Energies, LLC, Dayton, OH; J. Gord, Air Force Research Laboratory, Dayton, OH	1200 hrs Oral Presentation **4D tomographic diagnostics: progress, challenges, and opportunities (Invited)** L. Ma, Virginia Polytechnic Institute and State University, Blacksburg, VA	

Monday, 5 June 2017						
17-APA-1	**Vortex/Vortical Flow Applications I**					**Century**
Chaired by: M. CALVERT, U.S. Army AMRDEC						
0930 hrs AIAA-2017-3035 **Aircraft Effects in Wake Vortex Decay Simulations** D. Schauerhamer, S. Robinson, University of California, Davis, Davis, CA	1000 hrs AIAA-2017-3036 **Semi-Analytical Viscous Trailing Vortex-Ground Interaction and Comparison with AVOSS Model** M. Kokurin, K. Rokhsaz, Wichita State University, Wichita, KS	1030 hrs AIAA-2017-3037 **Experimental investigation of the turbulence intensity effect on a wingtip vortex in the near field** K. Ben Miloud, M. Dghim, H. Fellouah, University of Sherbrooke, Sherbrooke, Canada; M. Ferchichi, Royal Military College of Canada, Kingston, Canada	1100 hrs AIAA-2017-3038 **Stereoscopic PIV Investigation of the Effect of Synthetic Jet Actuation on a Wingtip Vortex** M. Dghim, University of Sherbrooke, Sherbrooke, Canada; M. Ferchichi, Royal Military College of Canada, Kingston, Canada; H. Fellouah, University of Sherbrooke, Sherbrooke, Canada	1130 hrs AIAA-2017-3039 **Detached Eddy Simulation of Far-Field Wake Vortex in Static and Mutational Ground Effects** Q. Qu, C. Lu, P. Liu, Beihang University, Beijing, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO		

Monday, 5 June 2017						
18-APA-2	Flow Control Applications and Demonstrations I					Silver
Chaired by: K. KARA, Khalifa University of Science, Technology & Research and O. SAN, Oklahoma State University						
0930 hrs AIAA-2017-3040 **A technique for low input flow control actuation** A. Shmilovich, E. Whalen, The Boeing Company, Huntington Beach, CA	1000 hrs AIAA-2017-3041 **Flow Separation Control using Sweeping Jet Actuator** K. Kara, Khalifa University, Abu Dhabi, United Arab Emirates	1030 hrs AIAA-2017-3042 **On the Use of Sweeping Jets to Trim and Control a Tailless Aircraft Model** M. Jentzsch, L. Taubert, I. Wygnanski, University of Arizona, Tucson, Tucson, AZ	1100 hrs AIAA-2017-3043 **Separated Flow Control over Naca 0012 Airfoil Using Sweeping Jet Actuators** K. Kara, B. Slupski, Khalifa University, Abu Dhabi, United Arab Emirates	1130 hrs AIAA-2017-3044 **A Sweeping Jet Application on a High Reynolds Number Semi-Span Supercritical Wing Configuration** G. Jones, W. Milholen, D. Chan, S. Goodliff, NASA Langley Research Center, Hampton, VA	1200 hrs AIAA-2017-3045 **Application of Active Flow Control for Download Alleviation in Rotorcraft** Y. Yadlin, A. Shmilovich, The Boeing Company, Huntington Beach, CA; R. Narducci, The Boeing Company, Philadelphia, PA	

Monday, 5 June 2017						
19-APA-3	Special Session: Low Boom Activities I					Windows
Chaired by: K. WAITHE, Boom Technology Inc and A. ELMILIGUI, NASA Langley Research Center						
0930 hrs AIAA-2017-3046 **Viscous Aerodynamic Shape Optimization with Installed Propulsion Effects** C. Heath, J. Seidel, NASA Glenn Research Center, Cleveland, OH; S. Rallabhandi, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2017-3047 **Trim Flight Conditions for a Low-Boom Aircraft Design Under Uncertainty** B. Phillips, T. West, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-3048 **Behavior of Whole Near-Filed Flow over Mach 1.7 Free-Flight Bodies** Y. Aoki, D. Yoshimizu, A. Iwakawa, A. Sasoh, Nagoya University, Nagoya, Japan	1100 hrs AIAA-2017-3049 **Adjoint-Based Mesh Adaptation for the Sonic Boom Signature Loudness** S. Rallabhandi, M. Park, NASA Langley Research Center, Hampton, VA	1130 hrs Oral Presentation **Status & Plans for NASA Low Boom Flight Demonstration** P. Coen, NASA Langley Research Center, Hampton, VA		

Monday, 5 June 2017						
20-APA-4	Rotorcraft Aerodynamics					Colorado
Chaired by: N. HARIHARAN, CREATE-AV and E. BLOSCH, Lockheed Martin Corporation						
0930 hrs AIAA-2017-3050 **The Effects of Blade Aspect Ratio and Taper Ratio on the Hovering Performance of the Cycloidal Rotor** Y. Hu, H. Zhang, X. Fu, G. Wang, Northwestern Polytechnical University, Xi'an, China	1000 hrs AIAA-2017-3051 **On High Fidelity Modeling of Aerodynamic Interaction between Ship and Rotor** E. Bae, C. He, Advanced Rotorcraft Technology, Inc., Sunnyvale, CA	1030 hrs AIAA-2017-3052 **Investigating the impact of using CFD generated unsteady Mach number dynamic stall data for numerical rotor analysis of helicopter forward flight.** D. Jee, K. Al-Jaburi, D. Feszty, Carleton University, Ottawa, Canada	1100 hrs AIAA-2017-3053 **Prediction of helicopter rotor hover performance using high fidelity CFd methods** A. Jimenez-Garcia, G. Barakos, University of Glasgow, Glasgow, United Kingdom	1130 hrs AIAA-2017-3054 **Trim Routine for Multirotor Vehicles in Straight and Level Flight** J. Tsaltas, G. Bramesfeld, Ryerson University, Toronto, Canada	1200 hrs AIAA-2017-3055 **Numerical Study of Aerodynamic Performance and Flow Interaction for Coaxial Rigid Rotor in Hover and Forward Flight** X. Zhao, P. Zhou, X. Yan, Northwestern Polytechnical University, Xi'an, China; Y. Lin, China Helicopter Research and Development Institute, Jingdezhen, China	

Monday, 5 June 2017						
21-APA-5	Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques I					Gold
Chaired by: O. KHAN, Tuskegee Univ and N. HALL						
0930 hrs AIAA-2017-3056 **Transonic Airfoil Study Using Sonic Plateau, Optimization and Off-Design Performance Maps** J. Doherty, University of Surrey, Guildford, United Kingdom	1000 hrs AIAA-2017-3057 **Efficient Global Optimization of a Transonic Wing with Geometric Data Reduction** D. Cinquegrana, E. Iuliano, Italian Aerospace Research Center (CIRA), Capua, Italy	1030 hrs AIAA-2017-3058 **Computational Design and Analysis of a Transonic Natural Laminar Flow Wing for a Wind Tunnel Model** M. Lynde, R. Campbell, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2017-3059 **Building a Practical Natural Laminar Flow Design Capability** R. Campbell, M. Lynde, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2017-3060 **Design Optimization of Natural-Laminar-Flow Airfoil for Complicated Flight Conditions** H. Zhao, Z. Gao, Y. Gao, Northwestern Polytechnical University, Xi'an, China	1200 hrs AIAA-2017-3061 **Hybrid Optimization Design of Natural-Laminar-Flow(NLF) Supercritical Airfoil and Infinite Swept Wing** T. Fan, W. Song, J. Chen, Z. Han, Northwestern Polytechnical University, Xi'an, China	

Monday, 5 June 2017						
22-ASE-1	**Observations and Modeling of the Atmospheric Environment**					**Columbine**
Chaired by: M. STEINER, NCAR/RAL and F. PROCTOR, NASA Langley Research Center						
0930 hrs AIAA-2017-3062 **OpenFOAM coupled with WRF for Wind Power Estimations** E. Leblebici, I. Tuncer, Middle East Technical University, Ankara, Turkey	1000 hrs AIAA-2017-3063 **Atmospheric Radiation Measurement System for Commercial Aircraft Altitudes** W. Atwell, Self, Houston, TX; K. Tobiska, Space Environment Technologies, Pacific Palisades, CA	1030 hrs AIAA-2017-3064 **Characterization of atmospheric turbulence as a function of altitude** S. Prasad, York High School, Yorktown, VA; M. Ivanco, T. Ivanco, E. Ancel, NASA Langley Research Center, Hampton, VA	1100 hrs Oral Presentation **High Ice Crystal Concentrations and Temperature/Airspeed Anomalies Measured from Commercial Aircraft** G. Raga, National Autonomous University of Mexico, Mexico City, Mexico; D. Baumgardner, Droplet Measurement Technologies, Boulder, CO; M. Gallagher, University of Manchester, Manchester, United Kingdom	1130 hrs Oral Presentation **The Backscatter Cloudprobe with Polarization Detection: A New Aircraft Ice Water Detector** D. Baumgardner, R. Newton, M. Freer, Droplet Measurement Technologies, Boulder, CO; D. Axisa, National Center for Atmospheric Research, Boulder, CO		

Monday, 5 June 2017						
23-ATIO.ACD-1	**Aircraft Subsystems Design**					**Governor's Square 16**
Chaired by: M. DRAKE, Boeing Commercial Airplanes and A. CHAPUT, University of Texas at Austin						
0930 hrs AIAA-2017-3065 **On-Board Systems Preliminary Sizing in an Overall Aircraft Design Environment** L. Boggero, M. Fioriti, S. Corpino, Technical University of Turin, Turin, Italy; P. Ciampa, German Aerospace Center (DLR), Hamburg, Germany	1000 hrs AIAA-2017-3066 **Parameterized Flight Mission for Secondary Power Requirement Estimations of Commercial Transport Aircraft** T. Lampl, S. Muschkorgel, M. Hornung, Technical University of Munich, Munich, Germany	1030 hrs AIAA-2017-3067 **Integrated Sizing and Multi-objective Optimization of Aircraft and Subsystem Architectures in Early Design** D. Rajaram, Y. Cai, T. Puranik, I. Chakraborty, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2017-3068 **Conceptual Design Assessment of Advanced Hybrid Electric Turboprop Aircraft Configurations** M. Strack, German Aerospace Center (DLR), Hamburg, Germany	1130 hrs AIAA-2017-3069 **Carbon Nanotube (CNT) based Ice Protection System applied to a small aircraft** W. Affonso, Embraer, São Paulo, Brazil; R. Annes da Silva, Technological Institute of Aeronautics (ITA), São Paulo, Brazil; F. da Silva, Embraer, São Paulo, Brazil; G. Thomas, S. Kessler, Metis Design Corporaton, Boston, MA; R. Hoffmann Domingos, Embraer, São Paulo, Brazil	1200 hrs AIAA-2017-3070 **Study on Classification of Aircraft Conceptual Design Parameters by Principal Component Analysis** R. Omiya, K. Rinoie, University of Tokyo, Tokyo, Japan	

Monday, 5 June 2017						
24-ATIO.ATM-1	**UAS Traffic Management (UTM)**					**Plaza Court 1**
Chaired by: P. WEI, Iowa State University						
0930 hrs AIAA-2017-3071 **Modeling Approach for Evaluation of Traffic Management Requirements and Policies for Unmanned Aircraft Systems** B. Horio, V. Kumar, M. Narkus-Kramer, LMI, Tysons, VA	1000 hrs AIAA-2017-3072 **UAV Trajectory Modeling Using Neural Networks** M. Xue, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2017-3073 **Initial Study of An Effective Fast-time Simulation Platform for Unmanned Aircraft System Traffic Management** M. Xue, J. Rios, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2017-3074 **Exploration of Detect-and-Avoid and Well-Clear Requirements for Small UAS Maneuvering in an Urban Environment** S. Johnson, A. Petzen, D. Tokotch, Adaptive Aerospace Group, Inc., Hampton, VA	1130 hrs AIAA-2017-3075 **Small Unmanned Aircraft Systems Operational and Traffic Management Considerations** Z. Barbeau, J. Jacob, Oklahoma State University, Stillwater, OK	1200 hrs AIAA-2017-3076 **The improved VIKOR method based on dynamic parameters optimization in multi-target threat assessment** K. Zhang, Northwestern Polytechnical University, Xi'an, China	

Monday, 5 June 2017						
25-ATIO.ATM-2	**Machine Learning In ATM**					**Plaza Court 2**
Chaired by: H. ARNESON, NASA Ames Research Center						
0930 hrs AIAA-2017-3077 **Wind forecast uncertainty prediction using Machine Learning techniques on Big Weather Data** R. Cabos, P. Hecker, Technical University of Braunschweig, Braunschweig, Germany; N. Kneuper, J. Schiefele, Jeppesen GmbH, Neu-Isenburg, Germany	1000 hrs AIAA-2017-3078 **Predicting the Operational Acceptability of Route Advisories** A. Evans, Crown Consulting, Inc., Moffett Field, CA; P. Lee, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2017-3079 **Exploring Abnormal Flight Patterns via Machine Learning Techniques** E. Aslaner, ASELSAN, Inc., Ankara, Turkey; C. Unal, Turkish Aerospace Industries, Inc., Ankara, Turkey	1100 hrs AIAA-2017-3080 **DAAS: Data Analytics for Assurance of Safety** A. Tyagi, C. Kurcz, A. Grushin, J. Nanda, Intelligent Automation, Inc., Rockville, MD	1130 hrs AIAA-2017-3081 **An Aircraft Deployment Prediction Model Using Machine Learning Techniques** T. Ukai, H. Chao, D. DeLaurentis, Purdue University, West Lafayette, IN		

Monday, 5 June 2017						
26-ATIO.TFPC-1	**On-Demand Mobility I: Operations and Airspace**					**Governor's Square 15**
Chaired by: K. GOODRICH, NASA Langley Research Center and S. BRICENO, Georgia Institute of Technology						
0930 hrs AIAA-2017-3082 **Preliminary Considerations for ODM Air Traffic Management based on Analysis of Commuter Passenger Demand and Travel Patterns for the Silicon Valley Region of California** A. Trani, N. Syed, M. Rye, M. Ade, N. Hinze, H. Swingle, Virginia Polytechnic Institute and State University, Blacksburg, VA; et al.	1000 hrs AIAA-2017-3083 **Constraint Identification for On-Demand Mobility Aviation Operations in Los Angeles** P. Vascik, R. Hansman, Massachusetts Institute of Technology, Cambridge, MA	1030 hrs AIAA-2017-3084 **Evaluation of Operational Constraint Mitigation Approaches for On-Demand Mobility Aviation** P. Vascik, R. Hansman, Massachusetts Institute of Technology, Cambridge, MA	1100 hrs AIAA-2017-3085 **Exploring Concepts of Operations for On-Demand Passenger Air Transportation** V. Nneji, A. Stimpson, M. Cummings, Duke University, Durham, NC; K. Goodrich, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2017-3086 **Enabling Airspace Integration for High-Density On-Demand Mobility Operations** E. Mueller, P. Kopardekar, NASA Ames Research Center, Moffett Field, CA; K. Goodrich, NASA Langley Research Center, Hampton, VA	1200 hrs AIAA-2017-3087 **Pilot Training Metrics at a Part 141 University Training Program** S. Hampton, K. Byrnes, D. Truong, Embry-Riddle Aeronautical University, Daytona Beach, FL	

Monday, 5 June 2017						
27-BAL-1	**Balloon Programs and Operations**					**Savoy**
Chaired by: M. SMITH, Aerostar International, Inc.						
0930 hrs AIAA-2017-3088 **The CNES 2015 - 2017 Balloon Program** A. Vargas, V. Dubourg, P. Raizonville, P. Cocquerez, French Space Agency (CNES), Toulouse, France	1000 hrs AIAA-2017-3089 **The Stratospheric Balloon Mission PoGO+ from Esrange to Victoria Island, Canada** C. Lockowandt, Swedish Space Corporation (SSC), Solna, Sweden	1030 hrs AIAA-2017-3090 **2017 NASA Balloon Program Update** D. Fairbrother, NASA Wallops Flight Facility, Wallops Island, VA	1100 hrs AIAA-2017-3091 **Performance Highlights of NASA Super Pressure Balloon Mid-Latitude Flights** H. Cathey, New Mexico State University, Las Cruces, NM; D. Fairbrother, M. Said, NASA Wallops Flight Facility, Wallops Island, VA	1130 hrs AIAA-2017-3092 **Minimizing wrinkles in the RF-reflector for the Exa-Volt Antenna (EVA)** F. Baginski, J. Trageser, George Washington University, Washington, D.C.; P. Gorham, University of Hawaii, Honolulu, Honolulu, HI		

Monday, 5 June 2017						
28-CFD-1	**High-Order Methods**					**Tower Court D**
Chaired by: Z. WANG, University of Kansas and S. NADARAJAH						
0930 hrs AIAA-2017-3093 **On High-Order Upwind Methods for Convection** H. Huynh, NASA Glenn Research Center, Cleveland, OH	1000 hrs AIAA-2017-3094 **High Order FR/CPR Method for Overset Meshes** Z. Duan, Z. Wang, University of Kansas, Lawrence, Lawrence, KS	1030 hrs AIAA-2017-3095 **Nodal Space-Time Flux Reconstruction Methods for Conservation Laws** M. Yu, University of Maryland, Baltimore County, Baltimore, MD	1100 hrs AIAA-2017-3096 **Scalability and Efficiency of Explicit and Implicit FR/CPR Schemes in Large Eddy Simulations** F. Jia, Z. Wang, University of Kansas, Lawrence, Lawrence, KS; R. Bhaskaran, U. Paliath, General Electric Company, Niskayuna, NY; G. Laskowski, General Electric Company, Lynn, MA	1130 hrs AIAA-2017-3097 **A Compact High Order Finite Volume Method Based on Variational Reconstruction for Compressible Flows on Arbitrary Grids** X. Liu, J. Lou, L. Li, H. Luo, North Carolina State University, Raleigh, NC; H. Nishikawa, National Institute of Aerospace, Hampton, VA; Y. Ren, Tsinghua University, Beijing, China	1200 hrs AIAA-2017-3098 **Compact Direct Flux Reconstruction for the Navier-Stokes Equations on Dynamic Meshes** L. Wang, M. Yu, University of Maryland, Baltimore County, Baltimore, MD	

Monday, 5 June 2017						
29-CFD-2	**Optimization for Mesh Adaptation**					**Tower Court C**
Chaired by: P. PERSSON and C. ROY, Virginia Tech						
0930 hrs AIAA-2017-3099 **Error Minimization via Metric-Based Curved-Mesh Adaptation** D. Sanjaya, K. Fidkowski, University of Michigan, Ann Arbor, Ann Arbor, MI; L. Diosady, S. Murman, NASA Ames Research Center, Moffett Field, CA	1000 hrs AIAA-2017-3100 **Adjoint-based anisotropic mesh adaptation for Discontinuous Galerkin Methods Using a Continuous Mesh Model** A. Rangarajan, G. May, RWTH Aachen University, Aachen, Germany; V. Dolejsi, Charles University, Prague, Czech Republic	1030 hrs AIAA-2017-3101 **Optimization-based Anisotropic hp-Adaptation for High-Order Methods** N. Ringue, S. Nadarajah, McGill University, Montréal, Canada	1100 hrs AIAA-2017-3102 **Airfoil Shape Optimization Using Output-Based Adapted Meshes** G. Chen, K. Fidkowski, University of Michigan, Ann Arbor, Ann Arbor, MI	1130 hrs AIAA-2017-3103 **Optimal Mesh Adaptation for 2D Euler Equations** C. Jackson, C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA; C. Schrock, Air Force Research Laboratory, Wright-Patterson AFB, OH	1200 hrs AIAA-2017-3104 **Residual based grid adaptation for meshless LSFD-U solver** B. Narayanarao, Y. Mohamed, Indian Institute of Science, Bengaluru, India	

Monday, 5 June 2017						
30-CFD-3	**Meshing I**					**Tower Court B**
Chaired by: K. VOGIATZIS, ENGILITY and S. DEY, NRL						
0930 hrs AIAA-2017-3105 **The Impact of Unstructured Mesh Generation Approach on Errors** H. Fan, C. Ollivier Gooch, University of British Columbia, Vancouver, Canada	1000 hrs AIAA-2017-3106 **Methods for the Evaluation of Candidate Meshes for the Geometry and Mesh Generation Workshop** J. Dannenhoffer, Syracuse University, Syracuse, NY; C. Ollivier Gooch, University of British Columbia, Vancouver, Canada	1030 hrs AIAA-2017-3107 **Spline Interpolation for A Fourth-Order Adaptive Mesh Refinement Algorithm on Arbitrary Mapped Grids** N. Overton, X. Gao, S. Guzik, Colorado State University, Fort Collins, CO	1100 hrs AIAA-2017-3108 **Metric-Aligned and Metric-Orthogonal Strategies in AFLR** F. Alauzet, National Institute for Research in Computer Science and Control (INRIA), Saclay, France; D. Marcum, Mississippi State University, Starkville, MS	1130 hrs AIAA-2017-3109 **Reducing the Computational Cost of Viscous Mesh Adaptation** Z. Davis, T. Carrigan, N. Wyman, Pointwise, Inc., Fort Worth, TX; M. McMullen, Aerion Technologies, Palo Alto, CA		

Monday, 5 June 2017						
31-CPS-1	**Advances in Computer Systems for Aviation**					**Vail**
Chaired by: M. VELEV, Aries Design Automation, LLC						
0930 hrs AIAA-2017-3110 **The case for software-defined networks in contested environments** J. Lyke, Air Force Research Laboratory, Kirtland AFB, NM	1000 hrs AIAA-2017-3111 **Data Privacy and Security Challenges for Next-Generation Aircraft: Using Smart-Bridge Technology and Privacy-Preserving Search in Heterogeneous Aircraft Systems** E. Rozier, Iowa State University, Ames, IA	1030 hrs AIAA-2017-3112 **A Case Study in Safety, Security, and Availability of Wireless-Enabled Aircraft Communication Networks.** R. Dureja, E. Rozier, K. Rozier, Iowa State University, Ames, IA	1100 hrs AIAA-2017-3113 **Modeling the Software Development Process as a Socio-Technical System Based on FRAM to Facilitate the Risk Analysis and Software Defects Prevention** L. Tan, B. Liiu, S. Wang, D. Ling, Beihang University, Beijing, China			

Monday, 5 June 2017		
32-F360-1 **0930 - 1130 hrs**	**Perspectives and Progress on Green Aviation**	**Grand Ballroom I**

Moderator: John Tylko, Chief Innovation Officer, Aurora Flight Sciences

Panelists:

Fay Collier
Project Manager
Environmentally Responsible Aviation
NASA Langley Research Center

Mark Drela
Terry J. Kohler Professor
Department of Aeronautics and Astronautics
Massachusetts Institute of Technology

Alan H. Epstein
Vice President
Technology and Environment
Pratt & Whitney

Robert H. Liebeck
Chief Scientist
Blended-Wing-Body Airplane Program
Boeing Defense, Space, and Security

Monday, 5 June 2017						
33-FD-1	**Boundary Layer Control**					**Capitol**
Chaired by: B. ELBING, Oklahoma State University						
0930 hrs AIAA-2017-3114 **Effect of Upstream Flow Deformation Using Plasma Actuators on Crossflow Transition Induced by Unsteady Vortical Free-Stream Disturbances** P. Dörr, M. Kloker, University of Stuttgart, Stuttgart, Germany; A. Hanifi, Royal Institute of Technology (KTH), Stockholm, Sweden	1000 hrs AIAA-2017-3115 **Numerical investigations of boundary-layer flow transition control with Plasma Actuators** L. Wang, J. Li, S. Fu, Tsinghua University, Beijing, China	1030 hrs AIAA-2017-3116 **DNS of compressible turbulent boundary layers at varying subsonic Mach numbers** C. Wenzel, B. Selent, M. Kloker, U. Rist, University of Stuttgart, Stuttgart, Germany	1100 hrs AIAA-2017-3117 **Aerodynamic Investigation of the Conformal Vortex Generator** G. Kibble, J. Jacob, A. Alexander, B. Elbing, Oklahoma State University, Stillwater, OK; P. Ireland, B. Black, Edge Aerodynamix, Panama City Beach, FL	1130 hrs AIAA-2017-3118 **Slip length based boundary condition for modeling drag reduction devices** B. Mele, R. Tognaccini, University of Naples "Federico II", Naples, Italy		

Monday, 5 June 2017						
34-FD-2	**Shock Boundary Interactions I**					**Beverly**
Chaired by: M. GAMBA, University of Michigan and S. LAURENCE, University of Maryland, College Park						
0930 hrs AIAA-2017-3119 **Pulse-Burst PIV of the Supersonic Wake of a Wall-Mounted Hemisphere** S. Beresh, J. Henfling, R. Spillers, Sandia National Laboratories, Albuquerque, NM	1000 hrs AIAA-2017-3120 **Separation Detection for a Cone at High Angle of Attack in Hypersonic Flow with Pressure-Sensitive Paint** C. Running, T. Juliano, M. Thompson, H. Sakaue, University of Notre Dame, Notre Dame, IN	1030 hrs AIAA-2017-3121 **A joint study on the starting limits of a generic supersonic inlet** E. Schuelein, German Aerospace Center (DLR), Göttingen, Germany; M. Schenk, Technical University of Ilmenau, Ilmenau, Germany; B. Buchmann, University of Göttingen, Göttingen, Germany	1100 hrs AIAA-2017-3122 **Aerothermodynamics of a Hypersonic Inflatable Aerodynamic Decelerator (HIAD) with Flexible TPS** B. Hollis, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2017-3123 **Study of the Dynamics of Transitional Shock Wave-Boundary Layer Interactions using Optical Diagnostics** E. Lash, C. Combs, P. Kreth, J. Schmisseur, University of Tennessee, Tullahoma, Tullahoma, TN	1200 hrs AIAA-2017-3124 **Hypersonic Shock Wave Transitional Boundary Layer Interactions - A Review** D. Knight, M. Mortazavi, Rutgers University, New Brunswick, NJ	

Monday, 5 June 2017						
35-FD-3	**Unsteady Fluid Dynamics and Unsteady Aerodynamics I**					**Tower Court A**
Chaired by: J. NAUGHTON, University of Wyoming						
0930 hrs AIAA-2017-3125 **Study of Fluid-Structure Interactions on a Tunable Store in Complex Cavity Flow** K. Casper, J. Wagner, S. Beresh, R. Spillers, J. Henfling, Sandia National Laboratories, Albuquerque, NM	1000 hrs AIAA-2017-3126 **Effects of Cavity Width on Compressible Resonance Dynamics using Time-Resolved Pressure Sensitive Paint and Particle Image Velocimetry** J. Wagner, K. Casper, S. Beresh, E. Demauro, R. Spillers, J. Henfling, Sandia National Laboratories, Albuquerque, NM	1030 hrs AIAA-2017-3127 **Unsteady Force and Flow Measurements for Plunging Finite Wings** N. Chiereghin, D. Cleaver, I. Gursul, University of Bath, Bath, United Kingdom	1100 hrs AIAA-2017-3128 **Experimental Investigation of the Structure of Turbulent Swirling Jets** E. DeMillard, J. Naughton, University of Wyoming, Laramie, Laramie, WY	1130 hrs AIAA-2017-3129 **POD Analysis in the Wake of Wall-Mounted Cylinders** H. Fanini Leite, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil; L. Abreu, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; A. Avelar, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil; A. Cavalieri, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1200 hrs AIAA-2017-3130 **The Study of Cavity Flow and Leading Edge Spoiler based on DES** L. Xie, J. Ai, H. Feng, Y. Zhang, Y. Hou, C. Yuan, FAI, Xi'an, China	

Monday, 5 June 2017						
36-FD-4	**Special Session: HIFiRE-5b Flight Test Results**					**Terrace**
Chaired by: R. KIMMEL, USAF AFRL/RQHF and D. DOLVIN, AFRL						
0930 hrs AIAA-2017-3131 **HIFiRE-5b Flight Overview** R. Kimmel, D. Adamczak, Air Force Research Laboratory, Wright-Patterson AFB, OH; D. Hartley, H. Alesi, M. Frost, R. Pietsch, DSTG, Brisbane, Australia; et al.	1000 hrs AIAA-2017-3132 **CFD Baseflow Calculations for HiFIRE-5b Flight** K. Porter, J. Poggie, Purdue University, West Lafayette, IN	1030 hrs AIAA-2017-3133 **Correlation of HIFiRE-5b Flight Data With Computed Pressure and Heat Transfer for Attitude Determination** J. Jewell, R. Kimmel, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Poggie, K. Porter, Purdue University, West Lafayette, IN; T. Juliano, University of Notre Dame, Notre Dame, IN	1100 hrs AIAA-2017-3134 **HIFiRE-5b Heat Flux and Boundary-Layer Transition** T. Juliano, University of Notre Dame, Notre Dame, IN; J. Poggie, K. Porter, Purdue University, West Lafayette, IN; R. Kimmel, J. Jewell, D. Adamczak, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2017-3135 **Ground Test Measurements of Boundary-Layer Instabilities and Transition for HIFiRE-5 at Flight-Relevant Attitudes** M. Borg, R. Kimmel, Air Force Research Laboratory, Wright-Patterson AFB, OH	1200 hrs AIAA-2017-3136 **PSE Analysis of Crossflow Instability on HIFiRE 5b Flight Test** M. Tufts, R. Gosse, R. Kimmel, Air Force Research Laboratory, Wright-Patterson AFB, OH	

Monday, 5 June 2017						
37-FT-1	**Flight Testing of Unmanned Aircraft Systems**					**Director's Row J**
Chaired by: K. GARMAN, Federal Aviation Administration and R. ROEDTS, Columbia Helicopters, Inc and W. SCHUMAN, AEDC - Arnold Engineering Development Complex						
0930 hrs AIAA-2017-3137 **Operational Overview for UAS Integration in the NAS Project Flight Test Series 3** S. Valkov, D. Sternberg, M. Marston, NASA Armstrong Flight Research Center, Edwards, CA	1000 hrs AIAA-2017-3138 **First Flights of Advanced Unmanned Aircraft – Fundamentals of Planning and Execution** M. McDaniel, Naval Air Warfare Center, Patuxent River, MD	1030 hrs AIAA-2017-3139 **Flight Testing an ADS-B Equipped sUAS in GPS-Denied Environments** C. Lum, R. Larson, W. Handley, S. Lui, Z. Caratao, University of Washington, Seattle, Seattle, WA	1100 hrs AIAA-2017-3140 **Low-Cost, Multi-Purpose Autopilot for Ground and Aerial Vehicles using an Arduino MEGA with Transistor Array Safety Circuit** B. Troub, M. Wojciechowski, M. Swanepoel, R. Garrido, J. Magnin, C. Montalvo, University of South Alabama, Mobile, AL	1130 hrs AIAA-2017-3141 **Aerodynamic Characteristics of Quadrotor Helicopter** H. Nguyen, L. Yu, K. Mori, Nagoya University, Nagoya, Japan		

Monday, 5 June 2017						
38-GT-1	**NASA Aeronautics Evaluation and Test Capabilities Project**					**Governor's Square 17**
Chaired by: S. HELLAND, NASA Glenn Research Center and C. PASTOR-BARSI, NASA Glenn Research Center						
0930 hrs AIAA-2017-3142 **FY16 Facility Assessment for the Aeronautics Evaluation and Test Capabilities Project** J. Howard, C. Jacobs, T. Proffitt, Jacobs, Tullahoma, TN; D. Shinn, NASA Langley Research Center, Hampton, VA; P. Pachlhofer, NASA Glenn Research Center, Cleveland, OH; J. Sydnor, NASA Langley Research Center, Hampton, VA	1000 hrs Oral Presentation **Overview of AETC and the New Funding Model** R. Colantonio, NASA Glenn Research Center, Cleveland, OH	1030 hrs Oral Presentation **AETC Capability Advancements** D. Stark, NASA Glenn Research Center, Cleveland, OH	1100 hrs Oral Presentation **AETC Test Technology** J. Bell, NASA Ames Research Center, Moffett Field, CA	1130 hrs **Panel Discussion** Moderator: Mark Woike Ron Colantonio David Stark James Bell		

Monday, 5 June 2017						
39-MDO-1	**Aerodynamic Shape Optimization I**					**Director's Row I**
Chaired by: B. STANFORD, NASA Langley Research Center						
0930 hrs AIAA-2017-3143 **Robust Airfoil Design Optimization Using Stochastic Expansions and Utility Theory** X. Du, L. Leifsson, Iowa State University, Ames, IA; S. Koziel, Reykjavik University, Reykjavik, Iceland	1000 hrs AIAA-2017-3144 **Robustness of Natural Laminar Flow Airfoil Drag Optimization to Transition Amplification Factor** J. Hollom, N. Qin, University of Sheffield, Sheffield, United Kingdom	1030 hrs AIAA-2017-3145 **An Aerodynamic Perspective on Shape Deformation Methods** M. Kaandorp, Delft University of Technology, Delft, The Netherlands; S. Menzel, S. Schmitt, Honda Corporation, Offenbach, Germany				

Monday, 5 June 2017						
40-MDO-2	**Design Optimization of Complex Engineered System I**					**Director's Row H**
Chaired by: S. FERGUSON, North Carolina State University and M. HENSON, Lockheed Martin Aeronautics						
0930 hrs AIAA-2017-3146 **Conceptual Design Methods for New Aircraft Generators** S. Iden, K. Yost, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. von Spakovsky, Virginia Polytechnic Institute and State University, Blacksburg, VA; D. Allison, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2017-3147 **Technology Considerations for Inclusion of Survivability in MDAO** N. Alexandrov, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-3148 **On the Consequences of the "No Free Lunch" Theorem for Optimization on the Choice of an Appropriate MDO Architecture** C. Vanaret, F. Gallard, Institute of Technology Antoine de Saint Exupéry, Toulouse, France; J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2017-3149 **Towards the Industrialization of New MDO Methodologies and Tools for Aircraft Design** A. Gazaix, F. Gallard, V. Gachelin, Institute of Technology Antoine de Saint Exupéry, Toulouse, France	1130 hrs AIAA-2017-3150 **Automated Selection of the Optimal On-board Systems Architecture within MDO Collaborative Environment** M. Fioriti, L. Boggero, S. Corpino, Technical University of Turin, Turin, Italy; A. Isyanov, A. Mirzoyan, Central Institute of Aviation Motors, Moscow, Russia; R. Lombardi, NOESIS Solutions N.V., Gaston Geenslaan, Belgium; et al.		

Monday, 5 June 2017						
41-MST-1	**Modeling and Simulation for Unmanned Aerial Systems**					**Governor's Square 14**
Chaired by: G. CHATTERJI, NASA Ames Research Center and P. ZAAL, NASA Ames Research Center						
0930 hrs AIAA-2017-3151 **Agent-Based Analysis of Multi-UAV Area Monitoring Mission Effectiveness** R. Zhang, B. Song, Y. Pei, W. Tang, Northwestern Polytechnical University, Xi'an, China; M. Wang, University of Southampton, Southampton, United Kingdom	1000 hrs AIAA-2017-3152 **Methodology of Estimation of Aerodynamic Coefficients of the UAS-E4 Ehécatl using Datcom and VLM Procedure** M. Kuitche, R. Botez, University of Québec, Montréal, Canada	1030 hrs AIAA-2017-3153 **High Performance Photo-Realistic Simulation Environment for Search and Track Missions Executed by Autonomous Unmanned Aerial Systems** I. Kamil, University of California, Berkeley, Berkeley, CA; A. Chakrabarty, R. Morris, X. Bouyssounouse, R. Hunt, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2017-3154 **System Identification of Circulation Control UAV Using X-Plane Flight Simulation Software and Flight Data** M. Agha, K. Kanistras, P. Saka, K. Valavanis, M. Rutherford, University of Denver, Denver, CO			

Monday, 5 June 2017						
42-PDL-1	**Plasma and Laser Physics**					**Denver**
Chaired by: S. LEONOV, University of Notre Dame						
0930 hrs AIAA-2017-3155 **Investigation of photoionization in the exhaust jet of a high-velocity oxy-fuel system toward application to MHD power generation** H. Kim, D. Huckaby, R. Woodside, E. Zeuthen, D. Oryshchyn, T. Ochs, National Energy Technology Laboratory, Albany, OR	1000 hrs AIAA-2017-3156 **Non-equilibrium modeling of UV laser induced plasma on a copper target in the presence of CU_2^+** A. Ait Oumeziane, Abou Beker Blekaid University, Tlemcen, Algeria; J. Parisse, French Air Force Academy, Salon de Provence, France; B. Liani, Abou Beker Blekaid University, Tlemcen, Algeria	1030 hrs AIAA-2017-3157 **Experimental Study of the Electrical and Spectroscopic Characteristics of Glow Discharge** M. Kotov, P. Kozlov, L. Ruleva, S. Solodovnikov, S. Surzhikov, Russian Academy of Sciences, Moscow, Russia				

Monday, 5 June 2017						
43-TFM-1	**Flow Stability and Transition**					**Spruce**
Chaired by: J. SMITH, Sandia National Laboratories						
0930 hrs AIAA-2017-3158 **Nonlinear Stability of the Couette Flow** P. Yau, S. Wang, Auckland University, Auckland, New Zealand; Z. Rusak, Rensselaer Polytechnic Institute, Troy, NY	1000 hrs AIAA-2017-3159 **Accounting Crossflow Effects in One-Equation Local Correlation-Based Transition Model** S. Vallinayagam Pillai, S. Lardeau, Siemens, London, United Kingdom	1030 hrs AIAA-2017-3160 **Dynamic Mode Shaping for Fluid Flow Control: New Strategies for Transient Growth Suppression** M. Hemati, H. Yao, University of Minnesota, Twin Cities, Minneapolis, MN	1100 hrs AIAA-2017-3161 **Real fluid effects on thermoacoustic standing-wave resonance in supercritical CO_2** M. Migliorino, P. Gupta, C. Scalo, Purdue University, West Lafayette, IN	1130 hrs AIAA-2017-3162 **Non-Equilibrium Effects on the Stability of a Mach 10 Flat-Plate Boundary Layer** X. Wang, University of Alabama, Tuscaloosa, Tuscaloosa, AL		

Monday, 5 June 2017						
44-TP-1	**Reacting Flows I**					**Plaza Court 3**
Chaired by: X. WANG, The University of Alabama and T. SCHWARTZENTRUBER, University of Minnesota						
0930 hrs AIAA-2017-3163 **Master equation simulation of O_2-N_2 collisions on an *ab-initio* potential energy surface** D. Andrienko, I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2017-3164 **Ab initio based rovibrational grouping model for $N_2(^1\Sigma^+_g)$-$N_2(^1\Sigma^+_g)$ energy transfer and dissociation** R. Macdonald, University of Illinois, Urbana-Champaign, Urbana, IL; R. Jaffe, D. Schwenke, NASA Ames Research Center, Moffett Field, CA; A. Munafò, M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL	1030 hrs AIAA-2017-3165 **Coarse grain modeling and direct molecular simulation of nitrogen dissociation** R. Macdonald, University of Illinois, Urbana-Champaign, Urbana, IL; M. Grover, T. Schwartzentruber, University of Minnesota, Twin Cities, Minneapolis, MN; M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL	1100 hrs AIAA-2017-3166 **Quasi-classical Trajectory Studies of N_2+O Collisions: Trajectory Patterns and Long-lived Configurations** H. Luo, S. Macheret, A. Alexeenko, Purdue University, West Lafayette, IN	1130 hrs AIAA-2017-3167 **Quasiclassical Trajectory Analysis of N2+O2 and Implications for Hypersonic CFD** R. Chaudhry, University of Minnesota, Twin Cities, Minneapolis, MN; J. Bender, Lawrence Livermore National Laboratory, Livermore, CA; T. Schwartzentruber, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN		

Monday, 5 June 2017

45-CYBER-1 0930 - 1645 hrs	Cybersecurity Symposium	Grand Ballroom II

Join us to hear about Baudelaire Aerospace, a medium-sized, diversified corporation operating in multiple business segments around the world, and the series of unfortunate events that devastated this once promising enterprise.

You will learn from experts on some of the most common cyber threats: malicious insiders; compromised vendors; doing business outside of the United States; exploited electronic devices, and more. Through facilitated discussions, you will use the example of Baudelaire Aerospace to discuss real-world examples of cyber challenges, learn how to safeguard your assets, and walk away with best practices that can be implemented back at the office.

Symposium Organizer: Jeffrey Carr, Principal Consultant, 20K League
Expert Facilitators:

Melissa Irace	Russ Syphert	David Shaw	Stephen Cobb Sr.	Cameron Camp	Cynthia James
Managing Director for Professional Services & Research CBA	Vice President for Technology and CISCO CBA	Founder & CEO CBA	Security Researcher ESET	Security Researcher ESET	General Manager KGSS

Schedule
0930–1030 hrs - Intro/Orientation
1030–1330 hrs - Breakouts and working lunch (boxed lunch)
1330–1345 hrs – Break
1345–1500 hrs - Report outs in plenary
1515–1645 hrs - GBA TTX

For program updates, visit www.aviation.aiaa.org/cyber

Monday, 5 June 2017

46-AA-9	Airframe/High-Lift Noise III: Trailing Edge Noise - General					Plaza Court 4
Chaired by: M. HERR, DLR - German Aerospace Center						
1400 hrs AIAA-2017-3168 **Trailing Edge Noise Source Characteristics for Wind Turbine Airfoils** S. Lee, University of California, Davis, Davis, CA	1430 hrs AIAA-2017-3169 **Effect of Boundary Layer Shear on Trailing Edge Noise** D. Baker, N. Peake, University of Cambridge, Cambridge, United Kingdom	1500 hrs AIAA-2017-3170 **Overset LES for Trailing-Edge Noise Computations** P. Bernicke, R. Akkermans, Technical University of Braunschweig, Braunschweig, Germany; R. Ewert, J. Dierke, German Aerospace Center (DLR), Braunschweig, Germany	1530 hrs AIAA-2017-3171 **Separation and Quantification of Airfoil Leading-edge and Trailing-edge Noise Source with Microphone Array** W. Qiao, L. Ji, L. Wang, F. Tong, W. Chen, Northwestern Polytechnical University, Xi'an, China	1600 hrs AIAA-2017-3172 **Camber Effects on the Tonal Noise and Flow Characteristics of a Wall-mounted Finite Airfoil** D. Moreau, University of New South Wales, Sydney, Australia; T. Geyer, Technical University of Brandenburg, Cottbus, Germany; C. Doolan, University of New South Wales, Sydney, Australia; E. Sarradj, Technical University of Berlin, Berlin, Germany	1630 hrs AIAA-2017-3173 **Coherent Hydrodynamic Waves and Trailing-edge Noise** L. Abreu, A. Cavalieri, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; W. Wolf, University of Campinas, Campinas, Brazil	

Monday, 5 June 2017

47-AA-10	CAA II: Methods					Plaza Court 8
Chaired by: D. HIXON, University of Toledo and X. LI, Beihang University						
1400 hrs AIAA-2017-3174 **A Full High Order Method for Computational AeroAcoustics** C. Peyret, ONERA, Châtillon, France	1430 hrs AIAA-2017-3175 **Optimization of DRP Schemes for Non-Constant-Amplitude Oscillations** E. Brambley, V. Markeviciute, University of Cambridge, Cambridge, United Kingdom	1500 hrs AIAA-2017-3176 **Effect of the Dissipation on Hybrid MacCormack-type Scheme for Computational Aeroacoustics** S. Yazdani, D. Hixon, N. Mansouri, University of Toledo, Toledo, OH	1530 hrs AIAA-2017-3177 **On the Accuracy of Boundary Stencils for Runge-Kutta Time Marching Schemes** D. Hixon, University of Toledo, Toledo, OH	1600 hrs AIAA-2017-3178 **Low-Storage Hybrid MacCormack-type Schemes for Computational Aeroacoustics** R. Azim, D. Hixon, University of Toledo, Toledo, OH	1630 hrs AIAA-2017-3179 **A Hybrid Adaptive Low-Mach-Number/ Compressible Method for the Euler Equations** E. Motheau, M. Duarte, A. Almgren, J. Bell, Lawrence Berkeley National Laboratory, Berkeley, CA	

Monday, 5 June 2017						
48-AA-11	**Duct Acoustics II: Impedance Eduction**					**Governor's Square 10**
Chaired by: M. JONES, NASA-Langley Research Center and H. BODEN, KTH						
1400 hrs AIAA-2017-3180 **Impedance eduction of liners in no-flow condition and based on multimodal excitation** M. Lavieille, S. Le-Saint, Airbus, Toulouse, France	1430 hrs AIAA-2017-3181 **Development of a Multi-Fidelity Approach to Acoustic Liner Impedance Eduction** D. Nark, M. Jones, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2017-3182 **Impedance eduction in the presence of turbulent shear flow using the linearized Navier-Stokes equations** C. Weng, A. Schulz, German Aerospace Center (DLR), Berlin, Germany; D. Ronneberger, Georg August University, Göttingen, Germany; L. Enghardt, F. Bake, German Aerospace Center (DLR), Berlin, Germany	1530 hrs AIAA-2017-3183 **Impedance Eduction in Large Ducts Containing High-Order Modes and Grazing Flow** W. Watson, M. Jones, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2017-3184 **Comparison of the effect of flow direction on liner impedance using different measurement methods** H. Boden, Royal Institute of Technology (KTH), Stockholm, Sweden; J. Cordioli, A. Spillere, P. Serrano, Federal University of Santa Catarina, Florianopolis, Brazil	1630 hrs AIAA-2017-3185 **On the Effect of Boundary Conditions on Impedance Eduction Results** A. Spillere, J. Cordioli, Federal University of Santa Catarina, Florianopolis, Brazil; H. Boden, Royal Institute of Technology (KTH), Stockholm, Sweden	1700 hrs AIAA-2017-3186 **Investigation of impedance eduction accuracy on "interferometer with the flow" test rigs with help of exact solution problem of sound propagation in duct with impedance transition** N. Ostrikov, TsAGI, Moscow, Russia

Monday, 5 June 2017						
49-AA-12	**General Acoustics**					**Plaza Court 7**
Chaired by: C. BAILLY, Ecole Centrale de Lyon						
1400 hrs AIAA-2017-3187 **Acoustic Reflectometry for Pitot Tube Blockage Detection** J. Rodrigues, S. Grey, T. Rendall, M. Azarpeyvand, University of Bristol, Bristol, United Kingdom	1430 hrs AIAA-2017-3188 **Investigation of Aircraft Approach and Departure Velocity Profiles on Community Noise** J. Thomas, L. Jensen, C. Brooks, M. Brenner, S. Salgueiro, R. Hansman, Massachusetts Institute of Technology, Cambridge, MA	1500 hrs AIAA-2017-3189 **Computational Modeling of Meteor-Generated Ground Pressure Signatures** M. Nemec, Science and Technology Corporation, Moffett Field, CA; M. Aftosmis, NASA Ames Research Center, Moffett Field, CA; P. Brown, University of Western Ontario, London, Canada	1530 hrs AIAA-2017-3190 **Laminar boundary layer instability noise** M. Sanjose, P. Jaiswal, S. Moreau, University of Sherbrooke, Sherbrooke, Canada; A. Towne, S. Lele, Stanford University, Stanford, CA; A. Mann, Exa Corporation, Brisbane, CA	1600 hrs AIAA-2017-3191 **A novel acoustic network model to study the influence of mean flow and axial temperature distribution on spinning limit cycles in annular combustors** D. Laera, D. Yang, J. Li, A. Morgans, Imperial College London, London, United Kingdom	1630 hrs AIAA-2017-3192 **Separation of Impulsive Transients from Broadband Noise by Wavelet Filtering** A. Medda, D. Alvord, Georgia Institute of Technology, Atlanta, GA	

Monday, 5 June 2017						
50-AA-13	**Integration Effects and Flight Acoustics**					**Governor's Square 17**
Chaired by: M. DOTY, NASA - Langley Research Center						
1400 hrs AIAA-2017-3193 **Aircraft Noise Reduction Technology Roadmap Toward Achieving The NASA 2035 Goal** R. Thomas, NASA Langley Research Center, Hampton, VA; Y. Guo, NEAT Consulting, Seal Beach, CA; J. Berton, NASA Glenn Research Center, Cleveland, OH; H. Fernandez, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2017-3194 **Ground Noise Contour Prediction for A NASA Hybrid Wing Body Subsonic Transport Aircraft** R. Thomas, NASA Langley Research Center, Hampton, VA; Y. Guo, NEAT Consulting, Seal Beach, CA	1500 hrs AIAA-2017-3195 **Investigating Noise Shielding by Unconventional Aircraft Congurations** K. Rossignol, M. Pott-Pollenske, J. Delfs, German Aerospace Center (DLR), Braunschweig, Germany; J. Silbermann, Bernhard Halle Nachfolger GmbH, Berlin, Germany; J. Pereira Gomes, German-Dutch Wind Tunnels, Braunschweig, Germany	1530 hrs AIAA-2017-3196 **Aircraft System Noise Shielding Prediction with a Kirchhoff Integral Method** Y. Guo, NEAT Consulting, Seal Beach, CA; D. Pope, Analytical Mechanics Associates, Inc., Hampton, VA; C. Burley, R. Thomas, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2017-3197 **Multiple Scattering of Acoustic Waves in Potential Mean Flow With Circumferential Distortion** S. Guerin, M. Vogt, A. Holewa, German Aerospace Center (DLR), Berlin, Germany	1630 hrs AIAA-2017-3198 **Including Wall Effects in Analytical Leading Edge Noise Predictions** R. Karve , J. Gill, F. Gea Aguilera, D. Angland, University of Southampton, Southampton, United Kingdom; T. Node-Langlois, Airbus, Toulouse, France	1700 hrs AIAA-2017-3199 **Physical Simulation of Sound Propagation from Aircraft in Close Proximity to the Ground** J. Zhang, Z. Zheng, University of Kansas, Lawrence, Lawrence, KS

Monday, 5 June 2017						
51-AA-14	**Interior Noise/Structural Acoustics**					**Plaza Court 5**
Chaired by: N. MURRAY, The University of Mississippi						
1400 hrs AIAA-2017-3200 **Numerical investigation of wall pressure fluctuations for zero and adverse pressure gradient turbulent boundary layers using synthetic anisotropic turbulence** N. Hu, N. Reiche, R. Ewert, German Aerospace Center (DLR), Braunschweig, Germany	1430 hrs AIAA-2017-3201 **Measurements of Surface Pressure Fluctuations and Flexible Panel Response to a Transonic Reattaching Flow** N. Murray, B. Jansen, University of Mississippi, Oxford, Oxford, MS; M. Yang, M. Palodichuk, ATA Engineering, Inc., San Diego, CA	1500 hrs AIAA-2017-3202 **Prediction of Structural Response in Transonic Flow Using Wavenumber Decomposition of Fluctuating Pressures** M. Yang, M. Palodichuk, ATA Engineering, Inc., San Diego, CA; N. Murray, B. Jansen, University of Mississippi, Oxford, Oxford, MS	1530 hrs AIAA-2017-3203 **Empirical spectral model of wall pressure fluctuations including adverse pressure gradient effects** N. Hu, German Aerospace Center (DLR), Braunschweig, Germany	1600 hrs AIAA-2017-3204 **Effects of Structural Damping on Acoustic Scattering by Flexible Plates** M. Nilton, A. Cavalieri, M. Donadon, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; W. Wolf, University of Campinas, Campinas, Brazil	1630 hrs AIAA-2017-3205 **Determining Flow Propagation Direction from In-Flight Array Surface Pressure Fluctuation Data** S. Haxter, C. Spehr, German Aerospace Center (DLR), Göttingen, Germany	1700 hrs AIAA-2017-3206 **Automotive Wind Noise Prediction using Deterministic Aero-Vibro-Acoustics Method** C. Yu, Corning, Inc., Corning, NY

Monday, 5 June 2017						
52-AA-15	Jet Noise II: CFD Supersonic					Governor's Square 12
Chaired by: J. NICHOLS, Aerospace Engineering and Mechanics and G. BRÈS, Cascade Technologies, Inc.						
1400 hrs AIAA-2017-3207 **Large eddy simulations of supersonic rectangular jets from sinuous exhaust system** G. Brès, S. Bose, F. Ham, Cascade Technologies, Inc., Palo Alto, CA; G. Valentich, R. Kumar, F. Alvi, Florida State University, Tallahassee, FL	1430 hrs AIAA-2017-3208 **Helical Screech Tone Generation in an Overexpanded Jet** J. Liu, A. Corrigan, K. Kailasanath, R. Ramamurti, Naval Research Laboratory, Washington, D.C.; E. Gutmark, University of Cincinnati, Cincinnati, OH	1500 hrs AIAA-2017-3209 **Numerical Study of Temporally-Developing Supersonic Round Jets and their Sound Fields** P. Pineau, C. Bogey, École Centrale de Lyon, Lyon, France	1530 hrs AIAA-2017-3210 **Aeroacoustics of Supersonic Jets With Fluidic Injection** M. Coderoni, A. Lyrintzis, Embry-Riddle Aeronautical University, Daytona Beach, FL; G. Blaisdell, Purdue University, West Lafayette, IN	1600 hrs AIAA-2017-3211 **Large-eddy Simulation of the Aeroacoustics of Clustered Supersonic jets using a High-order Unstructured Method** T. Haga, S. Tsutsumi, W. Sarae, K. Terashima, T. Ishii, T. Hiraiwa, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1630 hrs AIAA-2017-3212 **Numerical investigation of the noise generated by a rocket engine at lift-off conditions using a two-way coupled CFD-CAA method** A. Langenais, F. Vuillot, J. Troyes, ONERA, Châtillon, France; C. Bailly, École Centrale de Lyon, Ecully, France	1700 hrs AIAA-2017-3213 **Jet Noise Prediction using Hybrid RANS/LES with Structured Overset Grids** J. Housman, NASA Ames Research Center, Moffett Field, CA; G. Stich, Science and Technology Corporation, Moffett Field, CA; C. Kiris, NASA Ames Research Center, Moffett Field, CA

Monday, 5 June 2017						
53-AA-16	Turbomachinery Noise II					Governor's Square 11
Chaired by: C. TAM, Florida State Univeristy and M. GRUBER						
1400 hrs AIAA-2017-3214 **Bifurcation Measurement and Analysis of a Nonlinear Rijke-type Thermoacoustic System** X. Li, D. Zhao, Nanyang Technological University, Singapore, Singapore	1430 hrs AIAA-2017-3215 **Aeroacoustics of an axial ducted low Mach-number stage: numerical and experimental investigation** M. Pestana, A. Pereira, E. Salze, École Centrale de Lyon, Ecully, France; J. Thisse, Safran Group, Moissy-Cramayel, France; M. Sanjose, University of Sherbrooke, Sherbrooke, Canada; E. Jondeau, École Centrale de Lyon, Ecully, France; et al.	1500 hrs AIAA-2017-3216 **An Analytic Solution for Gust-Cascade Interaction Noise Including Effects of Realistic Aerofoil Geometry** P. Baddoo, L. Ayton, University of Cambridge, Cambridge, United Kingdom	1530 hrs AIAA-2017-3217 **Effects of Intermittency and Geometry on the Turbulence Impingement Noise of a CROR Rear-Rotor Blade** J. Giez, Safran Group, Moissy-Cramayel, France; M. Roger, École Centrale de Lyon, Ecully, France; L. Vion, Safran Group, Moissy-Cramayel, France; S. Moreau, University of Sherbrooke, Sherbrooke, Canada	1600 hrs AIAA-2017-3218 **Comprehensive experimental investigation of mode transmission through stator vane rows: Results and calibration of an analytical prediction model** M. Behn, L. Klähn, U. Tapken, German Aerospace Center (DLR), Berlin, Germany	1630 hrs AIAA-2017-3219 **Impact of turbulent inflow distributions on combustion noise of lean-premixed flames** S. Herff, K. Pausch, RWTH Aachen University, Aachen, Germany; H. Nawroth, Technical University of Berlin, Berlin, Germany; S. Schlimpert, RWTH Aachen University, Aachen, Germany; C. Paschereit, Technical University of Berlin, Berlin, Germany; W. Schroeder, RWTH Aachen University, Aachen, Germany	

Monday, 5 June 2017						
54-ADS-2	Aerodynamic Decelerator Systems: Precision Aerial Delivery I					Majestic Ballroom
Chaired by: N. SLEGERS, George Fox University and T. JANN, DLR - German Aerospace Center						
1400 hrs AIAA-2017-3220 **Trajectory Planning for Autonomous Parafoils in Complex Terrain** B. Le Floch, J. How, Massachusetts Institute of Technology, Cambridge, MA; L. Breger, M. Stoeckle, Draper Laboratory, Cambridge, MA	1430 hrs AIAA-2017-3221 **Characterizing the Performance of Transition Altitude Optimization for High Altitude-Low Opening Ballistic Airdrop** A. Gerlach, D. Doman, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Henry, Army Research, Development and Engineering Command, Natick, MA; S. Patel, Ignition Technologies, Sudbury, MA	1500 hrs AIAA-2017-3222 **A Probabilistic Algorithm for Ballistic Parachute Transition Altitude Optimization** A. Leonard, B. Klein, C. Jumonville, J. Rogers, Georgia Institute of Technology, Atlanta, GA; A. Gerlach, D. Doman, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2017-3223 **A Probabilistic Approach to the Optimal Determination of a Computed Air Release Point** A. Leonard, J. Rogers, Georgia Institute of Technology, Atlanta, GA; A. Gerlach, D. Doman, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2017-3224 **Probabilistic Airdrop Planning for Dynamic Drop Zones** A. Gerlach, D. Doman, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Rogers, A. Leonard, Georgia Institute of Technology, Atlanta, GA	1630 hrs AIAA-2017-3225 **Analysis of Performance Metrics for Precision Airdrop** A. Cinnamon, E. Miller, A. Gilkey, Infoscitex Corporation, Dayton, OH	1700 hrs AIAA-2017-3226 **Enhanced Meteorological Instrumentation in Airdrop Environment** R. Fraser, Yuma Proving Ground, Yuma Proving Ground, AZ

Monday, 5 June 2017						
55-ADS-3	**Aerodynamic Decelerator Systems: Orion Parachute System**					**Vail**
Chaired by: J. DAUM, NASA, JSC, Flight Mechanics & Traj Design Branch and J. CRUZ, NASA-Langley Research Center						
1400 hrs AIAA-2017-3227 **Test Vehicle Forebody Wake Effects on CPAS Parachutes** E. Ray, MRI Technologies, Houston, TX	1430 hrs AIAA-2017-3228 **Extrapolating the Trends of Test Drop Data with Opening Shock Factor Calculations: the Case of the Orion Main and Drogue Parachutes Inflating to 1st Reefed Stage** J. Potvin, Saint Louis University, St. Louis, MO; E. Ray, MRI Technologies, Houston, TX	1500 hrs AIAA-2017-3229 **Photographic Volume Estimation of CPAS Main Parachutes** E. Ray, MRI Technologies, Houston, TX	1530 hrs AIAA-2017-3230 **Design and Testing of CPAS Main Deployment Bag Energy Modulator** C. Mollmann, Airborne Systems, Santa Ana, CA	1600 hrs AIAA-2017-3231 **The Challenges of Using Computer-Vision-Based Technique for Motion Parameter Estimation of Multi-Body Aerodynamic Decelerator** O. Yakimenko, Naval Postgraduate School, Monterey, CA	1630 hrs AIAA-2017-3232 **Isolating Added Mass Load Components of CPAS Main Clusters** E. Ray, MRI Technologies, Houston, TX	1700 hrs AIAA-2017-3233 **Extraction-Separation Performance and Dynamic Modeling of Orion Test Vehicles with Adams Simulation: 3rd Edition** J. Varela, GeoControl Systems, Inc., Houston, TX; K. Anderson, Orbital ATK, Brigham City, UT; S. Reddy, Jacobs, Houston, TX; E. Moeller, Barrios Technology, Inc., Houston, TX

Monday, 5 June 2017						
56-AMT-2	**MEMS and Novel Sensors**					**Director's Row E**
Chaired by: D. PLEMMONS, National Aerospace Solutions and Z. ZHANG, University of Tennessee						
1400 hrs AIAA-2017-3234 **Air Data Probe Design by Circulation Theory - Extended Abstract** J. Zhu, M. Sempertegui, S. Randle, Ohio University, Athens, OH	1430 hrs AIAA-2017-3235 **Design and Evaluation of a Realtime, Microcontroller Based Gust Sensing System for a Small Unmanned Aerial Vehicle** I. Martin, C. Ben, D. Moormann, RWTH Aachen University, Aachen, Germany	1500 hrs AIAA-2017-3236 **A Compact Directional Total Pressure Probe for Advanced Inlet Development** Y. Li, D. Cuppoletti, C. Harris, Northrop Grumman Corporation, El Segundo, CA; R. Westphal, K. Lawrence, California Polytechnic State University, San Luis Obispo, San Luis Obispo, CA	1530 hrs AIAA-2017-3237 **A Novel Flight Coefficient Estimation of Flying Disc and its Performance Analysis via Onboard Magnetometer Measurement** J. Lee, Y. Lee, S. Sung, K. Kim, Konkuk University, Seoul, South Korea	1600 hrs AIAA-2017-3238 **Development of a Fast-Response Calorimeter Gauge for Hypersonic Ground Testing** R. Penty Geraets, M. McGilvray, L. Doherty, University of Oxford, Oxford, United Kingdom; R. Morgan, C. James, S. Vella, University of Queensland, Brisbane, Australia	1630 hrs AIAA-2017-3239 **High Temperature Sensors for Intellegent Aero-Engine Applications** F. Duan, Shanghai Jiao Tong University, Shanghai, China	

Monday, 5 June 2017						
57-AMT-3/FD-5	**Advanced Measurement Capability Needs for Understanding Hypersonic Laminar-to-Turbulent Transition**					**Governor's Square 14**
Chaired by: B. WHEATON, JHU Applied Physics Laboratory and J. JEWELL, Air Force Research Laboratory						
1400 hrs Oral Presentation **Flight Experiments for Boundary Layer Transition (Invited)** R. Kimmel, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs Oral Presentation **Experimental Data Needs for Mechanism-Based Simulations of High-Speed Transition (Invited)** G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN	1500 hrs Oral Presentation **Progress and Context of Recent Efforts with the Focused Laser Differential Interferometer (Invited)** N. Parziale, Stevens Institute of Technology, Hoboken, NJ	1530 hrs Oral Presentation **Schlieren measurements of the second mode instability in high-speed boundary layers (Invited)** S. Laurence, University of Maryland, College Park, College Park, MD	1600 hrs Oral Presentation **Atomic Layer Thermopile (ALTP) - sensors for high-bandwidth, quantitative surface heat-flux measurements (Invited)** T. Roediger, University of Applied Sciences Landshut, Landshut, Germany	1630 hrs Oral Presentation **Laser-Based Measurement Techniques for Understanding Hypersonic Laminar-to-Turbulent Transition (Invited)** P. Danehy, B. Bathel, NASA Langley Research Center, Hampton, VA	1700 hrs Oral Presentation **Boundary-Layer Transition and Tunnel Noise Measurements in Hypersonic T&E Facilities: Techniques and Challenges (Invited)** E. Marineau, G. Morauru, D. Lewis, J. Lafferty, Arnold Engineering Development Complex, Silver Spring, MD

Monday, 5 June 2017						
58-APA-6	**Vortex/Vortical Flow Applications II**					**Century**
Chaired by: B. MARPLES and B. MCGRATH, Johns Hopkins University Applied Physics Laboratory						
1400 hrs AIAA-2017-3240 **Effect of Controlled Imperfections on the Vortex Asymmetry of a Conical Body at High Incidence** S. Mahadevan, J. Rodriguez, R. Kumar, Florida State University, Tallahassee, FL	1430 hrs AIAA-2017-3241 **Vortex Control through Forebody Strakes and Vortex Generators** E. Stephen, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1500 hrs AIAA-2017-3242 **Vortex Study of Flow Over Airfoil with Gurney Flap and Numerical Analysis of its Drag Characteristics for Different Arrangements** A. Sharma, University of Petroleum and Energy Studies, Dehradun, India				

Monday, 5 June 2017						
59-APA-7	**Flow Control Applications and Demonstrations II**					**Silver**
Chaired by: B. OSBORNE, The Boeing Company and K. JANSEN, University of Colorado Boulder						
1400 hrs AIAA-2017-3243 **Interaction of a Synthetic Jet Actuator on Separated flow over a Vertical Tail** K. Jansen, M. Rasquin, J. Farnsworth, University of Colorado, Boulder, Boulder, CO; N. Rathay, M. Monastero, M. Amitay, Rensselaer Polytechnic Institute, Troy, NY	1430 hrs AIAA-2017-3244 **Numerical Investigation of Unsteady Blowing Through Discrete Slots on a Swept Vertical Tail of Infinite Span** A. Gebhardt, German Aerospace Center (DLR), Braunschweig, Germany	1500 hrs AIAA-2017-3245 **High Reynolds Number High-Lift Airfoil Testing with Flow Control** V. Ciobaca, German Aerospace Center (DLR), Braunschweig, Germany; J. Dandois, ONERA, Meudon, France	1530 hrs AIAA-2017-3246 **Transonic Drag Reduction Through Trailing-Edge Blowing on the FAST-MAC Circulation Control Model** D. Chan, G. Jones, W. Milholen, NASA Langley Research Center, Hampton, VA; S. Goodliff, Jacobs, Hampton, VA	1600 hrs AIAA-2017-3247 **Open Loop Control on a Coanda Flap Water Tunnel Model** Y. El Sayed M., R. Semaan, R. Radespiel, Technical University of Braunschweig, Braunschweig, Germany	1630 hrs AIAA-2017-3248 **Numerical and Experimental Investigation of Propeller Slipstream Interaction with active High Lift Wing** C. Lenfers, German-Dutch Wind Tunnels, Emmeloord, The Netherlands; N. Beck, R. Radespiel, Technical University of Braunschweig, Braunschweig, Germany	1700 hrs AIAA-2017-3249 **Numerical Investigation of Low Speed Performance of Transonic Coflow Jet Airfoil** S. Dhakal, Y. Yang, G. Zha, J. Boling, University of Miami, Coral Gables, FL

Monday, 5 June 2017						
60-APA-8	**Special Session: Carriage and Store Separation**					**Colorado**
Chaired by: J. DOYLE, US Army AMRDEC and C. ROSEMA, US Army AMRDEC						
1400 hrs AIAA-2017-3250 **Comparison of the Eglin Test Case with CFD Based Captive Trajectory Simulation and Grid Method** G. Demir, Middle East Technical University, Ankara, Turkey; M. Erdem, Figes Engineering, Ankara, Turkey; P. Alemdaroğlu, Atilim University, Ankara, Turkey	1430 hrs AIAA-2017-3251 **Store Aeparation Trajectory Predictions for Maritime Search and Rescue (SAR)** A. Cenko, AIWS, LLC, Huntingdon Valley, PA	1500 hrs AIAA-2017-3252 **Modelling of Transonic Shallow Cavity Flows** G. Loupy, G. Barakos, University of Glasgow, Glasgow, United Kingdom				

Monday, 5 June 2017						
61-APA-9	**Special Session: Low Boom Activities II**					**Windows**
Chaired by: S. RALLABHANDI, National Institute of Aerospace and M. PARK, NASA-Langley Research Center						
1400 hrs AIAA-2017-3253 **DLR TAU Simulations for the Second AIAA Sonic Boom Prediction Workshop** J. Kirz, R. Rudnik, German Aerospace Center (DLR), Braunschweig, Germany	1430 hrs AIAA-2017-3254 **USM3D Simulations for 2nd Sonic Boom Workshop** A. Elmiligui, M. Carter, NASA Langley Research Center, Hampton, VA; S. Cliff, NASA Ames Research Center, Moffett Field, CA; S. Nayani, J. Pearl, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2017-3255 **Cart3D Simulations for the Second AIAA Sonic Boom Prediction Workshop** G. Anderson, M. Aftosmis, M. Nemec, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2017-3256 **Near Field Summary and Statistical Analysis of the Second AIAA Sonic Boom Prediction Workshop** M. Park, NASA Langley Research Center, Hampton, VA; M. Nemec, NASA Ames Research Center, Mountain View, CA	1600 hrs AIAA-2017-3257 **Propagation Summary of the Second AIAA Sonic Boom Prediction Workshop** S. Rallabhandi, A. Loubeau, NASA Langley Research Center, Hampton, VA	1630 hrs **Panel Discussion**	

Monday, 5 June 2017						
62-APA-10	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques II**					**Gold**
Chaired by: M. GHOREYSHI, United States Air Force Academy and R. RAMAMURTI, Naval Research Laboratory						
1400 hrs AIAA-2017-3258 **Aerodynamic Shape Optimization of a Box-Wing Regional Aircraft Based on the Reynolds-Averaged Navier-Stokes Equations** T. Chau, D. Zingg, University of Toronto, Toronto, Canada	1430 hrs AIAA-2017-3259 **Accuracy of Two Nonlinear Finite Wing Models in the Aerodynamic Prediction of Wing Sweep Effects** H. Aubeelack, R. Botez, University of Québec, Montréal, Canada	1500 hrs AIAA-2017-3260 **An Evaluation of Bi-Fidelity Modeling Efficiency on a General Family of NACA Airfoils** R. Skinner, A. Doostan, E. Peters, J. Evans, K. Jansen, University of Colorado, Boulder, Boulder, CO	1530 hrs AIAA-2017-3261 **Multi-Fidelity Uncertainty Analysis in CFD Using Hierarchical Kriging** P. Palar, K. Shimoyama, Tohoku University, Sendai, Japan	1600 hrs AIAA-2017-3262 **Aerodynamic Optimization of Wing-Body Configuration using Discrete Adjoint Method** A. Yildirim, S. Eyi, Middle East Technical University, Ankara, Turkey		

Monday, 5 June 2017						
63-ASE-2/FD-6	**Dynamics of Aircraft Wake Vortices: A Continuing Journey Longer Than a Half Century (Invited)**					**Columbine**
Chaired by: Z. ZHENG, The University of Kansas and N. AHMAD, NASA Langley Research Center						
1400 hrs Oral Presentation **Wake-vortex research for aircraft spacing: from breakup to prediction** J. Crouch, The Boeing Company, Seattle, WA	1430 hrs Oral Presentation **Numerical Simulation of Aircraft Wake Vortex Behavior – A Retrospective and Contemporary View** F. Holzäpfel, German Aerospace Center (DLR), Oberpfaffenhofen, Germany	1500 hrs Oral Presentation **History of Wake Vortex Research at NASA Langley** F. Proctor, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2017-3263 **Axial Vortices: Did Rankine almost get it right?** R. Ash, Old Dominion University, Norfolk, VA	1600 hrs Oral Presentation **Investigating, through LES, the development of wake vortices and their interaction with the atmosphere and the ground** G. Winckelmans, Catholic University of Leuven, Leuven, Belgium	1630 hrs Oral Presentation **FAA Perspectives on Historical Wake Turbulence R&D to Recent Operational Implementations** D. Burnham, Scensi, Boston, MA; J. Hallock, F. Wang, Department of Transportation, Cambridge, MA	

Monday, 5 June 2017						
64-ATIO.ACD-2	**Aircraft En Route Performance**					**Governor's Square 16**
Chaired by: R. VOS, TU Delft fac. Aerospace Engineering						
1400 hrs AIAA-2017-3264 **Cruise Performance Optimization of the Airbus A320 through Flap Morphing** M. Orlita, R. Vos, Delft University of Technology, Delft, The Netherlands	1430 hrs AIAA-2017-3265 **Revisiting Takeoff Obstacle Clearance Procedures: An Argument for Extended Second Segment Climb** J. Beard, T. Takahashi, Arizona State University, Tempe, AZ	1500 hrs AIAA-2017-3266 **The Doghouse Plot: History, Construction Techniques, and Application** J. Wilson, T. Takahashi, Arizona State University, Tempe, AZ	1530 hrs AIAA-2017-3267 **Feasibility Analysis of Aviation CO_2 Emission Goals Under Uncertainty** M. Hassan, H. Pfaender, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2017-3268 **The control law of flight level change for transport aircraft** T. Yang, G. An, Y. Gao, Aviation Industry Corporation of China (AVIC), Xi'an, China		

Monday, 5 June 2017						
65-ATIO.ATM-3	**UAS Traffic Management (UTM) Safety**					**Plaza Court 1**
Chaired by: C. BELCASTRO, NASA-Langley Research Center and D. NEWMAN, Crew Systems						
1400 hrs AIAA-2017-3269 **Hazards Identification and Analysis for Unmanned Aircraft System Operations** C. Belcastro, NASA Langley Research Center, Hampton, VA; R. Newman, Crew Systems, Seattle, WA; J. Evans, Analytical Mechanics Associates, Inc., Hampton, VA; D. Klyde, Systems Technology, Inc., Hawthorne, CA; L. Barr, Department of Transportation, Cambridge, MA; E. Ancel, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2017-3270 **Failure Mode Effects Analysis and Flight Testing for Small Unmanned Aerial Systems** M. Logan, L. Glaab, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2017-3271 **High-Fidelity Multi-Rotor Unmanned Aircraft System (UAS) Simulation Development for Trajectory Prediction Under Off-Nominal Flight Dynamics** J. Foster, NASA Langley Research Center, Hampton, VA; D. Hartman, Drexel University, Philadelphia, PA	1530 hrs AIAA-2017-3272 **Preliminary Risk Assessment for Small Unmanned Aircraft Systems** L. Barr, Department of Transportation, Cambridge, MA; R. Newman, Crew Systems, Seattle, WA; E. Ancel, C. Belcastro, J. Foster, NASA Langley Research Center, Hampton, VA; J. Evans, Analytical Mechanics Associates, Inc., Hampton, VA; et al.	1600 hrs AIAA-2017-3273 **Real-time Risk Assessment Framework for Unmanned Aircraft System (UAS) Traffic Management (UTM)** E. Ancel, F. Capristan, J. Foster, NASA Langley Research Center, Hampton, VA; R. Condotta, Analytical Mechanics Associates, Inc., Hampton, VA	1630 hrs AIAA-2017-3274 **Experimental Flight Testing for Assessing the Safety of Unmanned Aircraft System Safety-Critical Operations** C. Belcastro, NASA Langley Research Center, Hampton, VA; D. Klyde, Systems Technology, Inc., Hawthorne, CA; M. Logan, NASA Langley Research Center, Hampton, VA; R. Newman, Crew Systems, Seattle, WA; J. Foster, NASA Langley Research Center, Hampton, VA	1700 hrs AIAA-2017-3275 **Making a Risk Informed Safety Case for Small Unmanned Aircraft System Operations** R. Clothier, The Boeing Company, Brisbane, Australia; E. Denney, G. Pai, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA

Monday, 5 June 2017						
66-ATIO.ATM-4	**Human Factors in ATM**					**Plaza Court 2**
Chaired by: A. DESHMUKH, Honeywell Inc.						
1400 hrs AIAA-2017-3276 **Experimental Investigation of Typical Aircraft Field Performance versus Predicted Performance Targets** D. Wood, T. Takahashi, Arizona State University, Tempe, AZ; L. Bays, Dragonfly Aeronautics, LLC, Alpharetta, GA	1430 hrs AIAA-2017-3277 **Analysis of Eye-Tracking Data during Conditions Conducive to Loss of Airplane State Awareness** E. Dill, S. Young, T. Daniels, E. Evans, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2017-3278 **Unmanned Aircraft Systems Detect and Avoid System: End-to-End Verification and Validation Simulation Study of Minimum Operational Performance Standards for Integrating Unmanned Aircraft into the National Airspace System** R. Ghatas, NASA Langley Research Center, Hampton, VA; D. Jack, Adaptive Aerospace Group, Inc., Hampton, VA; D. Tsakpinis, J. Sturdy, SAIC, Hampton, VA; M. Vincent, NASA Langley Research Center, Hampton, VA; K. Hoffler, Adaptive Aerospace Group, Inc., Hampton, VA; et al.	1530 hrs AIAA-2017-3279 **The Analysis of The Relationship Between Failure of Go-Around Situation and Crew Resource Management Training** D. Wang, Y. Nong, Civil Aviation Flight University of China, Guanghan, China			

Monday, 5 June 2017						
67-ATIO.TFPC-2/ATIO.GA-1	**On-Demand Mobility II: Thin-Haul Aviation Markets and Operations**					**Governor's Square 15**
Chaired by: A. LINN, Worcester Polytechnic Institute and B. GERMAN, Georgia Institute of Technology						
1400 hrs Oral Presentation **On-Demand Air Mobility - A National Strategic Framework Proposition** B. Holmes, R. Parker, AirMarkets Corporation, Williamsburg, VA; L. Garrow, Atlanta Analytics, Atlanta, GA; D. Stanley, P. McHugh, National Institute of Aerospace, Hampton, VA; P. Masson, Starnet, LLC, San Francisco, CA; et al.	1430 hrs Oral Presentation **The Emerging Potential for Economical Thin-Haul Aviation** B. German, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2017-3280 **Forecasting Demand for On Demand Mobility** L. Garrow, M. Ilbeigi, Z. Chen, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2017-3281 **Identification and Analysis of Factors Influencing the Decision to Select Transportation by General Aviation Aircraft, Commercial Air Carrier or Automobile.** A. Linn, Worcester Polytechnic Institute, Worcester, MA	1600 hrs AIAA-2017-3282 **Market volume estimation of thin-haul On-Demand Air Mobility services in Germany** M. Kreimeier, E. Stumpf, RWTH Aachen University, Aachen, Germany	1630 hrs AIAA-2017-3283 **Operational and Economic Feasibility of Electric Thin Haul Transportation** C. Justin, A. Payan, S. Briceno, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1700 hrs AIAA-2017-3284 **Electric Aircraft Sizing Considering the Constraints of Scheduled Operations** T. Hamilton, B. German, Georgia Institute of Technology, Atlanta, GA

Monday, 5 June 2017						
68-BAL-2	**Balloon Flight Performance**					**Savoy**
Chaired by: D. ORR, CSBF						
1400 hrs AIAA-2017-3285 **A New Tool for Estimating Atmospheric Conditions in Four Dimensions** M. Smith, Aerostar International, Inc., Sulphur Springs, TX	1430 hrs AIAA-2017-3286 **The Investigation and Measurement of Balloon Dynamics at the Apex and Base of a Scientific Balloon** E. Chaffee, I. Smith, J. Noll, B. Martin, Southwest Research Institute, San Antonio, TX	1500 hrs AIAA-2017-3287 **Demonstration of Fine Altitude Control on Stratospheric Balloons to Achieve a Desired Ground Track** M. Smith, Aerostar International, Inc., Sulphur Springs, TX	1530 hrs AIAA-2017-3288 **On Performance of Passively-Guided Balloon Systems for Earth and Extra-Terrestrial Applications** C. Yoder, R. Waghela, T. Gemmer, A. Mazzoleni, A. Gopalarathnam, North Carolina State University, Raleigh, NC	1600 hrs AIAA-2017-3289 **Sky Lantern Safety Flight Profile for Risk Assessment** M. Schuurman, D. Gransden, Delft University of Technology, Delft, The Netherlands		

Monday, 5 June 2017						
69-CFD-4	**High-Order Finite Volume Methods**					**Tower Court D**
Chaired by: H. LUO, North Carolina State University and C. OLLIVIER GOOCH, University of British Columbia						
1400 hrs AIAA-2017-3290 **Motivations and methods of verification for high-order RANS solvers and solutions** F. Navah, S. Nadarajah, McGill University, Montréal, Canada	1430 hrs AIAA-2017-3291 **Vortical flow calculations using a high-order Vorticity Confinement method** I. Petropoulos, M. Costes, ONERA, Meudon, France; P. Cinnella, Paris Institute of Technology, Paris, France	1500 hrs AIAA-2017-3292 **An Efficient Edge Based Data Structure Implementation for a Vertex Based Finite Volume Method** S. Akkurt, M. Sahin, Istanbul Technical University, Istanbul, Turkey	1530 hrs AIAA-2017-3293 **A Multilevel Parallelism Approach with MPI and OpenACC for Complex CFD Codes** A. McCall, C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA			

Monday, 5 June 2017						
70-CFD-5	**Numerical Methodologies for DNS and LES**					**Tower Court C**
Chaired by: I. SENOCAK, Boise State University and A. MCMULLAN, University of Leicester						
1400 hrs AIAA-2017-3294 **Turbulent Inflow Generation for Large-eddy Simulation of Incompressible Flows Through Buoyancy Perturbations** R. DeLeon, University of Idaho, Moscow, Moscow, ID; I. Senocak, Boise State University, Boise, ID	1430 hrs AIAA-2017-3295 **Inflow Condition Effects on Large Eddy Simulations of Variable Density Mixing Layers** J. Huang, S. Hug, W. McMullan, University of Leicester, Leicester, United Kingdom	1500 hrs AIAA-2017-3296 **A Volume-Force Synthetic Turbulence Approach For Modeling Unsteady Fluid-Structure Interactions.** M. Kazarina, S. Parikh, L. Nguyen, V. Golubev, Embry-Riddle Aeronautical University, Daytona Beach, FL; M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH				

Monday, 5 June 2017						
71-CFD-6	**Mesh Adaptation**					**Tower Court B**
Chaired by: N. WYMAN and D. MARCUM						
1400 hrs AIAA-2017-3297 **High-Order Finite-Volume Scheme with Anisotropic Adaptive Mesh Refinement: Efficient Inexact Newton Method for Steady Three-Dimensional Flows** L. Freret, C. Groth, University of Toronto, Toronto, Canada; T. Nguyen, H. De Sterck, University of Melbourne, Melbourne, Australia	1430 hrs AIAA-2017-3298 **Vortical Flow Prediction of a Moving Aircraft Using Goal-Oriented Anisotropic Mesh Adaptation** E. Gauci, F. Alauzet, National Institute for Research in Computer Science and Control (INRIA), Palaiseau, France; A. Dervieux, National Institute for Research in Computer Science and Control (INRIA), Sophia Antipolis, France	1500 hrs AIAA-2017-3299 **Anisotropic mesh adaptation for turbomachinery applications** L. Frazza, A. Loseille, F. Alauzet, National Institute for Research in Computer Science and Control (INRIA), Saclay, France	1530 hrs AIAA-2017-3300 **Assessment of Anisotropic Mesh Adaptation for High-Lift Prediction of the HL-CRM configuration** F. Alauzet, A. Loseille, National Institute for Research in Computer Science and Control (INRIA), Saclay, France; D. Marcum, Mississippi State University, Starkville, MS; T. Michal, The Boeing Company, St. Louis, MO	1600 hrs AIAA-2017-3301 **A Parallel Adaptive Mesh Refinement Software for Complex Geometry Flow Simulations** J. Hasbestan, I. Senocak, Boise State University, Boise, ID	1630 hrs AIAA-2017-3302 **Automatic high-order mesh movement with Spring-Field and vector-adding: 2D moving mesh with viscous layer** T. Liu, W. Lin, University of Tennessee, Chattanooga, Chattanooga, TN; C. Hilbert, Branch Technology, Chattanooga, TN	

Monday, 5 June 2017						
72-F360-2 **1400 - 1600 hrs**	**X-Planes: Discovery Through Flight**					**Grand Ballroom I**
Moderator: Starr Ginn, Deputy Aeronautics Research Director, NASA Armstrong Flight Research Center Panelists:						
Edward L. Burnett Senior Fellow Modeling, Simulation, and Controls Lockheed Martin Corporation	**Robert E. Curry** Chief Scientist NASA Dryden Flight Research Center	**Bill Gray** Chief Pilot U.S. Air Force Test Pilot School	**Nils Larson** Chief, Flight Crew Branch, NASA Armstrong Flight Research Center	**Daniel G. Murri** NASA Technical Fellow for Flight Mechanics NASA Langley Research Center	**Dana Purifoy** Director of Flight Operation NASA Armstrong Flight Research Center	**Art Tomassetti** Director F-35B U.S. Marine Corps Program Manager Lockheed Martin Corporation

Monday, 5 June 2017						
73-FD-7	**Experimental Studies or Numerical Simulations I**					**Beverly**
Chaired by: B. MAINES, Lockheed Martin Aeronautics and J. WEISS, Ecole de Technologie Superieure						
1400 hrs AIAA-2017-3303 **Experimental Measurements of Turbulent Junction Flow Using High Speed Stereo PIV and IR Thermography** S. Elahi, E. Lange, S. Lynch, Pennsylvania State University, University Park, PA	1430 hrs AIAA-2017-3304 **Higher order dynamic mode decomposition applied to post-process a limited amount of noisy PIV data** S. Le Clainche Martinez, F. Sastre, J. Vega, V. Angel, Technical University of Madrid, Madrid, Spain	1500 hrs AIAA-2017-3305 **The Variation in Co and Counter-Rotating Upstream-Downstream Vortex Interactions** K. Forster, T. Barber, University of New South Wales, Kensington, Australia; S. Diasinos, Macquarie University, North Ryde, Australia; G. Doig, California Polytechnic State University, San Luis Obispo, San Luis Obispo, CA	1530 hrs AIAA-2017-3306 **Unsteady Nature of Vortex Pair in Formation Flight** C. Chen, Z. Wang, I. Gursul, University of Bath, Bath, United Kingdom	1600 hrs AIAA-2017-3307 **A Numerical Investigation of Vortex Dynamics About a Streamlined Cylinder At Various Aspect Ratios** M. Siemon, D. Nichols, Auburn University, Auburn, AL	1630 hrs AIAA-2017-3308 **Numerical Simulation of Plasma Flows and Radio-Frequency Blackout in Atmospheric Reentry Demonstrator Mission** M. Jung, H. Kihara, K. Abe, Kyushu University, Fukuoka, Japan; Y. Takahashi, Hokkaido University, Sapporo, Japan	

Monday, 5 June 2017						
74-FD-8	**Fluidic/Jet Based Flow Control**					**Capitol**
Chaired by: O. SAHNI, Rensselaer Polytech Inst and J. FARNSWORTH, University of Colorado Boulder						
1400 hrs AIAA-2017-3309 **Identifying Dynamic Modes of Separated Flow Subject to ZNMF-Based Control from Surface Pressure Measurements** E. Deem, Florida State University, Tallahassee, FL; M. Hemati, University of Minnesota, Twin Cities, Minneapolis, MN; L. Cattafesta, Florida State University, Tallahassee, FL; F. Cadieux, R. Mittal, Johns Hopkins University, Baltimore, MD; H. Zhang, Princeton University, Princeton, NJ; et al.	1430 hrs AIAA-2017-3310 **Large Eddy Simulation of Flow Interactions between a Segmented Synthetic Jet and a Crossflow** E. McGlynn, S. Tran, O. Sahni, Rensselaer Polytechnic Institute, Troy, NY	1500 hrs AIAA-2017-3311 **Application of a Biot-Savart Solver to Predict Axis Switching Phenomenon in Finite-Span Vortices Expelled from a Synthetic Jet** J. Straccia, J. Farnsworth, University of Colorado, Boulder, Boulder, CO	1530 hrs AIAA-2017-3312 **Computational Modeling and Analysis of Sweeping Jet Fluidic Oscillators** J. Seo, R. Mittal, Johns Hopkins University, Baltimore, MD	1600 hrs AIAA-2017-3313 **Application of Sweeping Jet Actuators on the NASA Hump Model and Comparison with CFDVAL2004 Experiments** M. Koklu, NASA Langley Research Center, Hampton, VA	1630 hrs AIAA-2017-3314 **Phase-Synchronized Fluidic Oscillator Pair** M. Tomac, J. Gregory, Ohio State University, Columbus, OH	

Monday, 5 June 2017						
75-FD-9	**Separation Control**					**Terrace**
Chaired by: D. WILLIAMS, Illinois Institute of Technology						
1400 hrs AIAA-2017-3315 **Response of the Separated Flow over an Airfoil to a Short-Time Actuator Burst** X. An, D. Williams, Illinois Institute of Technology, Chicago, IL; A. Fernando de Castro da Silva, T. Colonius, California Institute of Technology, Pasadena, CA; J. Eldredge, University of California, Los Angeles, Los Angeles, CA	1430 hrs AIAA-2017-3316 **Effect of Synthetic Jet Modulation Schemes on the Response of a Separation Bubble** J. Seo, F. Cadieux, R. Mittal, Johns Hopkins University, Baltimore, MD; E. Deem, L. Cattafesta, Florida State University, Tallahassee, FL	1500 hrs AIAA-2017-3317 **Experimental Study on the Detailed Structure of Separation Bubble in Flow Control with DBD Plasma Actuator** Y. Miyakawa, Kogakuin University, Shinjuku, Japan; S. Sekimoto, Tokyo University of Science, Katsushika, Japan; M. Sato, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; T. Nonomura, Tohoku University, Sendai, Japan; A. Oyama, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; K. Fujii, Tokyo University of Science, Katsushika, Japan; et al.	1530 hrs AIAA-2017-3318 **Flow Control Using Passive Vortex Generators** S. Tandon, S. Shinde, K. Maki, E. Johnsen, University of Michigan, Ann Arbor, Ann Arbor, MI			

Monday, 5 June 2017						
76-FD-10	**Unsteady Fluid Dynamics and Unsteady Aerodynamics II**					**Tower Court A**
Chaired by: S. BENTON, Air Force Research Laboratory and D. GARMANN, Air Force Research Laboratory						
1400 hrs AIAA-2017-3319 **Interactions of a Trailing Vortex with a Downstream NACA0012 Wing** D. Garmann, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2017-3320 **Effects of Vertical Position and Orientation on a Vortical-Gust/Airfoil Interaction at a Transitional Reynolds Number** C. Barnes, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-3321 **Numerical Simulation of Wing Section Undergoing Plunging Motions at High Angles of Attack** A. Gross, New Mexico State University, Las Cruces, NM; J. Little, H. Fasel, University of Arizona, Tucson, Tucson, AZ	1530 hrs AIAA-2017-3322 **Numerical Simulation of Flow Past a Circular and a Square Cylinder at High Reynolds Number** L. Zhang, T. Wray, R. Agarwal, Washington University in St. Louis, St. Louis, MO			

Monday, 5 June 2017						
77-GT-2	**Data Acquisition, Modeling, and Simulation**					**Director's Row J**
Chaired by: W. HUMPHREYS, NASA Langley Research Center and A. CHOU, NASA Langley Research Center						
1400 hrs AIAA-2017-3323 **Data Acquisition System for Turbojet Engine using LabVIEW programming and PCI Extensions for Instrumentation** D. Ribeiro, H. Kubinhetz, A. Campo, J. Sousa, Federal Institute of Education Science and Technology, São Paulo, Brazil; J. Alencar, Brazilian Air Force, São Paulo, Brazil	1430 hrs AIAA-2017-3324 **A Preliminary Study on Application of Closed-loop Cross Compensation Control in Accelerated Fatigue Testing** Z. Hongwei, D. Shihui, F. Jianmin, Aviation Industry Corporation of China (AVIC), Xi'an, China	1500 hrs AIAA-2017-3325 **Mach 10 PIV Flow Field Measurements of a Turbulent Boundary Layer and Shock Turbulent Boundary Layer Interaction** J. Brooks, A. Gupta, University of Maryland, College Park, College Park, MD; E. Marineau, Arnold Engineering Development Complex, Silver Spring, MD; M. Smith, National Aerospace Solutions, Silver Spring, MD				

Monday, 5 June 2017						
78-MDO-3	**Aerodynamic Shape Optimization II**					**Director's Row I**
Chaired by: J. MARTINS, University of Michigan						
1400 hrs AIAA-2017-3326 **A Discrete Adjoint Framework for Low-Boom Supersonic Aircraft Shape Optimization** B. Munguia, T. Economon, J. Alonso, Stanford University, Stanford, CA	1430 hrs AIAA-2017-3327 **Component-based Geometry Manipulation for Aerodynamic Shape Optimization with Overset Meshes** N. Secco, J. Jasa, G. Kenway, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1500 hrs AIAA-2017-3328 **Statistical-Analysis-Based Setup of Physics-based Surrogates and Optimization Process Resolution for Variable-Fidelity Aerodynamic Design** S. Koziel, Reykjavik University, Reykjavik, Iceland; L. Leifsson, Iowa State University, Ames, IA	1530 hrs AIAA-2017-3329 **A Multilevel Monte Carlo Algorithm for Robust Multi Objective Aerodynamic Shape Optimization** M. Pisaroni, F. Nobile, P. Leyland, Swiss Federal Institute of Technology, Lausanne, Switzerland	1600 hrs AIAA-2017-3330 **Aerodynamic Design Exploration through Surrogate-Assisted Illumination** A. Gaier, A. Asteroth, Bonn-Rhein-Sieg University of Applied Sciences, Sankt Augustin, Germany; J. Mouret, National Institute for Research in Computer Science and Control (INRIA), Nancy, France		

Monday, 5 June 2017						
79-MDO-4	**Design Optimization of Complex Engineered Systems II**					**Director's Row H**
Chaired by: B. MESMER, University of Alabama and D. ALLAIRE, Texas A&M University						
1400 hrs AIAA-2017-3331 **Design Optimization of Advanced Exhaust Systems** N. Nigam, S. Ayyalasomayajula, Y. Tang, Intelligent Automation, Inc., Rockville, MD; P. Urbanczyk, J. Alonso, Stanford University, Stanford, CA	1430 hrs AIAA-2017-3332 **Fleet Sizing For Large Express Shipment Airlines** L. Ruckle, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2017-3333 **Simulation Optimization for Historical Reenactment of the Air Transportation Network Evolution** K. Song, J. Lewe, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2017-3334 **Compressor Design in the Context of Holistic Aero Engine Design** M. Hendler, S. Extra, M. Lockan, D. Bestle, Brandenburg University of Technology, Cottbus, Germany; P. Flassig, Rolls-Royce Group plc, Blankenfelde, Germany	1600 hrs AIAA-2017-3335 **Composite reinforced metallic cylinder for high-speed rotation** S. Pradhan, Indian Institute of Science, Bengaluru, India		

Monday, 5 June 2017						
80-MST-2	**Modeling and Simulation for the Air Transportation System**					**Plaza Court 6**
Chaired by: R. RUFF and M. ALVAREZ, NASA Langley Research Center						
1400 hrs AIAA-2017-3336 **Point-Mass Aircraft Trajectory Prediction Using a Hierarchical, Highly-Adaptable Software Design** D. Karr, R. Vivona, S. Woods, Engility Corporation, Billerica, MA; D. Wing, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2017-3337 **Autonomous System Technologies for Resilient Airspace Operations (ASTROA)** V. Houston, L. Le Vie, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2017-3338 **Efficient Fast Approximation for Aircraft Fuel Consumption for Decision-Making and Policy Analysis** J. Yanto, R. Liem, Hong Kong University of Science and Technology, Hong Kong, Hong Kong	1530 hrs AIAA-2017-3339 **Development of Rapid Fleet-Wide Environmental Assessment Capability** L. Jensen, J. Thomas, C. Brooks, M. Brenner, R. Hansman, Massachusetts Institute of Technology, Cambridge, MA	1600 hrs AIAA-2017-3340 **Benefit Analysis for ADS-B Surveillance System Based on China Airspace Capability Model** Q. Gu, G. Wang, J. Wu, Aviation Industry Corporation of China (AVIC), Shanghai, China		

Monday, 5 June 2017						
81-PDL-2	**Plasma Aerodynamics I: DBD-Based Flow Control**					**Denver**
Chaired by: D. ASHPIS, NASA Glenn Research Center						
1400 hrs AIAA-2017-3341 **Corner Separation Zone Response to Plasma Actuation in the Hypersonic Boundary Layer over a Compression Ramp** B. Hedlund, A. Houpt, S. Gordeyev, S. Leonov, University of Notre Dame, Notre Dame, IN	1430 hrs AIAA-2017-3342 **Static Stall Control at High Angle of Attack by NS pulsed Actuator in Burst Mode** A. Starikovskiy, Princeton University, Princeton, NJ; J. Williams, Purdue University, West Lafayette, IN; R. Miles, Princeton University, Princeton, NJ	1500 hrs AIAA-2017-3343 **Investigation of Scaling Effects Due to Varying Dielectric Materials in Asymmetric Surface Dielectric Barrier Discharge** A. Ngo, K. Pai, J. Jacob, Oklahoma State University, Stillwater, OK	1530 hrs AIAA-2017-3344 **NS Dielectric Barrier Discharge Development and Thrust Generation in 4-Electrode Geometry** A. Starikovskiy, K. Meehan, Princeton University, Princeton, NJ; J. Williams, Purdue University, West Lafayette, IN; R. Miles, Princeton University, Princeton, NJ			

Monday, 5 June 2017						
82-TFM-2/APA-11	**Supersonic and Hypersonic Flows**					**Spruce**
Chaired by: I. LEYVA, AFOSR and S. MUPPIDI						
1400 hrs AIAA-2017-3345 **Numerical simulation of jet impinge on turbine rotor of the Loitering Munition** W. Cai, Nanjing University of Science and Technology, Nanjing, China	1430 hrs AIAA-2017-3346 **Analysis of Effects of Different Diffusion Models in Hypersonic Flow Regimes** H. Gür, S. Eyi, Middle East Technical University, Ankara, Turkey	1500 hrs AIAA-2017-3347 **A Shock Wave Front Model Applied to Very Thick and Very Thin Supersonic Cones at Zero Incidence** R. Ferreyra, National University of Córdoba, Córdoba, Argentina	1530 hrs AIAA-2017-3348 **An Investigation into Hypersonic Inlet Performance for a Coupled Internal/External System at Off-Design Conditions.** A. Hall, Air Force Life Cycle Management Center, Wright-Patterson AFB, OH; S. Ruffin, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2017-3349 **Experimental Studies of Supersonic Flow Characteristics between Two Wedges** M. Kotov, L. Ruleva, S. Solodovnikov, Russian Academy of Sciences, Moscow, Russia	1630 hrs AIAA-2017-3350 **Numerical Investigation of RCS Jet Interaction and Plume Impingement for Mars Precision Landing** R. Votta, E. Trifoni, G. Pezzella, M. Di Clemente, A. Schettino, Italian Aerospace Research Center (CIRA), Capua, Italy; V. Mareschi, Thales Group, Turin, Italy; et al.	1700 hrs Oral Presentation **A New General Form of Prandtl Meyer Function, Application on Air** M. Salhi, T. Zebbiche, University of Blida 1, Blida, Algeria

Monday, 5 June 2017						
83-TP-2	**Ablation I**					**Plaza Court 3**
Chaired by: C. SMITH, Orbital ATK and H. WENG, University of Kentucky						
1400 hrs AIAA-2017-3351 **Conjugate Analysis of Rocket Nozzle Ablation** P. Cross, Naval Air Warfare Center, China Lake, CA; I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1430 hrs AIAA-2017-3352 **Numerical simulation of a non-charring ablator in high enthalpy flows by means of a unified flow-material solver** P. Schrooyen, Cenaero, Gosselies, Belgium; J. Coheur, A. Turchi, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium; K. Hillewaert, Cenaero, Gosselies, Belgium; P. Chatelain, Catholic University of Leuven, Leuven, Belgium; T. Magin, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1500 hrs AIAA-2017-3353 **Arcjet Tests and Thermal Response Analysis for Dual-Layer Woven Carbon Phenolic** F. Milos, Y. Chen, M. Mahzari, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2017-3354 **Verification of a Finite-Element Model for Pyrolyzing Ablative Materials** T. Risch, NASA Armstrong Flight Research Center, Edwards, CA	1600 hrs AIAA-2017-3355 **Development of a Universal Solver and Its Application to Ablation Problems** H. Weng, A. Martin, University of Kentucky, Lexington, Lexington, KY	1630 hrs AIAA-2017-3356 **Development Of An Open-Source Avcoat Material Database, VISTA** A. Omidy, J. Cooper, R. Fu, H. Weng, A. Martin, University of Kentucky, Lexington, Lexington, KY	1700 hrs AIAA-2017-3357 **Characterization of Virgin and Charred PICA Seeded for Remote Recession Measurements** B. Bradley, M. Winter, University of Kentucky, Lexington, Lexington, KY; M. Stackpoole, NASA Ames Research Center, Moffett Field, CA

Monday, 5 June 2017		
84-NW-5 **1600 - 1630 hrs**	**Networking Coffee Break**	**Meeting Room Foyers**

Monday, 5 June 2017		
85-RLA-1 **1600 - 1830 hrs**	**Rising Leaders in Aerospace Speed Mentoring and Reception**	**South Convention Lobby**

Senior members of corporations and AIAA will be taking time to meet with the Rising Leaders participants and share their experiences. This event is a great way to get insight from top-level officials and make some great new contacts. And, maybe, they will end up being a mentor for more than just the 15 minutes at this event.

Immediately following the round table interchange with senior members of the industry there will be a follow-on reception. This will allow for conversations to continue, or if a conversation was cut short, an opportunity to have a follow-up discussion. It will also allow for a casual opportunity to meet the other young professionals that are attending the conference. Having just participated in the Leadership Exchange, you'll definitely have at least one thing in common.

Monday, 5 June 2017		
86-LECT-1 1630 - 1730 hrs	**Aerodynamics Award Lecture**	**Grand Ballroom I**
Chimera: A Journey **John A Benek** Director, Computational Sciences Center, Air Force Research Laboratory, Wright-Patterson AFB, Ohio		

Monday, 5 June 2017		
87-LECT-2 1730 - 1830 hrs	**Aeroacoustics Lecture**	**Governor's Square 14**
Noise: The Most Important Thing **Alan H. Epstein** Vice President, Technology and Environment, Pratt & Whitney Corporation		

Monday, 5 June 2017		
88-LECT-3 1730 - 1830 hrs	**Fluid Dynamics Award Lecture**	**Grand Ballroom I**
Prediction, Understanding and Control of Complex Unsteady Flows: Progress and Challenges **Miguel R. Visbal** CFD Technical Advisor, Aerospace Systems Directorate, Air Force Research Laboratory, Wright-Patterson AFB, Ohio		

Monday, 5 June 2017		
89-LECT-4 1830 - 1930 hrs	**Wright Brothers Lecture in Aeronautics**	**Plaza Ballroom**
Around the World with Solar Power: An Overview About The Solar Impulse Program **Solar Impulse Aircraft Design Team** Lead Lecturer: Hannes Ross		

Tuesday

Tuesday, 6 June 2017		
90-NW-6 0730 - 0800 hrs	**Networking Coffee Break**	**Plaza Foyer**

Tuesday, 6 June 2017		
91-SB-2 0730 - 0800 hrs	**Speakers' Briefing**	**Session Rooms**

Tuesday, 6 June 2017		
92-PLNRY-2 0800 - 0900 hrs	**Plenary**	**Plaza Ballroom**
Innovation in the Age of the Third Aerospace Revolution **Paul Eremenko** Chief Technology Officer Airbus Group		

Tuesday, 6 June 2017		
93-NW-7 0900 - 0930 hrs	**Networking Coffee Break**	**Meeting Room Foyers**

Tuesday, 6 June 2017						
94-AA-17	**Acoustic/Fluid Dynamic Interactions II**					**Plaza Court 7**
Chaired by: C. DOOLAN, The University of New South Wales						
0930 hrs AIAA-2017-3358 **Experimental Study of Porous Treatment for Aerodynamic and Aeroacoustic Purposes** S. Showkat Ali, M. Azarpeyvand, University of Bristol, Bristol, United Kingdom; C. Ilario da Silva, Embraer, São José dos Campos, Brazil	1000 hrs AIAA-2017-3359 **Aircraft Cabin Outflow Valve Tonal and Broadband Noise Prediction Using the Lattice Boltzmann Method** Y. Shin, Honeywell International, Inc., Phoenix, AZ; F. Polidoro, I. Gonzalez-Martino, D. Casalino, Exa Corporation, Burlington, MA	1030 hrs AIAA-2017-3360 **Acoustic flame response of a round and a slot burner** K. Pausch, S. Herff, S. Schlimpert, M. Meinke, W. Schroeder, RWTH Aachen University, Aachen, Germany	1100 hrs AIAA-2017-3361 **Effect of Aeroelasticity on Vibroacoustic Loads during Startup of Large Area Ratio Nozzles** C. Tinney, K. Scott, M. Routon, J. Sirohi, University of Texas, Austin, Austin, TX; J. Ruf, NASA Marshall Space Flight Center, Huntsville, AL			

Tuesday, 6 June 2017						
95-AA-18	**Airframe/High-Lift Noise IV: High Lift Systems**					**Plaza Court 4**
Chaired by: M. KHORRAMI, NASA Langley Research Center						
0930 hrs AIAA-2017-3362 **Noise Simulations of the High-Lift Common Research Model** D. Lockard, M. Choudhari, M. O'Connell, NASA Langley Research Center, Hampton, VA; B. Duda, E. Fares, Exa GmbH, Stuttgart, Germany	1000 hrs AIAA-2017-3363 **Numerical Simulation of the Noise from the 30P30N Highlift Airfoil with Spectral Difference Method** J. Gao, X. Li, Beihang University, Beijing, China; D. Lin, Commercial Aircraft Corporation of China, Ltd. (COMAC), Beijing, China	1030 hrs AIAA-2017-3364 **Experimental Investigation of Flow Around Three-Element High-Lift Airfoil with Morphing Fillers** H. Kamliya Jawahar, M. Azarpeyvand, University of Bristol, Bristol, United Kingdom; C. Ilario, Embraer, São José dos Campos, Brazil	1100 hrs AIAA-2017-3365 **A Qualitative Acoustic Analysis of Krueger Device Noise Utilizing CFD/CAA Experiments** J. Kreitzman, The Boeing Company, St. Louis, MO; R. Cheng, The Boeing Company, Huntington Beach, CA; N. Moffitt, D. Babcock, P. Bent, The Boeing Company, St. Louis, MO	1130 hrs AIAA-2017-3366 **Two Approaches to Resolving the Flow Physics of a Krueger Flap for CFD/CAA Analysis** N. Moffitt, D. Babcock, J. Kreitzman, The Boeing Company, St. Louis, MO; R. Cheng, The Boeing Company, Huntington Beach, CA		

Tuesday, 6 June 2017						
96-AA-19	**CAA III: Airfoils**					**Plaza Court 8**
Chaired by: V. GOLUBEV, Embry-Riddle Aeronautical University (ERAU) and M. WANG, University of Notre Dame						
0930 hrs AIAA-2017-3367 **An investigation of passive methods for airfoil noise reduction in laminar boundary layer instability flow regime** W. Krusz, Z. Rarata, Warsaw University of Technology, Warsaw, Poland	1000 hrs AIAA-2017-3368 **Direct Numerical Simulation of Transitional Airfoil Noise** H. Wu, University of Sherbrooke, Sherbrooke, Canada; J. Winkler, United Technologies Corporation, East Hartford, CT; R. Sandberg, University of Melbourne, Parkville, Australia; S. Moreau, University of Sherbrooke, Sherbrooke, Canada	1030 hrs AIAA-2017-3369 **A numerical investigation of the airfoil-gust interaction noise in transonic flows** S. Zhong, X. Zhang, Hong Kong University of Science and Technology, Hong Kong, Hong Kong; J. Gill, University of Southampton, Southampton, United Kingdom; R. Fattah, Hong Kong University of Science and Technology, Hong Kong, Hong Kong	1100 hrs AIAA-2017-3370 **Wavy Leading Edge Airfoils Interacting with Anisotropic Turbulence** F. Gea Aguilera, J. Gill, D. Angland, University of Southampton, Southampton, United Kingdom; X. Zhang, Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong	1130 hrs AIAA-2017-3371 **Experimental and Numerical Investigation of Aerodynamic Performance of Airfoils Fitted with Morphing Trailing-edges** H. Kamliya Jawahar, Q. Ai, M. Azarpeyvand, University of Bristol, Bristol, United Kingdom		

Tuesday, 6 June 2017						
97-AA-20	**Duct Acoustics III: Liners**					**Governor's Square 10**
Chaired by: D. NARK, NASA Langley Research Center						
0930 hrs AIAA-2017-3372 **Eigenmodes and Green's function of swirling flow in a duct with the lining varying circumferentially** J. Mathews, N. Peake, University of Cambridge, Cambridge, United Kingdom	1000 hrs AIAA-2017-3373 **A Study of the Viscous Effects over an Acoustic Liner Using the Linearised Navier-Stokes Equations in the Frequency Domain** C. O'Reilly, B. Pascual, Royal Institute of Technology (KTH), Stockholm, Sweden	1030 hrs AIAA-2017-3374 **Calculation model for sound propagation in duct with circumferentially non-uniform liner** X. Wang, X. Wang, Beihang University, Beijing, China; L. Huang, University of Hong Kong, Hong Kong, Hong Kong; X. Sun, Beihang University, Beijing, China	1100 hrs AIAA-2017-3375 **Scattering in a flow duct with azimuthally non-uniform liners** H. Jiang, X. Huang, Peking University, Beijing, China	1130 hrs AIAA-2017-3376 **Nonlinear Acoustics in a Viscothermal Boundary Layer over an Acoustic Lining** O. Petrie, E. Brambley, University of Cambridge, Cambridge, United Kingdom	1200 hrs AIAA-2017-3377 **Modeling of liner impedance with grazing shear flow using a new momentum transfer boundary condition** A. Schulz, Technical University of Berlin, Berlin, Germany; C. Weng, F. Bake, L. Enghardt, German Aerospace Center (DLR), Berlin, Germany; D. Ronneberger, Self, Göttingen, Germany	

Tuesday, 6 June 2017						
98-AA-21	**Jet Noise III: Wavepackets I**					**Governor's Square 12**
Chaired by: P. JORDAN and J. SPYROPOULOS, NAVAIR						
0930 hrs AIAA-2017-3378 **Wavepacket modeling of turbulent jet noise generation using input-output analysis** J. Jeun, J. Nichols, University of Minnesota, Twin Cities, Minneapolis, MN	1000 hrs AIAA-2017-3379 **Modal and non-modal linear wavepacket dynamics in turbulent jets** P. Jordan, M. Zhang, G. Lehnasch, University of Poitiers, Poitiers, France; A. Cavalieri, Technological Institute of Aeronautics (ITA), São José Dos Campos, Brazil	1030 hrs AIAA-2017-3380 **Two-Point Wavepacket Modelling of Jet Noise** I. Maia, P. Jordan, University of Poitiers, Poitiers, France; V. Jaunet, École Centrale de Nantes, Nantes, France; A. Cavalieri, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1100 hrs AIAA-2017-3381 **Flight effects on turbulent-jet wavepackets** L. Mourão Soares , A. Cavalieri, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1130 hrs AIAA-2017-3382 **Exploring Flight Effects for Installed Jet Noise using a Wavepacket Sound-Source Model** J. Huber, Airbus, Toulouse, France; P. Jordan, National Center for Scientific Research (CNRS), Poitiers, France; M. Roger, École Centrale de Lyon, Ecully, France; Y. Gervais, National Center for Scientific Research (CNRS), Poitiers, France; D. Lizarazu, Airbus, Toulouse, France	1200 hrs AIAA-2017-3383 **Understanding jet-noise reduction with wavepackets** M. Le Rallic, P. Jordan, Y. Gervais, University of Poitiers, Poitiers, France	

Tuesday, 6 June 2017						
99-AA-22	**Turbomachinery Noise III**					**Governor's Square 11**
Chaired by: S. MOREAU, Université de Sherbrooke						
0930 hrs AIAA-2017-3384 **Baseline Acoustic Levels of the EESC-USP Fan Rig** B. Martinez, P. Greco, University of São Paulo, São Carlos, Brazil; L. Caldas, University of São Paulo, São Paulo, Brazil; L. Baccalá, University of São Paulo, São Carlos, Brazil; R. Cuenca, Federal University of Santa Catarina, Joinville, Brazil; R. Queiroz, Embraer, São José dos Campos, Brazil	1000 hrs AIAA-2017-3385 **Liner behavior in an annular duct with swirling and sheared mean flow** V. Masson, University of Sherbrooke, Sherbrooke, Canada; J. Mathews, university of Cambridge, Cambridge, United Kingdom; H. Posson, Airbus, Toulouse, France; M. Sanjose, S. Moreau, University of Sherbrooke, Sherbrooke, Canada	1030 hrs AIAA-2017-3386 **Fan noise predictions using scale-resolved, statistical, stochastic and semi-analytical models** C. Schram, J. Christophe, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium; M. Shur, M. Strelets, A. Travin, Saint Petersburg State Polytechnical University, Saint Petersburg, Russia; A. Wohlbrandt, German Aerospace Center (DLR), Braunschweig, Germany; et al.	1100 hrs AIAA-2017-3387 **Experimental Investigation of Sound Reduction by Leading Edge Serrations in Axial Fans** F. Zenger, A. Renz, S. Becker, Friedrich-Alexander University Erlangen-Nuremberg, Erlangen, Germany	1130 hrs AIAA-2017-3388 **Deconvolution of Azimuthal Mode Detection Measurements** P. Sijtsma, Pieter Sijtsma Advanced AeroAcoustics, Wezep, The Netherlands; H. Brouwer, National Aerospace Laboratory (NLR), Amsterdam, The Netherlands	1200 hrs AIAA-2017-3389 **Investigation of Aeroacoustic Properties of Low-Pressure Axial Fans with Different Blade Stacking** F. Zenger, J. Müller, S. Becker, Friedrich-Alexander University Erlangen-Nuremberg, Erlangen, Germany	

Tuesday, 6 June 2017						
100-ADS-4/BAL-3/LTA-1	**Aerodynamic Decelerator, Balloons, and Lighter-than-Air Combined Session**					**Majestic Ballroom**
Chaired by: B. ANDERSON, NASA-Johnson Space Center						
0930 hrs AIAA-2017-3390 **An Investigation into the Performance of Parachutes in Low Density Atmospheres** J. Underwood, A. Saunders, S. Rogers, J. Lingard, Vorticity, Ltd., Chalgrove, United Kingdom; L. Marraffa, ESA, Noordwijk, The Netherlands; L. Ferracina, ATG Europe, Noordwijk, The Netherlands	1000 hrs Oral Presentation **An introduction to Project Loon for the American Institute of Aeronautics and Astronautics** M. Mulhern, Google, Palo Alto, CA	1030 hrs AIAA-2017-3391 **System Identification Approach for a Tethered Airship** J. Santos, S. Stevanovic, K. Kondak, German Aerospace Center (DLR), Munich, Germany; L. Goes, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; R. Pant, Indian Institute of Technology Bombay, Bombay, India	1100 hrs AIAA-2017-3392 **Shaping Dispersion Patterns in Complex Dropzones Through Parachute Transition Altitude Optimization** J. Rogers, A. Leonard, C. Jumonville, Georgia Institute of Technology, Atlanta, GA; A. Gerlach, D. Doman, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2017-3393 **Surrogate Based Shape Optimization of Airship Envelopes** M. Alam, R. Pant, Indian Institute of Technology Bombay, Mumbai, India		

Tuesday, 6 June 2017						
101-AFM-1	**Aircraft Flight Dynamics I**					**Governor's Square 17**
Chaired by: K. CUNNINGHAM, NASA Langley Research Center and N. FEZANS, DLR - German Aerospace Center						
0930 hrs AIAA-2017-3394 **Performance-Based Ice Detection Methodology** C. Deiler, N. Fezans, German Aerospace Center (DLR), Braunschweig, Germany	1000 hrs AIAA-2017-3395 **Statistical Modeling of Dependence Structures of Operational Flight Data Measurements not Fulfilling the I.I.D. Condition** L. Höhndorf, C. Czado, H. Bian, J. Kneer, F. Holzapfel, Technical University of Munich, Garching, Germany	1030 hrs AIAA-2017-3396 **Longitudinal Integrated Linear Parameter Varying Control for Morphing Aircraft in Large Flight Envelope** T. Yue, L. Wang, Beihang University, Beijing, China; J. Ai, Aviation Industry Corporation of China (AVIC), Xi'an, China				

Tuesday, 6 June 2017						
102-AMT-4	Advancements in Shear Stress Measurements (Invited)					Director's Row E
Chaired by: J. NAUGHTON, University of Wyoming and K. LOWE, Virginia Tech						
0930 hrs Oral Presentation **Open Challenges in Wall Shear Measurements (Invited)** J. Schetz, Virginia Polytechnic Institute and State University, Blacksburg, VA; R. Meritt, Ahmic Aerospace, Dayton, OH; E. Marineau, AEDC White Oak, Silver Spring, MD	1000 hrs Oral Presentation **The importance of quantitative skin friction measurement (Invited)** J. Naughton, University of Wyoming, Laramie, Laramie, WY	1030 hrs Oral Presentation **MEMS based floating element sensors (Invited)** M. Sheplak, University of Florida , Gainesville, FL	1100 hrs Oral Presentation **Luminescent Oil Film Approaches to Shear Stress Measurements (Invited)** N. Husen, Purdue University, West Lafayette, IN; T. Liu, Western Michigan University, Kalamazoo, MI; J. Sullivan, Purdue University, West Lafayette, IN	1130 hrs Oral Presentation **Shear Stress Measurements in Hypersonic Flows (Invited)** R. Meritt, Ahmic Aerospace, Dayton, OH	1200 hrs Oral Presentation **Photonic skin friction sensor based on whispering gallery optical resonators (Invited)** T. Iappolo, V. Otugen, Southern Methodist University, Dallas, TX	

Tuesday, 6 June 2017						
103-APA-12	Weapons Aerodynamics: Missile/Projectile/Guided-Munitions					Colorado
Chaired by: V. BHAGWANDIN, US Army Research Laboratory and M. SCHOENENBERGER, NASA Langley Research Center						
0930 hrs AIAA-2017-3397 **CFD Aerodynamic Characterization of 155-mm Projectile at High Angles-of-Attack** J. DeSpirito, Army Research Laboratory, Aberdeen Proving Ground, MD	1000 hrs AIAA-2017-3398 **Quasi-Steady Simulations for the Efficient Generation of Static Aerodynamic Coefficients at Subsonic Velocities** S. Silton, Army Research Laboratory, Aberdeen Proving Ground, MD	1030 hrs AIAA-2017-3399 **Prediction of Sparrow Missile Aerodynamic Characteristics with a Nonlinear Engineering Level Missile Prediction Method** D. Lesieutre, Analytical Mechanics Associates, Inc., Santa Clara, CA	1100 hrs AIAA-2017-3400 **Computational and Experimental Free-Flight Motion of a Subsonic Canard-Controlled Body** J. Sahu, F. Fresconi, Army Research Laboratory, Aberdeen Proving Ground, MD	1130 hrs AIAA-2017-3401 **Experimental und numerical investigation of the aerodynamic characteristic of a generic transonic missile** C. Schnepf, E. Schuelein, German Aerospace Center (DLR), Göttingen, Germany; J. Klevanski, German Aerospace Center (DLR), Cologne, Germany		

Tuesday, 6 June 2017						
104-APA-13	Transonic and Supersonic Aerodynamics					Tower Court A
Chaired by: J. CODER, University of Tennessee and B. DETERT, Boeing Commercial Airplanes						
0930 hrs AIAA-2017-3402 **Effect of Leading Edge Tubercles on Transonic Performance of Airfoils** A. Asghar, R. Perez, M. Ferchichi, Royal Military College of Canada, Kingston, Canada	1000 hrs AIAA-2017-3403 **Investigation of shock wave-boundary-layer interaction for flow over a wall-mounter hemisphere** P. Morgan, Ohio Aerospace Institute, Cleveland, OH; S. Sherer, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2017-3404 **Investigation of Indirect Reynolds Number Effect via Computational Fluid Dynamics Simulations** W. Yamazaki, S. Yamagishi, Nagaoka University of Technology, Nagaoka, Japan; M. Ueno, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1100 hrs AIAA-2017-3405 **Aerodynamics of a Transonic Airfoil in Ground Effect** B. Gao, Q. Qu, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1130 hrs AIAA-2017-3406 **An Experimental Investigation of the Effect of Sweep-Back Angle on an Internal Compression Inlet** H. Tabanli, E. Ede, K. Yuceil, Istanbul Technical University, Istanbul, Turkey		

Tuesday, 6 June 2017						
105-APA-14	Flapping Flight Applications					Century
Chaired by: B. MCGRATH, Johns Hopkins University Applied Physics Laboratory and K. MULLENERS, EPFL						
0930 hrs AIAA-2017-3407 **Aerodynamics of a Flapping Airfoil in Forward Flight in Proximity of Ground** H. Li, Q. Qu, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1000 hrs AIAA-2017-3408 **Ground Effect Aerodynamics of a Flapping Airfoil in Hover** Q. Qu, Y. Zheng, P. Liu, Y. Qin , Beihang University, St. Louis, MO; R. Agarwal, Washington University in St. Louis, St. Louis, MO	1030 hrs AIAA-2017-3409 **Experimental Investigation into Wake Flapping Wing Robotic Bird** A. Brentjes, H. Hoeijmakers, University of Twente, Enschede, The Netherlands				

Tuesday, 6 June 2017						
106-APA-15	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques III**					**Gold**
Chaired by: M. GHOREYSHI, United States Air Force Academy and B. MARPLES						
0930 hrs AIAA-2017-3410 **Mitigation of Engine Inlet Distortion through Adjoint-Based Design** I. Ordaz, NASA Langley Research Center, Hampton, VA; S. Rallabhandi, National Institute of Aerospace, Hampton, VA; E. Nielsen, NASA Langley Research Center, Hampton, VA; B. Diskin, National Institute of Aerospace, Hampton, VA	1000 hrs AIAA-2017-3411 **Aerodynamic Design of the Hybrid Wing Body Propulsion-Airframe Integration** M. Liou, NASA Glenn Research Center, Cleveland, OH; H. Kim, SAIC, Cleveland, OH; B. Lee, Vantage Partners, LLC, Cleveland, OH; M. Liou, NASA Glenn Research Center, Cleveland, OH	1030 hrs AIAA-2017-3412 **Preliminary Computational Aerodynamic Investigation of the NATO AVT-251 Multi-Disciplinary Configuration** P. Aref, S. McGlone, J. Allen, M. Ghoreyshi, A. Jirasek, A. Lofthouse, U.S. Air Force Academy, Colorado Springs, CO	1100 hrs AIAA-2017-3413 **Methodologies for Turbofan Inlet Aerodynamics Prediction** B. Godard, N. Ben Nasr, R. Barrier, J. Marty, ONERA, Meudon, France; N. Gourdain, Higher Institute of Aeronautics and Space, Toulouse, France; E. De Jaeghere, Safran Group, Paris, France	1130 hrs AIAA-2017-3414 **A Higher-Order Free-Wake Method for Propeller-Wing Systems** J. Cole, Bucknell University, Lewisburg, PA; M. Maughmer, Pennsylvania State University, University Park, PA; G. Bramesfeld, Ryerson University, Toronto, Canada; M. Kinzel, Pennsylvania State University, University Park, PA	1200 hrs Oral Presentation **Numerical Investigation of Mixing Effects on Mini Gas Turbine Engine Cooling and Performance Characteristics** J. Joy, P. Wang, S. Yu, Singapore Institute of Technology, Singapore, Singapore	

Tuesday, 6 June 2017						
107-APA-16/FD-11	**Active Flow Control: Historical Implementation and the Future Challenge Workshop (Invited)**					**Silver**
Chaired by: L. CATTAFESTA, FAMU-FSU College of Engineering and B. OSBORNE, The Boeing Company						
0930 hrs Oral Presentation **"Blow On"…An Overview of Boundary Layer Control on Production Tactical Aircraft** R. Dowgwillo, The Boeing Company, St. Louis, MO	1000 hrs Oral Presentation **Innovative Flow Control Challenges and Approaches for Maneuvering of Aircraft** D. Smith, Air Force Office of Scientific Research, Arlington, VA	1030 hrs Oral Presentation **High Lift Common Research Model and Opportunities for Advancement of Active Flow Control Technology** J. Lin, NASA Langley Research Center, Hampton, VA	1100 hrs **Open Discussion**			

Tuesday, 6 June 2017						
108-ASE-3	**Ice Accretion Modeling**					**Columbine**
Chaired by: D. THOMPSON, Mississippi State University and A. MALONE, Boeing						
0930 hrs AIAA-2017-3415 **A Revised Validation Process for Ice Accretion Codes** W. Wright, Vantage Partners, LLC, Cleveland, OH	1000 hrs AIAA-2017-3416 **Validation of a LEWICE-based Icing Code with Coupled Heat Transfer Prediction and Aerodynamics Performance Determination** Y. Han, Clemson University, Clemson, SC; J. Palacios, Pennsylvania State University, University Park, PA	1030 hrs AIAA-2017-3417 **Description and assessment of the new ONERA 2D icing suite IGLOO2D.** P. Trontin, G. Blanchard, A. Kontogiannis, P. Villedieu, ONERA, Toulouse, France	1100 hrs AIAA-2017-3418 **Three-Dimensional Numerical Simulation of Ice Accretion using a Discrete Morphogenetic Approach** K. Szilder, National Research Council Canada, Ottawa, Canada; E. Lozowski, University of Alberta, Edmonton, Canada	1130 hrs AIAA-2017-3419 **A 3D Finite-Volume Integral Boundary Layer method for icing applications** N. Bempedelis, C. Bayeux, G. Blanchard, E. Radenac, P. Villedieu, ONERA, Toulouse, France		

Tuesday, 6 June 2017						
109-ATIO.ACD-3	**Aircraft Ground and Field Performance**					**Governor's Square 16**
Chaired by: J. MERRET, Gulfstream Aerospace Corporation and T. TAKAHASHI, Arizona State University						
0930 hrs AIAA-2017-3420 **The Effect of Aerodynamic and Propulsive Uncertainty Upon Certified Takeoff Performance** T. Takahashi, D. Wood, Arizona State University, Tempe, AZ; L. Bays, Dragonfly Aeronautics, LLC, Alpharetta, GA	1000 hrs AIAA-2017-3421 **Parameterization and Computation of Automatic Take-off and Landing Trajectories for Fixed-Wing UAV** M. Kügler, F. Holzapfel, Technical University of Munich, Munich, Germany	1030 hrs AIAA-2017-3422 **The Effect of Piloting Practices Upon Actual as Opposed to Scheduled Takeoff Performance** D. Wood, T. Takahashi, Arizona State University, Tempe, AZ; L. Bays, Dragonfly Aeronautics, LLC, Alpharetta, GA	1100 hrs AIAA-2017-3423 **The Feasibility of High Speed Ground Effect Vehicles** R. Li, H. Chen, Tsinghua University, Beijing, China	1130 hrs AIAA-2017-3424 **Improving the Boarding Performance of Regional Aircraft** M. Schmidt, P. Heinemann, Bauhaus Luftfahrt e.V., Taufkirchen, Germany	1200 hrs AIAA-2017-3425 **Aircraft Ground Handling: Analysis for Automation** D. Alonso Tabares, AIRBUS, Blagnac, France; F. Mora-Camino, ENAC, Toulouse, France	

Tuesday, 6 June 2017						
110-ATIO.ATM-5	**Weather Impact I**					**Plaza Court 1**
Chaired by: K. MARAIS, Purdue University						
0930 hrs AIAA-2017-3426 **Subject Matter Expert Evaluation of Multi-Flight Common Route Advisories** K. Bilimoria, M. Hayashi, K. Sheth, NASA Ames Research Center, Moffett Field, CA	1000 hrs AIAA-2017-3427 **A Network Condition-Centric Flow Selection and Rerouting Strategy to Mitigate Air Traffic Congestion under Uncertainties** J. Xie, Texas A&M University, Corpus Christi, TX; Y. Wan, University of Texas, Arlington, Arlington, TX	1030 hrs AIAA-2017-3428 **Identification of Beneficial Multiple Flight Common Routes Concept Scenarios** A. Saraf, J. Schade, M. Popish, T. Towner, M. Dang, ATAC Corporation, Santa Clara, CA; M. Klopfenstein, Avmet Applications, Alexandria, VA; et al.	1100 hrs AIAA-2017-3429 **Dynamic Routing of Aircraft in Presence of Adverse Weather Using a POMDP Framework** E. Balaban, I. Roychoudhury, L. Spirkovska, S. Sankararaman, C. Kulkarni, M. Daigle, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2017-3430 **Strategic Forecasts of TRACON Airspace Capacity during Convective Weather Impacts** M. Matthews, R. DeLaura, J. Venuti, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA	1200 hrs AIAA-2017-3431 **Optimal Aircraft Trajectory Planning in the Presence of Stochastic Convective Weather Cells** D. González-Arribas, Charles III University of Madrid, Leganés, Spain; D. Hentzen, Swiss Federal Institute of Technology, Zürich, Switzerland; M. Sanjurjo-Rivo, M. Soler, Charles III University of Madrid, Leganés, Spain; M. Kamgarpour, Swiss Federal Institute of Technology, Zürich, Switzerland	

Tuesday, 6 June 2017						
111-ATIO.ATM-6	**ATM Trajectory Optimization**					**Plaza Court 2**
Chaired by: J. KOELLING, NASA-Langley Research Center						
0930 hrs AIAA-2017-3432 **Optimal Trajectory Option Sets for In-Flight Climb-Descend Trajectory Negotiations** S. Park, P. Dutta, P. Menon, Optimal Synthesis, Inc., Los Altos, CA	1000 hrs AIAA-2017-3433 **In-Flight Synthesis of Optimal En-Route Trajectory Option Sets** P. Dutta, S. Park, P. Menon, Optimal Synthesis, Inc., Los Altos, CA	1030 hrs AIAA-2017-3434 **Designing Flight-Specific Reroutes using Network Optimization** C. Taylor, S. Liu, D. Larsen, C. Wanke, T. Stewart, MITRE Corporation, McLean, VA	1100 hrs AIAA-2017-3435 **3D Reference Trajectory Optimization Using Particle Swarm Optimization** A. Murrieta-Mendoza, H. Ruiz, S. Kessaci, R. Botez, University of Québec, Montréal, Canada	1130 hrs AIAA-2017-3436 **Simulation based validation of a mixed-integer optimal control algorithm for conflict detection and resolution using TAAM software** A. Munoz Hernandez, M. Soler, Charles III University of Madrid, Leganes, Spain		

Tuesday, 6 June 2017						
112-ATIO.GA-2	**Inflight Loss of Control Mitigation for Light Aircraft**					**Plaza Court 5**
Chaired by: K. HOFFLER, Adaptive Aerospace Group, Inc. and A. PRZEKOP, NASA Langley Research Center						
0930 hrs AIAA-2017-3437 **Helicopter Approach Stability Analysis Using Flight Data Records** A. Payan, P. Lin, Georgia Institute of Technology, Atlanta, GA; C. Johnson, Federal Aviation Administration, Atlantic City, NJ; D. Mavris, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2017-3438 **Development of a New Departure Aversion Standard for Light Aircraft** N. Borer, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-3439 **In Search of General Aviation Flight Data Monitoring: Lightweight Recording System** B. Kuo, W. Guan, P. Chen, Aviation Safety Council, New Taipei City, Taiwan				

Tuesday, 6 June 2017						
113-ATIO.TFPC-3/ATIO.VSTOL-1	**On-Demand Mobility III: VTOL and V/STOL Concepts and Technologies**					**Governor's Square 15**
Chaired by: B. SEELEY, Sustainable Aviation Foundation, Inc. and A. GIBSON, Empirical Systems Aerospace						
0930 hrs AIAA-2017-3440 **Regional Sky Transit IV: Pocket Airpark Design Constraints** B. Seeley, Sustainable Aviation Foundation, Inc., Santa Rosa, CA	1000 hrs AIAA-2017-3441 **Metrics for NASA Aeronautics Research Mission Directorate (ARMD) Strategic Thrust 3B Vertical Lift Strategic Direction** R. Hochstetler, SAIC, Washington, D.C.	1030 hrs AIAA-2017-3442 **A Study in Reducing the Cost of Vertical Flight with Electric Propulsion** M. Duffy, S. Wakayama, R. Hupp, The Boeing Company, Ridley Park, PA				

Tuesday, 6 June 2017		
114-CASE-1 0930 - 1230 hrs	Model-Based Systems Engineering	Governor's Square 14

Chair: Paul Collopy, Professor/Department Chair, Industrial & Systems Engineering and Engineering Management, University of Alabama in Huntsville

Panelists:

Dale Thomas
Professor/Eminent Scholar
Industrial & Systems Engineering and Engineering Management
University of Alabama in Huntsville

Troy Peterson
Vice President
System Strategy, Inc.

William Othon
Associate Chief
Aeroscience and Flight Mechanics Division
NASA Johnson Space Center

Academic Scholar: Bryan Mesmer
Assistant Professor
Industrial & Systems Engineering and Engineering Management
University of Alabama in Huntsville

Tuesday, 6 June 2017						
115-CFD-7/FD-12/TFM-3	Future of Fluids Series: Visions for Next-Generation CFD and Turbulence Modeling					Windows
Chaired by: Q. WANG, MIT and H. LUO, Vanderbilt University						
0930 hrs Oral Presentation **The Role of Direct Numerical Simulation of Turbulent Combustion in High-Speed Flows** J. Chen, Sandia National Laboratories, Livermore, CA	1000 hrs Oral Presentation **Wall Modeling for Large Eddy Simulation in External Aerodynamics** P. Moin, Stanford University, Stanford, CA	1030 hrs Oral Presentation **RANS and LES, our Allies in the Quest for Turbulence** P. Spalart, The Boeing Company, Seattle, WA	1100 hrs Oral Presentation **Next-Generation CFD for Hypersonic Flows** G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN	1130 hrs Oral Presentation **Novel Theoretical Considerations in Flow Simulations** Z. Rusak, Rensselaer Polytechnic Institute, Troy, NY	1200 hrs Oral Presentation **Requirements of CFD in a Paradigm in Which Next-Generation HPC and Multi-Disciplinary Simulation Software are Used to Drive Engineering Design Cycles** R. Meakin, CREATE Kestrel Team, Lorton, VA	

Tuesday, 6 June 2017						
116-CFD-8	High-Order Methods for Advection-Diffusion Equations					Tower Court D
Chaired by: M. YU, University of Maryland, Baltimore County and H. NISHIKAWA, National Institute of Aerospace						
0930 hrs AIAA-2017-3443 **Third-Order Edge-Based Hyperbolic Navier-Stokes Scheme for Three-Dimensional Viscous Flows** Y. Liu, H. Nishikawa, National Institute of Aerospace, Hampton, VA	1000 hrs AIAA-2017-3444 **A New Family of Discontinuous Galerkin Schemes for Diffusion Problems** P. Johnson, E. Johnsen, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2017-3445 **Reconstructed Discontinuous Galerkin Methods Based on First-Order Hyperbolic System for Advection-Diffusion Equations** J. Lou, L. Li, X. Liu, H. Luo, North Carolina State University, Raleigh, NC; H. Nishikawa, National Institute of Aerospace, Hampton, VA	1100 hrs AIAA-2017-3446 **Overdetermined Interface-Centered Reconstruction in Discontinuous Galerkin for Advection** L. Khieu, Vietnamese-German University, Thu Dau Mot, Viet Nam			

Tuesday, 6 June 2017						
117-CFD-9	Numerical Methodologies for FSI Simulations					Tower Court C
Chaired by: Y. PEET, Arizona State University and K. WANG						
0930 hrs AIAA-2017-3447 **An Embedded Robin Boundary Method for Incompressible Fluid-Structure Interaction Problems** S. Cao, Virginia Polytechnic Institute and State University, Blacksburg, VA; A. Main, Duke University, Durham, NC; K. Wang, Virginia Polytechnic Institute and State University, Blacksburg, VA	1000 hrs AIAA-2017-3448 **Conservative Unsteady Simulation of Arbitrary Motion in Two-dimensional Spacetime Using Central Difference, Upwind and Hybrid Formulations** I. Flamarique Ederra, T. Rendall, A. Gaitonde, D. Jones, C. Allen, University of Bristol, Bristol, United Kingdom	1030 hrs AIAA-2017-3449 **Accuracy and Performance of Fluid-Structure Interaction Algorithms with Explicit versus Implicit Formulations of the Fluid Solver** Y. Xu, Y. Peet, Arizona State University, Tempe, AZ				

Tuesday, 6 June 2017						
118-CFD-10	**Meshing II**					**Tower Court B**
Chaired by: J. MASTERS, National Aerospace Solutions and C. BRUNER, Sandia National Laboratories						
0930 hrs AIAA-2017-3450 **Node Creation for Isotropic Tetrahedral Mesh Generation** S. Karman, N. Wyman, Pointwise, Inc., Fort Worth, TX	1000 hrs AIAA-2017-3451 **Strategies Toward Automation of Overset Structured Surface Grid Generation** W. Chan, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2017-3452 **Automated Mesh Generation and Solution Analysis of Arbitrary Airfoil Geometries** A. Costenoble, B. Govindarajan, J. Baeder, University of Maryland, College Park, College Park, MD	1100 hrs AIAA-2017-3453 **A Mixed-Element 3D Advancing Layer Mesh Generator For Complex Geometries** L. Numerow, C. Ollivier Gooch, University of British Columbia, Vancouver, Canada	1130 hrs AIAA-2017-3454 **An automated workflow for high quality CFD meshing using the 3D medial object** J. Bucklow, R. Fairey, M. Gammon, International TechneGroup, Inc. (ITI), Cambridge, United Kingdom		

Tuesday, 6 June 2017		
120-F360-3 **0930 - 1130 hrs**	**Evolving Culture of Aviation**	**Grand Ballroom I**

Moderator: Glenn Roberts, Chief Engineer, Center for Advanced Aviation System Development, The MITRE Corporation

Panelists:

Van Espahbodi
Co-Founder & COO
Starburst Accelerator

Jonathan Evans
Co-President
Skyward, A Verizon Company

Jesse Kallman
President
Airbus Aerial

Wes Ryan
Manager
Programs & Procedures, ACE-11
Small Airplane Directorate
Federal Aviation Administration

Tuesday, 6 June 2017						
121-FD-13/TFM-4	**Boundary Layer Stability and Transition**					**Terrace**
Chaired by: C. LI, Ohio State University						
0930 hrs AIAA-2017-3455 **Global linear stability analysis of high speed flows on compression ramps** S. Gs, A. Dwivedi, G. Candler, J. Nichols, University of Minnesota, Twin Cities, Minneapolis, MN	1000 hrs AIAA-2017-3456 **The effect of sponge layers on global stability analysis of Blasius boundary layer flow** W. Ran, A. Zare, University of Southern California, Los Angeles, CA; J. Nichols, University of Minnesota, Twin Cities, Minneapolis, MN; M. Jovanovic, University of Southern California, Los Angeles, CA	1030 hrs AIAA-2017-3457 **A New Laminar Kinetic Energy Model for RANS Simulations of Bypass Transition** L. Jecker, Safran Group, Magny-les-Hameaux, France; O. Vermeersch, H. Deniau, ONERA, Toulouse, France; G. Casalis, Higher Institute of Aeronautics and Space, Toulouse, France; E. Croner, Safran Group, Magny-les-Hameaux, France	1100 hrs AIAA-2017-3458 **Wall forcing of the secondary crossflow instability** E. van Bokhorst, C. Atkin, City, University of London, London, United Kingdom	1130 hrs AIAA-2017-3459 **Nonlinear evolution and secondary instability of steady Gortler vortices induced by free-stream vortical disturbances** D. Xu, Y. Zhang, X. Wu, Tianjin University, Tianjin, China		

Tuesday, 6 June 2017						
122-FD-14	**New Models for High-Speed Flows**					**Capitol**
Chaired by: X. ZHONG, University of California Los Angeles						
0930 hrs AIAA-2017-3460 **A Morphing Continuum Approach to Supersonic Flow Over a Compression Ramp** M. Cheikh, J. Chen, Kansas State University, Manhattan, KS	1000 hrs AIAA-2017-3461 **Extension of Morphing Continuum Theory to Numerical Simulations of Transonic Flow over a Bump** L. Wonnell, J. Chen, Kansas State University, Manhattan, KS	1030 hrs AIAA-2017-3462 **Numerical Investigation of the Effect of the Sweep Angle of a Cylindrical Blunt Fin on the Shock Wave/Laminar Boundary Layer Interaction in a Hypersonic Flow** M. Mortazavi, D. Knight, Rutgers University, Piscataway, NJ	1100 hrs AIAA-2017-3463 **Experimental investigation of Goertler vortices in hypersonic ramp flows behind sharp and blunt leading edges** A. Roghelia, RWTH Aachen University, Aachen, Germany; P. Chuvakhov, Russian Academy of Sciences, Zhukovsky, Russia; H. Olivier, RWTH Aachen University, Aachen, Germany; I. Egorov, Russian Academy of Sciences, Zhukovsky, Russia	1130 hrs AIAA-2017-3464 **The Generalized Onsager Model and DSMC Simulations of High-Speed Rotating Flows in a Multiply Connected Domain** S. Pradhan, Indian Institute of Science, Bengaluru, India		

Tuesday, 6 June 2017						
123-FD-15	**Multiphysics and Cross-Disciplinary Fluid Dynamics I**					**Beverly**
Chaired by: P. HAMLINGTON and T. IOPPOLO, Southern Methodist University						
0930 hrs AIAA-2017-3465 **Optical Diagnostic Imaging of Multi-Rocket Plume-Induced Base Flow Environments** M. Mehta, NASA Marshall Space Flight Center, Huntsville, AL; P. Danehy, J. Inman, NASA Langley Research Center, Hampton, VA; D. Gaddy, NASA Marshall Space Flight Center, Huntsville, AL; A. Dufrene, CUBRC, Buffalo, NY	1000 hrs AIAA-2017-3466 **Lagrangian Analysis of Vorticity Dynamics in Turbulent Premixed Flames** R. Darragh, C. Towery, P. Hamlington, University of Colorado, Boulder, Boulder, CO; A. Poludnenko, Texas A&M University, College Station, TX	1030 hrs AIAA-2017-3467 **Interaction of Side-by-Side Piezoelectric Beams in Quiescent Flow and Grid Turbulence** A. Danesh-Yazdi, Pennsylvania State University, Erie, PA; N. Elvin, Y. Andreopoulos, City College of New York, New York, NY	1100 hrs AIAA-2017-3468 **Unsteady PSP measurements on a cylinder translating out from a supersonic cavity** D. Chin, K. Granlund, North Carolina State University, Raleigh, NC; T. Hayashi, H. Sakaue, University of Notre Dame, Notre Dame, IN			

Tuesday, 6 June 2017		
124-FD-16 **0930 - 1230 hrs**	**Transition Open Forum**	**Vail**

Tuesday, 6 June 2017						
125-FT-2	**Flight Test Airworthiness Workshop**					**Director's Row J**
Chaired by: S. GINN, NASA AFRC and K. GARMAN, Federal Aviation Administration						
0930 hrs Oral Presentation **NASA Armstrong Flight Research Center Airworthiness and Flight Safety Review Process** B. Neal, B. Flick, NASA Armstrong Flight Research Center, Edwards, CA	1000 hrs Oral Presentation **Aerodynamics and Performance X-Plane Airworthiness Guidelines and Best Practices** S. Cumming, T. Bui, M. Smith, M. Frederick, D. Banks, NASA Armstrong Flight Research Center, Edwards, CA	1030 hrs Oral Presentation **Aerostructures X-Plane Airworthiness Guidelines and Best Practices** R. Thompson, W. Lokos, N. Spivey, M. Moholt, NASA Armstrong Flight Research Center, Edwards, CA	1100 hrs Oral Presentation **Development of a cost effective approach to design, build, and fly a subsonic, transport class X-plane** S. Jacobson, M. Frederick, J. Lechniak, J. Welstead, J. Melton, M. Long-Davis, NASA Armstrong Flight Research Center, Edwards, CA; et al.	1130 hrs Oral Presentation **Exploratory Experimental Flight Lesson Learned** B. Flick, NASA Armstrong Flight Research Center, Edwards, CA	1200 hrs **Lessons Learned--Open Discussion**	

Tuesday, 6 June 2017						
126-MDO-5	**Aerodynamic Shape Optimization III**					**Director's Row I**
Chaired by: S. CHOI, Virginia Tech						
0930 hrs AIAA-2017-3469 **Application of Advanced Design Methods to Multi-Objective Automobile Shape Optimization towards a New Paradigm Shift** K. Song, K. Choo, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2017-3470 **Helicopter Rotor Performance Improvement with Multidisciplinary Aerodynamic Optimization** J. Xie, Z. Xie, M. Zhou, J. Qiu, Tsinghua University, Beijing, China	1030 hrs AIAA-2017-3471 **Multi-objective Aerodynamic Optimization Design with User Preference based on MOEA/D** X. Zhu, Z. Gao, H. Zhao, Northwestern Polytechnical University, Xi'an, China				

Tuesday, 6 June 2017		
127-MDO-9 **0930 - 1230 hrs**	**Selected Papers Panel**	**Director's Row H**
This special session highlights selected papers by the MDO TC. Presenting authors will give abbreviated presentations of their work leaving time for additional questions from the audience.		

Tuesday, 6 June 2017						
128-MST-3	**Simulator Motion Cueing**					**Plaza Court 6**
Chaired by: J. SCHROEDER, Federal Aviation Administration and S. ADVANI, International Development of Technology B.V.						
0930 hrs AIAA-2017-3472 **The Effects of Motion Feedback in Manual Preview Tracking Tasks** K. van der El, J. Morais Almeida, D. Pool, M. van Paassen, M. Mulder, Delft University of Technology, Delft, The Netherlands	1000 hrs AIAA-2017-3473 **Effects of Motion Cues on the Training of Multi-Axis Manual Control Skills** P. Zaal, San Jose State University, Moffett Field, CA; X. Mobertz, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2017-3474 **The Force is With You – The Apparent Vertical Filter Concept** C. Seehof, J. Buch, C. Raab, German Aerospace Center (DLR), Braunschweig, Germany	1100 hrs AIAA-2017-3475 **Pilot Perception and Control Behavior Models as a Tool to Assess Motion-Cueing Algorithms** C. Onur, U. Ture, U. Zengin, Turkish Aerospace Industries, Inc., Ankara, Turkey			

Tuesday, 6 June 2017						
129-PDL-3	**Plasma Aerodynamics II: Flow Control**					**Denver**
Chaired by: J. ZIMMERMAN, CU Aerospace and D. KONIGORSKI, Airbus Group						
0930 hrs AIAA-2017-3476 **Dynamic Response of an Oblique Shock Wave Generated by a Q-DC Discharge in Pulse-Repetitive Mode** A. Houpt, B. Hedlund, S. Leonov, University of Notre Dame, Notre Dame, IN; T. Ombrello, C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2017-3477 **Plasma Actuator with Arc Breakdown in a Magnetic Field for Active Flow Control Applications** J. Zimmerman, A. Palla, D. Carroll, CU Aerospace, LLC, Champaign, IL; G. Hristov, P. Ansell, University of Illinois, Urbana-Champaign, Urbana, IL	1030 hrs AIAA-2017-3478 **Effect of Off-Body Laser Discharge on Drag Reduction of Hemisphere Cylinder in Supersonic Flow** N. Kianvashrad, D. Knight, Rutgers University, Piscataway, NJ; S. Wilkinson, A. Chou, R. Horne, G. Herring, NASA Langley Research Center, Hampton, VA; et al.	1100 hrs AIAA-2017-3479 **Supersonic Flow Control of Swept Shock Wave / Turbulent Boundary Layer Interactions using Plasma Actuators** A. Deshpande, J. Poggie, Purdue University, West Lafayette, IN	1130 hrs AIAA-2017-3480 **Energy Balance and Discharge Characteristics of a Repetitive High Voltage NSDBD Actuator** S. Zhang, Z. Chen, B. Zhang, Northwestern Polytechnical University, Xi'an, China; Y. Chen, Commercial Aircraft Corporation of China, Ltd. (COMAC), Shanghai, China		

Tuesday, 6 June 2017						
130-TFM-5	**CFD and Theory**					**Spruce**
Chaired by: O. SAHNI, Rensselaer Polytech Inst						
0930 hrs AIAA-2017-3481 **Combining A Reduced Polynomial Chaos Expansion Approach with Universal Kriging for Uncertainty Quantification** J. Weinmeister, N. Xie, X. Gao, A. Prasad, S. Roy, Colorado State University, Fort Collins, CO	1000 hrs AIAA-2017-3482 **Model order reduction using DMD modes and adjoint DMD modes** W. Zhang, M. Wei, Kansas State University, Manhattan, KS	1030 hrs AIAA-2017-3483 **An EnKF-based Flow State Estimator for Aerodynamic Flows** A. de Castro da Silva, T. Colonius, California Institute of Technology, Pasadena, CA	1100 hrs AIAA-2017-3484 **Validation of BEM using CFD MRF Coupled with Axial and Radial Induction Factors** N. Dumakude, M. Kamper, Stellenbosch University, Stellenbosch, South Africa	1130 hrs AIAA-2017-3485 **Variable Interface Dynamic Adaptation (VIDA) technique: A Novel Approach to adjust Lagrangian Frame and Eulerian Frame at Flattering Interface** A. Zanj, Flinders University, Adelaide, Australia		

Tuesday, 6 June 2017						
131-TP-3	**Reacting Flows II**					**Plaza Court 3**
Chaired by: D. KUNTZ, Sandia National Laboratories and M. PANESI, University of Illinois at Urbana Champaign						
0930 hrs AIAA-2017-3486 **The Effect of the Spin-forbidden CO (1Σ+) + O (3P) → CO2 (1Σg+) Recombination Reaction on Afterbody Heating of Mars Entry Vehicles** L. Xu, R. Jaffe, D. Schwenke, NASA Ames Research Center, Moffett Field, CA; M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL	1000 hrs AIAA-2017-3487 **Simulation of oxygen dissociation on a six-dimensional O_4 potential energy surface** D. Andrienko, I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2017-3488 **Internal energy relaxation and dissociation in molecular oxygen using direct molecular simulation** M. Grover, T. Schwartzentruber, University of Minnesota, Twin Cities, Minneapolis, MN	1100 hrs AIAA-2017-3489 **State-to-State Kinetic Modeling of Select Air Species in Hypersonic Nonequilibrium Flows** E. Josyula, C. Suchyta, K. Vogiatzis, Air Force Research Laboratory, Wright-Patterson AFB, OH; Y. Khine, Naval Research Laboratory, Washington, D.C.; P. Vedula, University of Oklahoma, Norman, Norman, OK	1130 hrs AIAA-2017-3490 **Coupled Vibration-Rotation Dissociation Model for Nitrogen from Direct Molecular Simulations** N. Singh, T. Schwartzentruber, University of Minnesota, Twin Cities, Minneapolis, MN		

Tuesday, 6 June 2017		
132-D4U-1 0930 - 1700 hrs	**DEMAND for UNMANNED®**	

Demand for Unmanned® Host: I. J. Hudson, former Technology Reporter, NBC4 Washington (WRC-TV)

0930–1130 hrs
Grand Ballroom I

The Evolving Culture of Aviation

Moderator: Glenn Roberts, Chief Engineer, Center for Advanced Aviation System Development, The MITRE Corporation
Speakers:

Jonathan Evans
Co-President
Skyward, A Verizon Company

Jesse Kallman
President
Airbus Aerial

Van Espahbodi
Co-Founder & COO
Starburst Accelerator

Wes Ryan
Manager
Programs and Procedures (Advanced Technology)
Small Airplane Directorate
Federal Aviation Administration

1415–1545 hrs
Grand Ballroom II

The Verification and Validation of Intelligent Machines

Moderator: Mike Francis, Chief, Advanced Programs and Senior Fellow, Autonomous and Intelligent Systems, United Technologies Research Center
Speakers:

Noah Flood
Aviation & Autonomy Consultant
Delta Air Lines, Inc.

Paul Nielsen
Director and CEO
Software Engineering Institute

Scott Strimple
Director of Training and Education
The Drone Flight School

Alessandro Pinto
Project Leader
Embedded Intelligence
United Technologies Research Center

Fritz Langford
Chief Engineer
Autonomous Aerial Cargo/Utility System
Aurora Flight Sciences

1600– 1700 hrs
Grand Ballroom II

Unique Applications Session Lightning Talks

Speakers:

Chris Kucera
Director of Air Operations
Analytical Graphics Inc.

Rob Parenti
Senior Technical Marketing Engineer
Alta Devices

Matt Fanelli
In-house Counsel
Skyward

Aaron Greenwald
President
Unmanned Safety Institute

For program updates, visit www.aviation.aiaa.org/DEMANDforUNMANNED

Tuesday, 6 June 2017		
133-RLA-2 1200 - 1330 hrs	**Rising Leaders in Aerospace Lunch and Learn - Your Next Move: How to Build a Strong Foundation for Long-Term Career Success**	**Grand Ballroom I**

Ron Bessire
Vice President
Engineering and Technology
Lockheed Martin

Tuesday, 6 June 2017		
134-LNCH-1 1230 - 1400 hrs	**Awards Luncheon — Celebrating Achievements in Aerospace Sciences**	**Plaza Ballroom**

A ticket for the luncheon is required and included in the registration fee where where indicated. Additional tickets for guests may be purchased upon registration, or on site as space is available. The following awards will be presented: Aeroacoustics Award, Aerodynamics Award, Aerodynamic Measurement Technology Award, Fluid Dynamics Award, Ground Testing Award, Plasmadynamics and Lasers Award, Thermophysics Award

Tuesday, 6 June 2017						
135-AA-23	Acoustic/Fluid Dynamic Interactions III: Leading Edge Serrations					Governor's Square 10
Chaired by: P. JOSEPH, ISVR/University of Southampton						
1400 hrs AIAA-2017-3491 **Leading Edge Noise Reduction of Thin Aerofoil by the Straight and Curved Serrations of the Add-on Type** A. Juknevicius, T. Chong, P. Woodhead, Brunel University London, Uxbridge, United Kingdom	1430 hrs AIAA-2017-3492 **An analytic solution for gust-aerofoil interaction noise for plates with leading-edge serrations** L. Ayton, University of Cambridge, Cambridge, United Kingdom	1500 hrs AIAA-2017-3493 **Polyoptimisation of the Aerodynamic and Aeroacoustic Performance of Aerofoils with Serrated Leading Edges** T. Biedermann, Dusseldorf University of Applied Sciences, Dusseldorf, Germany; T. Chong, Brunel University London, Uxbridge, United Kingdom; F. Kameier, Dusseldorf University of Applied Sciences, Dusseldorf, Germany; C. Paschereit, Technical University of Berlin, Berlin, Germany; O. Koster, D. Schreiber, Dusseldorf University of Applied Sciences, Dusseldorf, Germany	1530 hrs AIAA-2017-3494 **Aeroacoustic effects of the trailing edge of an undulated aerofoil subjected to impinging disturbances** J. Turner, J. Kim, University of Southampton, Southampton, United Kingdom	1600 hrs AIAA-2017-3495 **Leading Edge Noise from Very Thick Airfoils with Vertical Fences** S. Glegg, Florida Atlantic University, Boca Raton, FL; W. Devenport, Virginia Polytechnic Institute and State University, Blacksburg, VA		

Tuesday, 6 June 2017						
136-AA-24	Airframe/High-Lift Noise V: Trailing Edge Noise Reduction					Plaza Court 4
Chaired by: S. OERLEMANS						
1400 hrs AIAA-2017-3496 **Airfoil Self Noise Reduction at Low Reynolds Numbers Using a Passive Flexible Trailing Edge** L. Kamps, Technical University of Bergakademie Freiberg, Freiberg, Germany; C. Brücker, City, University of London, London, United Kingdom; T. Geyer, Technical University of Brandenburg, Cottbus, Germany; E. Sarradj, Technical University of Berlin, Berlin, Germany	1430 hrs AIAA-2017-3497 **Impact of Permeable Surface on Trailing-Edge Noise at Varying Lift** S. Koh, M. Meinke, W. Schroeder, RWTH Aachen University, Aachen, Germany; B. Zhou, N. Gauger, Technical University of Kaiserslautern, Kaiserslautern, Germany	1500 hrs AIAA-2017-3498 **Acoustic scattering by 3D poroelastic plates with swept trailing edges** C. Pimenta, W. Wolf, University of Campinas, Campinas, Brazil; A. Cavalieri, Technological Institute of Aeronautics (ITA), Campinas, Brazil	1530 hrs AIAA-2017-3499 **Effects of Streamwise Surface Treatments on Trailing Edge Noise Reduction** A. Afshari, Yazd University, Yazd, Iran; M. Azarpeyvand, University of Bristol, Bristol, United Kingdom; A. Dehghan, Yazd University, Yazd, Iran; M. Szoke, University of Bristol, Bristol, United Kingdom	1600 hrs AIAA-2017-3500 **An Experimental Study on the Reduction of Airfoil Trailing-edge Noise Using a Single-Leg Spiral Array in an Anechoic Wind Tunnel** W. Chen, W. Qiao, L. Wang, F. Tong, C. Haoyi, Northwestern Polytechnical University, Xi'an, China	1630 hrs AIAA-2017-3501 **Experimental Investigation of Flow Field Around An Asymmetric Beveled Trailing Edge and Aerodynamic Sound** Y. Guan, S. Morris, University of Notre Dame, Notre Dame, IN	1700 hrs AIAA-2017-3502 **Numerical Investigation of Bio-Inspired Blade Designs at High Reynolds Numbers for Ultra-Quiet Aircraft and Wind Turbines** A. Bodling, B. Agrawal, A. Sharma, Iowa State University, Ames, IA; I. Clark, W. Alexander, W. Devenport, Virginia Polytechnic Institute and State University, Blacksburg, VA

Tuesday, 6 June 2017						
137-AA-25	CAA IV: Boundary Conditions					Plaza Court 8
Chaired by: E. ENVIA, NASA Glenn Research Center						
1400 hrs AIAA-2017-3503 **Improved Mean Flow Boundary Conditions for Computational Aeroacoustics** D. Hixon, University of Toledo, Toledo, OH	1430 hrs AIAA-2017-3504 **Immersed boundary conditions for high order CAA solvers – Aeroacoustics installation effects assessment** D. Mincu, T. Le Garrec, S. Peron, M. Terracol, ONERA, Châtillon, France	1500 hrs AIAA-2017-3505 **Evaluation of Acoustic Jump Conditions at Discontinuous Porous Interfaces** L. Rossian, R. Ewert, J. Delfs, German Aerospace Center (DLR), Braunschweig, Germany	1530 hrs AIAA-2017-3506 **Modeling Approach for Delayed Time Domain Impedance Boundary Condition** Q. Douasbin, National Center for Scientific Research (CNRS), Toulouse, France; C. Scalo, Purdue University, West Lafayette, IN; L. Selle, T. Poinsot, National Center for Scientific Research (CNRS), Toulouse, France	1600 hrs AIAA-2017-3507 **Numerical Experiments in Error Control for Sound Propagation Using a Damping Layer Boundary Treatment** J. Goodrich, NASA Glenn Research Center, Cleveland, OH	1630 hrs AIAA-2017-3508 **Use of OpenFOAM coupled with a Hybridization of Finite Element-Boundary Element Methods using an Adaptive Absorbing Boundary Condition for Wind Noise Simulation** N. Zerbib, ESI Group, Compiegne, France; A. Heather, OpenCFD, Ltd., Bracknell, United Kingdom; D. Mas, L. Mebarek, ESI Group, Compiegne, France	1700 hrs AIAA-2017-3509 **A New Two-Way Artificial Boundary Condition for Wave Propagation** H. Espinoza, Technical University of Bolivar, Cartagena, Colombia; R. Paredes, Escuela Superior Politécnica del Litoral, Guayaquil, Ecuador; M. Ehrhardt, University of Wuppertal, Wuppertal, Germany

Tuesday, 6 June 2017						
138-AA-26	**CAA V: Integral Methods**					**Plaza Court 7**
Chaired by: P. MORRIS, Pennsylvania State University and A. LYRINTZIS						
1400 hrs AIAA-2017-3510 **A new formulation of time domain boundary integral equation for acoustic wave scattering in the presence of a uniform mean flow** F. Hu, M. Pizzo, Old Dominion University, Norfolk, VA; D. Nark, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2017-3511 **Sensitivity Analysis and Uncertainty Quantification for the Ffowcs Williams-Hawkings Equation** N. Ricks, S. Abraham, F. Contino, G. Ghorbaniasl, Vrije Universiteit Brussel, Brussels, Belgium	1500 hrs AIAA-2017-3512 **Assessment of the Taylor--Lorentz transform for boundary element solutions to wave propagation with mean flow** S. Mancini, R. Astley, G. Gabard, University of Southampton, Southampton, United Kingdom; M. Tournour, Siemens, Leuven, Belgium	1530 hrs AIAA-2017-3513 **Numerical Green's Functions for Extern Aeroacoustic Beamforming** S. Bousabaa, D. Mincu, ONERA, Châtillon, France; R. Marchiano, F. Ollivier, Pierre-and-Marie-Curie University, Paris, France; J. Bulté, ONERA, Châtillon, France	1600 hrs AIAA-2017-3514 **A Lighthill Equation-based Boundary-Field Integral Formulation for Sound Scattering of Moving Bodies** C. Testa, Italian Institute for Naval Hydrodynamic Research and Ship Model Basin, Rome, Italy; M. Gennaretti, G. Bernardini, C. Poggi, Roma Tre University, Rome, Italy	1630 hrs AIAA-2017-3515 **Fast Multipole Boundary Element Method with Stochastic Sources for Broadband Noise Simulation** N. Reiche, R. Ewert, M. Lummer, J. Delfs, German Aerospace Center (DLR), Braunschweig, Germany	

Tuesday, 6 June 2017						
139-AA-27	**Jet Noise IV: Experiments Supersonic I**					**Governor's Square 12**
Chaired by: M. SAMIMY, The Ohio State University and M. DOTY, NASA - Langley Research Center						
1400 hrs AIAA-2017-3516 **On the Dominant Noise Components of Tactical Aircraft: Laboratory to Full Scale** C. Tam, Florida State University, Tallahassee, FL; A. Aubert, J. Spyropoulos, R. Powers, Naval Air Systems Command, Patuxent River, MD	1430 hrs AIAA-2017-3517 **Particle Image Velocimetry Analysis of the Twin Supersonic Jet Structure and Standing-Wave** G. Bell, J. Soria, D. Honnery, D. Edgington-Mitchell, Monash University, Melbourne, Australia	1500 hrs AIAA-2017-3518 **Experimental Results for Supersonic Jet Noise Reduction using Nozzle Fluidic Inserts** J. Morgan, D. McLaughlin, P. Morris, Pennsylvania State University, University Park, PA	1530 hrs AIAA-2017-3519 **Characterization of Supersonic Laboratory-Scale Jet Noise with Vector Acoustic Intensity** K. Gee, Brigham Young University, Provo, UT; M. Akamine, K. Okamoto, University of Tokyo, Kashiwa, Japan; T. Neilsen, Brigham Young University, Provo, UT; S. Tsutsumi, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; S. Teramoto, University of Tokyo, Tokyo, Japan; et al.	1600 hrs AIAA-2017-3520 **Preliminary Investigation of Multilobe Fighter Jet Noise Sources Using Acoustical Holography** A. Wall, Air Force Research Laboratory, Wright-Patterson AFB, OH; K. Leete, K. Gee, T. Neilsen, Brigham Young University, Provo, UT; M. James, Blue Ridge Research and Consulting, LLC, Asheville, NC; R. McKinley, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2017-3521 **Experimental Investigation of a Heated Supersonic Jet with Total Temperature Non-Uniformity** D. Mayo, K. Daniel, K. Lowe, W. Ng, Virginia Polytechnic Institute and State University, Blacksburg, VA	

Tuesday, 6 June 2017						
140-AA-28	**Jet Noise V: Surfaces/Integration**					**Governor's Square 11**
Chaired by: C. BROWN, NASA Glenn and R. POWERS						
1400 hrs AIAA-2017-3522 **Jet-Surface Interaction Noise from High Aspect Ratio Nozzles: Test Summary** C. Brown, G. Podboy, NASA Glenn Research Center, Cleveland, OH	1430 hrs AIAA-2017-3523 **On the Mechanism and Reduction of Installed Jet Noise** B. Lyu, A. Dowling, University of Cambridge, Cambridge, United Kingdom	1500 hrs AIAA-2017-3524 **Prediction of the Impact of Jet Mixing Noise on an generic Aircraft Fuselage in Cruise Flight** C. Appel, A. Neifeld, German Aerospace Center (DLR), Braunschweig, Germany	1530 hrs AIAA-2017-3525 **Acoustic Similarity Modelling of a UHBR Jet Engine for the Investigation of Jet-Flap-Interaction Noise** C. Jente, M. Pott-Pollenske, D. Boenke, German Aerospace Center (DLR), Braunschweig, Germany; A. Büscher, Airbus Operations GmbH, Bremen, Germany	1600 hrs AIAA-2017-3526 **Jet noise of a UHBR nozzle using ZDES: external boundary layer thickness and installation effects** F. Gand, ONERA, Meudon, France; M. Huet, T. Le Garrec, F. Cléro, ONERA, Châtillon, France	1630 hrs AIAA-2017-3527 **On the Azimuthal Structure of Installed Jet Noise** G. Faranosov, V. Kopiev, I. Belyaev, O. Bychkov, S. Chernyshev, TsAGI, Moscow, Russia	1700 hrs AIAA-2017-3528 **Experimental investigation of the transient bleed valve noise** P. Laffay, Safran Group, Villaroche, France; M. Jacob, Higher Institute of Aeronautics and Space, Toulouse, France; S. Moreau, École Centrale de Lyon, Ecully, France; J. Regnard, Safran Group, Villaroche, France

Tuesday, 6 June 2017						
141-AA-29	**Propeller, Rotorcraft and V/STOL Noise I**					**Plaza Court 5**
Chaired by: D. CASALINO, EXA GmbH						
1400 hrs AIAA-2017-3529 **Noise Predictions of Helicopter Rotors in Hover and Forward Flight** Y. Ozyoruk, A. Unal, Middle East Technical University, Ankara, Turkey; A. Yuksel, Turkish Aerospace Industries, Inc., Ankara, Turkey	1430 hrs AIAA-2017-3530 **High-speed impulsive noise prediction of helicopter rotors using a frequency-domain formulation** Z. Huang, L. Siozos-Rousoulis, T. De Troyer, G. Ghorbaniasl, Vrije Universiteit Brussel, Brussels, Belgium	1500 hrs AIAA-2017-3531 **Influence of Blade Thickness and Blade Span on Orthogonal Blade/Vortex Interaction Noise** P. Zehner, F. Falissard, S. Peron, ONERA, Palaiseau, France; X. Gloerfelt, Laboratory DynFluid, Paris, France	1530 hrs AIAA-2017-3532 **A Conformal Mapping Model for Force Response of Arbitrarily Shaped Thick Foils to Incident Turbulence** J. Anderson, D. DiPerna, Naval Surface Warfare Center, West Bethesda, MD	1600 hrs AIAA-2017-3533 **Large-Eddy Simulation Study of Rotor Noise Generation in a Turbulent Wake** J. Wang, K. Wang, M. Wang, University of Notre Dame, Notre Dame, IN	1630 hrs AIAA-2017-3534 **Trailing Edge Noise Reduction Technologies for Applications in Wind Energy** A. Suryadi, German Aerospace Center (DLR), Braunschweig, Germany; S. Martens, Leibniz University of Hanover, Hannover, Germany; M. Herr, German Aerospace Center (DLR), Braunschweig, Germany	

Tuesday, 6 June 2017						
142-ADS-5	**Aerodynamic Decelerator Systems: Aerial Delivery**					**Savoy**
Chaired by: J. WATKINS, Pioneer Aerospace Corporation and E. SCHEUERMANN						
1400 hrs AIAA-2017-3535 **2,000 Pound High Altitude Low Opening Ballistic Parachute System Development** M. Henry, Army Research, Development and Engineering Command, Natick, MA; S. Patel, Ignition Technologies, Sudbury, MA; E. Campagna, Army Research, Development and Engineering Command, Natick, MA	1430 hrs AIAA-2017-3536 **Unguided Parachute Ballistics: Data Collection, Post Processing and Applications** S. Patel, Ignition Technologies, Sudbury, MA; B. Cohanim, MORSE Corp, Cambridge, MA; M. Henry, Army Research, Development and Engineering Command, Natick, MA; C. Boggs, Air Force Research Laboratory, Wright-Patterson AFB, OH; S. Comer, Army Research, Development and Engineering Command, Natick, MA	1500 hrs AIAA-2017-3537 **Dynamic Modeling-Simulation of Advanced Low Velocity Airdrop Systems (ALVADS): First Edition** U. Fraire, Army Research, Development and Engineering Command, Natick, MA	1530 hrs AIAA-2017-3538 **Six Degree of Freedom Vehicle Tracking System (6DVTS) Implementation for Aerial Delivery Development Testing** R. Tiaden, Yuma Proving Ground, Yuma Proving Ground, AZ	1600 hrs AIAA-2017-3539 **Precision Aerial Delivery with a Steerable Cruciform Parachute** J. Haller, T. Fields, University of Missouri, Kansas City, Kansas City, MO; O. Yakimenko, Naval Postgraduate School, Monterey, CA	1630 hrs AIAA-2017-3540 **Development of a Steerable Single Actuator Cruciform Parachute** T. Fields, University of Missouri, Kansas City, Kansas City, MO; O. Yakimenko, Naval Postgraduate School, Monterey, CA	1700 hrs AIAA-2017-3541 **Computational Study of Air Drop Control Mechanisms for Cruciform Parachutes** C. Fagley, J. Seidel, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO; G. Noetscher, T. Rose, Army Research, Development and Engineering Command, Natick, MA

Tuesday, 6 June 2017						
143-ADS-6	**Aerodynamic Decelerator Systems: Simulation**					**Vail**
Chaired by: J. POTVIN, Saint Louis University and R. CHARLES, US Army Natick Soldier Center						
1400 hrs AIAA-2017-3542 **Computational Investigation on the Wake Flow of a Hemispherical Parachute Canopy** J. Vasile, Army Research Laboratory, Aberdeen Proving Ground, MD	1430 hrs AIAA-2017-3543 **Fluid-Structure Interaction Simulations of the Inflated Shape and Associated Flowfield of the MC4/5 Parafoil During Steady Gliding Flight** N. Fogell, L. Iannucci, Imperial College London, London, United Kingdom; K. Bergeron, Army Research, Development and Engineering Command, Natick, MA	1500 hrs AIAA-2017-3544 **Near-Body Simulations of Loads Airdropped from Aircraft and Helicopter -Fluid / Structure Interaction Approach-** B. Perin, P. Bordenave, DGA Aeronautical Systems, Balma, France	1530 hrs AIAA-2017-3545 **Simulation of the Baseline Performance Characteristics of a Ram-Air Parachute** R. Charles, Army Research, Development and Engineering Command, Natick, MA	1600 hrs AIAA-2017-3546 **Deformation of a Ram-Air Canopy due to Control Line Retraction** W. Tang, H. Johari, California State University, Northridge, CA	1630 hrs AIAA-2017-3547 **Fluid-Structure Interaction Simulation study of a Semi-Rigid Ram-Air Parachute Model** N. Fogell, L. Iannucci, Imperial College London, London, United Kingdom; K. Bergeron, Army Research, Development and Engineering Command, Natick, MA	

Tuesday, 6 June 2017						
144-AFM-2	**Aircraft Flight Dynamics II**					**Governor's Square 17**
Chaired by: D. MURRI, NASA Engineering and Safety Center and B. JOLLY, USAF						
1400 hrs AIAA-2017-3548 **Combined Feedback and LIDAR-Based Feedforward Active Load Alleviation** N. Fezans, German Aerospace Center (DLR), Braunschweig, Germany; H. Joos, German Aerospace Center (DLR), Wessling, Germany	1430 hrs AIAA-2017-3549 **Unsteady Fluid-Structure-Jet Interactions of Agile High-Speed Vehicles** R. Kitson, C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI	1500 hrs AIAA-2017-3550 **Method to Calculate Aircraft Climb and Cruise Trajectory using an Aero-Propulsive Model** G. Ghazi, R. Botez, University of Québec, Montréal, Canada	1530 hrs AIAA-2017-3551 **Dynamics of a Multi-Purpose Lightweight Towed System** N. Huynh, C. Montalvo, University of South Alabama, Mobile, AL			

Tuesday, 6 June 2017						
145-AMT-5	**Flow Visualization, Particle Measurements, and Data Acquisition Methods**					**Director's Row E**
Chaired by: B. BATHEL, NASA Langley Research Center						
1400 hrs AIAA-2017-3552 **Airborne Acquisition of Blade Tip Displacements and Vortices on a Coaxial Ultralight Helicopter** A. Bauknecht, German Aerospace Center (DLR), Göttingen, Germany; B. Grebing, edm aerotec GmbH, Geisleden, Germany; M. Raffel, German Aerospace Center (DLR), Göttingen, Germany	1430 hrs AIAA-2017-3553 **Flow visualization of aircraft in flight by means of Background Oriented Schlieren using Celestial Objects** M. Hill, E. Haering, NASA Armstrong Flight Research Center, Edwards, CA	1500 hrs AIAA-2017-3554 **Preliminary Investigation of a Scramjet Flowfield with Hyperspectral Imaging Augmented by Large Eddy Simulation** A. Kerst, K. Gross, E. Oren, J. Komives, Air Force Institute of Technology, Wright-Patterson AFB, OH; M. Rhoby, T. Ombrello, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2017-3555 **Nonlinear Response of a Thin Panel Subjected to a Shockwave Impingement and Thermal Buckling** T. Beberniss, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2017-3556 **Modification of Vortex Identification Method Based on Normalized Angular Momentum** S. Shkarayev, University of Arizona, Tucson, Tucson, AZ; V. Kurnosov, National Academy of Sciences, Kharkiv, Ukraine	1630 hrs AIAA-2017-3557 **A new method of PIV-based pressure measurement in supersonic flows** S. Liu, J. Xu, K. Yu, Nanjing University of Aeronautics and Astronautics, Nanjing, China	

Tuesday, 6 June 2017						
146-APA-17	**High Angle of Attack and High Lift Aerodynamics**					**Century**
Chaired by: R. RADESPIEL, Technische Universitat Braunschweig and A. VOEGELE, The Aerospace Corporation						
1400 hrs AIAA-2017-3558 **Aircraft and technology for low noise short take-off and landing** J. Delfs, C. Appel, German Aerospace Center (DLR), Braunschweig, Germany; P. Bernicke, C. Blech, Technical University of Braunschweig, Braunschweig, Germany; J. Blinstrub, German Aerospace Center (DLR), Göttingen, Germany; C. Heykena, Technical University of Braunschweig, Braunschweig, Germany; et al.	1430 hrs AIAA-2017-3559 **Progress in Efficient Active High-Lift** F. Kauth, J. Seume, Leibniz University of Hanover, Hannover, Germany; R. Radespiel, R. Semaan, D. François, Y. El Sayed M., Technical University of Braunschweig, Braunschweig, Germany; et al.	1500 hrs AIAA-2017-3560 **Flight Dynamics Investigation of an Active High-Lift Aircraft** P. Horst, K. Sommerwerk, Technical University of Braunschweig, Braunschweig, Germany; D. Keller, J. Diekmann, German Aerospace Center (DLR), Braunschweig, Germany; N. Neuert, I. Krukow, Technical University of Braunschweig, Braunschweig, Germany; et al.	1530 hrs AIAA-2017-3561 **Flight Mechanical Challenges of STOL Aircraft Using Active High-Lift** J. Diekmann, German Aerospace Center (DLR), Braunschweig, Germany	1600 hrs AIAA-2017-3562 **Aerodynamic Sensitivities of 2D High lift Airfoil Configured with Porous Trailing Edges** P. Kumar, R. Radespiel, Technical University of Braunschweig, Braunschweig, Germany	1630 hrs AIAA-2017-3563 **Investigation into the Performance of Turbulence Models for the Computation of High-Lift Flows at Large Angles of Attack** R. Balin, K. Jansen, University of Colorado, Boulder, Boulder, CO; M. Rasquin, Cenaero, Gosselies, Belgium; K. Chitale, Flowdesign Sonics, Inc., Wilbraham, MA	

Tuesday, 6 June 2017						
147-APA-18	**Flow Control Applications and Demonstrations III**					**Silver**
Chaired by: P. ANSELL, University of Illinois at Urbana-Champaign and C. PASILIAO, AFRL/RW						
1400 hrs AIAA-2017-3564 **Modeling of transient blowing actuation using Pulse Width Modulation on a dynamically pitching NACA 0018 Airfoil.** F. Niel, C. Fagley, J. Seidel, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1430 hrs AIAA-2017-3565 **Study on the Sensing Parameters toward Better Feed-back Control of Stall Separation with DBD Plasma Actuator** T. Ogawa, Science University of Tokyo, Tokyo, Japan; S. Shimomura, Tokyo University of Agriculture and Technology, Tokyo, Japan; K. Asada, S. Sekimoto, T. Tatsukawa, K. Fujii, Science University of Tokyo, Tokyo, Japan; et al.	1500 hrs AIAA-2017-3566 **A continuous reinforcement learning strategy for closed-loop control in fluid dynamics** C. Pivot, L. Cordier, University of Poitiers, Poitiers, France; L. Mathelin , National Center for Scientific Research (CNRS), Orsay, France	1530 hrs AIAA-2017-3567 **Computations of Active Flow Control for Heavy Vehicle Drag Reduction** D. Manosalvas-Kjono, T. Economon, Stanford University, Stanford, CA; C. Othmer, Volkswagen, Belmont, CA; A. Jameson, Stanford University, Stanford, CA	1600 hrs AIAA-2017-3568 **Flow-Control Effectiveness of Convergent Surface Indentations on an Aerofoil at Low Reynolds Numbers** N. Shah, Polypipe Civils Ltd., Loughborough, United Kingdom	1630 hrs AIAA-2017-3569 **Drag Reduction with Non-Axisymmetric Dimples** J. Tay, T. Lim, National University of Singapore, Singapore, Singapore	

Tuesday, 6 June 2017						
148-APA-19	**Propeller Aerodynamics I**					**Colorado**
Chaired by: N. HARIHARAN, CREATE-AV and H. HU, Iowa State University						
1400 hrs AIAA-2017-3570 **Hybrid Blade Element and Lifting Line for Propeller or Propfan Performance** J. Barnes, Pelican Aero Group, San Pedro, CA	1430 hrs AIAA-2017-3571 **Towards Optimum Swirl Recovery Vanes for Propeller Propulsion Systems** Q. Li, K. Öztürk, T. Sinnige, D. Ragni, Delft University of Technology, Delft, The Netherlands; Y. Wang, Northwestern Polytechnical University, Xi'an, China; G. Eitelberg, Delft University of Technology, Delft, The Netherlands; et al.	1500 hrs AIAA-2017-3572 **Implementation of a Body Force Model in OVERFLOW for Propulsor Simulations** H. Akaydin, S. Pandya, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2017-3573 **Propeller Analysis Using Low & High Fidelity Aero-acoustic Methods** N. Ben Nasr, F. Falissard, J. Decours, R. Gaveriaux, ONERA, Meudon, France; Y. Delrieux, S. Canard-Caruana, ONERA, Châtillon, France; et al.	1600 hrs AIAA-2017-3574 **Computational Modeling of C-130 H/J Propellers and Airdrop Configurations** K. Bergeron, Army Research, Development and Engineering Command, Natick, MA; M. Ghoreyshi, A. Jirasek, P. Aref, A. Lofthouse, U.S. Air Force Academy, Colorado Springs, CO	1630 hrs AIAA-2017-3575 **Investigation on Improving Efficiency of High-Altitude Propeller with Tandem Configuration** J. Xu, W. Song, X. Yang, Y. Zhang, Northwestern Polytechnical University, Xi'an, China	

Tuesday, 6 June 2017						
149-APA-20	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques IV**					**Gold**
Chaired by: O. KHAN, Tuskegee Univ and J. AZEVEDO						
1400 hrs AIAA-2017-3576 **On the Numerical Stability of the Eminton-Lord Wave Drag Method** B. Rothacker, The Boeing Company, Hazelwood, MO	1430 hrs AIAA-2017-3577 **Mixing and Refinement of Design Variables for Geometry and Topology Optimization in Aerodynamics** A. Payot, T. Rendall, C. Allen, University of Bristol, Bristol, United Kingdom	1500 hrs AIAA-2017-3578 **Effect of the Slot Span on the Wing Performance** J. Granizo, S. Gudmundsson, W. Engblom, Embry-Riddle Aeronautical University, Daytona Beach, FL				

Tuesday, 6 June 2017						
150-APA-21	**Special Session: Historically Significant Papers in Applied Aerodynamics (Invited)**					**Windows**
Chaired by: R. WAHLS, NASA Aeronautics Research Mission Directorate and J. PINIER, NASA Langley Research Center						
1400 hrs Oral Presentation **Viscous/Inviscid Modeling and Computational Methods for Aerodynamic Design** M. Drela, Massachusetts Institute of Technology, Cambridge, MA						

Tuesday, 6 June 2017						
151-ASE-4	**Ice Roughness and Heat Transfer**					**Columbine**
Chaired by: M. POTAPCZUK, NASA Glenn Research Center and T. BOND, FAA						
1400 hrs AIAA-2017-3579 **Convection from Surfaces with Real Laser-Scanned Ice Accretion Roughness and Different Thermal Conductivities** D. Hawkins, T. Shannon, S. McClain, Baylor University, Waco, TX	1430 hrs AIAA-2017-3580 **Flow Visualization and Skin Friction Variations along Surfaces with Real and Model Ice Roughness** T. Shannon, S. McClain, Baylor University, Waco, TX	1500 hrs AIAA-2017-3581 **Sublayer Surface Roughness and the Spalart-Allmaras Turbulence Model** A. Rothmayer, Iowa State University, Ames, IA	1530 hrs AIAA-2017-3582 **An Experimental Investigation on the Dynamic Ice Accretion Process over the Surface of a Wind Turbine Blade Model** L. Gao, Y. Liu, H. Hu, Iowa State University, Ames, IA	1600 hrs AIAA-2017-3583 **An Experimental Investigation on the Unsteady Heat Transfer Process over Ice Accreting Surfaces of Aero-engine Spinner Models** L. Li, H. Hu, Iowa State University, Ames, IA	1630 hrs AIAA-2017-3584 **Spanwise Form Extraction for Ice Roughness Measurements from Misaligned Airfoils or Tapered Wings** S. McClain, Baylor University, Waco, TX	1700 hrs AIAA-2017-3585 **Ice Roughness and Thickness Evolution on a Swept NACA 0012 Airfoil** S. McClain, Baylor University, Waco, TX; M. Vargas, NASA Glenn Research Center, Cleveland, OH; J. Tsao, Ohio Aerospace Institute, Cleveland, OH

Tuesday, 6 June 2017						
152-ATIO.ACD-4	**Aircraft System Design Studies**					**Governor's Square 16**
Chaired by: D. LEVY, Sierra Nevada Corporation and E. DIGIROLAMO, Lockheed Martin Aeronautics						
1400 hrs AIAA-2017-3586 **Multidisciplinary Design Process for a 100 Seat Regional Jet** T. Takahashi, J. Wilson, R. Teves, N. Snodgrass, J. Haley, Arizona State University, Tempe, AZ	1430 hrs AIAA-2017-3587 **Conceptual design of an interceptor UAV** M. Diehl, M. Hornung, Technical University of Munich, Munich, Germany	1500 hrs AIAA-2017-3588 **Exploring the Prospect of Small Supersonic Airliners - A Case Study Based on the Aerion AS2 Jet** B. Liebhardt, K. Lütjens, German Aerospace Center (DLR), Hamburg, Germany; R. Tracy, A. Haas, Aerion Corporation, Reno, NV	1530 hrs AIAA-2017-3589 **Aerodynamic Design of a Flying V Aircraft** F. Faggiano, R. Vos, Delft University of Technology, Delft, The Netherlands; M. Baan, R. Van Dijk, ParaPy B.V., Delft, The Netherlands	1600 hrs AIAA-2017-3590 **Conceptual Design of a D8 Commercial Aircraft** B. Yutko, C. Jeffrey, C. Church, C. Courtin, M. Lieu, T. Roberts, Aurora Flight Sciences, Cambridge, MA; et al.		

Tuesday, 6 June 2017						
153-ATIO.ATM-7	**Weather Impact II**					**Plaza Court 1**
Chaired by: K. SHETH, NASA/ARC-AFO						
1400 hrs AIAA-2017-3591 **Metering During Severe En Route Weather via Advanced Flight-Specific Trajectories (AFST)** J. DeArmon, H. Gao, D. Chaloux, M. Hokit, MITRE Corporation, McLean, VA	1430 hrs AIAA-2017-3592 **Estimating Weather Delays and Savings from Weather Reroute Technologies** V. Stouffer, K. Steinley, LMI, Tysons, VA	1500 hrs AIAA-2017-3593 **Analysis of convective-weather impact on pre-departure routing decisions for flights traveling between Fort Worth Center and New York Air Center** H. Arneson, NASA Ames Research Center, Moffett Field, CA; A. Bombelli, A. Segarra-Torne, University of California, Irvine, Irvine, CA; E. Tse, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2017-3594 **Preliminary Investigation into the Use and Coverage of a Crowd-Sourced Airborne Weather Radar Network** S. Campbell, E. Clemons, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA	1600 hrs AIAA-2017-3595 **Predicting Airport Capacity in the Presence of Winds** J. Jones, R. DeLaura, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA	1630 hrs AIAA-2017-3596 **Flight Execution and Route Adaptation Considering Multiple Constraints** M. Sauer, M. Steiner, R. Sharman, J. Pinto, National Center for Atmospheric Research, Boulder, CO	

Tuesday, 6 June 2017						
154-ATIO.ATM-8	**ATM Performance and Benefits**					**Plaza Court 2**
Chaired by: J. POST, Federal Aviation Administration						
1400 hrs AIAA-2017-3597 **Potential Safety Benefits of RNP Approach Procedures** S. Salgueiro, R. Hansman, Massachusetts Institute of Technology, Cambridge, MA	1430 hrs AIAA-2017-3598 **Modeling Effects of Competition on Airlines' Route-Selection Decisions** J. Thekinen, K. Moolchandani, J. Panchal, D. DeLaurentis, Purdue University, West Lafayette, IN	1500 hrs AIAA-2017-3599 **Benefits of using Pairwise Trajectory Management in the Central East Pacific** R. Chartrand, K. Ballard, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2017-3600 **A Model of Aircraft Retirement and Acquisition Decisions Based On Net Present Value Calculations** H. Chao, N. Kolencherry, K. Ogunsina, K. Moolchandani, W. Crossley, D. DeLaurentis, Purdue University, West Lafayette, IN	1600 hrs AIAA-2017-3601 **Evaluation of Factors Influencing Airport Attraction and Integrated Performance** A. Gillissen, S. Kern, German Aerospace Center (DLR), Braunschweig, Germany	1630 hrs AIAA-2017-3602 **Performance Impact of Improved Departure Time Prediction Relative to Sector Demand & Arrival Time Predictability** R. Curran, E. Konnemann, Delft University of Technology, Delft, The Netherlands	

Tuesday, 6 June 2017						
155-ATIO.TFPC-4	**Transformational Aircraft Technologies**					**Governor's Square 15**
Chaired by: K. ANTCLIFF, NASA Langley Research Center and I. CHAKRABORTY, ASDL, Georgia Tech						
1400 hrs AIAA-2017-3603 **Aerodynamically-Actuated Radical Shape-Change Concept** T. Ivanco, M. Ivanco, E. Ancel, NASA Langley Research Center, Hampton, VA; A. Grubb, Georgia Institute of Technology, Atlanta, GA; S. Prasad, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2017-3604 **Link!: Potential Field Guidance Algorithm for In-Flight Linking of Multi-Rotor Aircraft** J. Cooper, National Institute of Aerospace, Hampton, VA; P. Rothhaar, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2017-3605 **Assessment of Urban Aerial Taxi with Cryogenic Components under Design Environment for Novel Vertical Lift Vehicles (DELIVER)** C. Snyder, NASA Glenn Research Center, Cleveland, OH				

Tuesday, 6 June 2017						
156-BAL-4/LTA-2	**Balloon and Lighter Than Air Combined Session**					**Majestic Ballroom**
Chaired by: H. CATHEY, New Mexico State Universtiy						
1400 hrs AIAA-2017-3606 **Non-Linear Analysis of the NASA Super Pressure Balloons: Whole Flight Simulations** D. Wakefield, A. Bown, Tensys Dynamics, Ltd., Bath, United Kingdom	1430 hrs AIAA-2017-3607 **Normalizing the Narrative, Creating Industry wide Standards and Practices Within the Ballooning Community** A. Denney, New Mexico State University, Las Cruces, NM	1500 hrs AIAA-2017-3608 **Critical Review of Helium Purification Techniques for Lighter-than-Air Systems** R. Voleti, Indian Institute of Technology Bombay, Mumbai, India; N. Singhal, Nanyang Technological University, Singapore, Singapore; R. Pant, Indian Institute of Technology Bombay, Mumbai, India	1530 hrs AIAA-2017-3609 **The NASA Wallops Arc-Second Pointer (WASP) System for Precision Pointing of Scientific Balloon Instruments and Telescopes** D. Stuchlik, NASA Wallops Flight Facility, Wallops Island, VA	1600 hrs **Development Prize for the Alternative Propulsion Transport Airship** Panelists: **Don Hartsell** Commissioner and Managing Director World Air League **Ron Hochstetler** Vice Chairman AIAA Lighter-Than-Air Technical Committee	

Tuesday, 6 June 2017		
157-CASE-2 **1400 - 1700 hrs**	**Incremental/Agile Methods—Fit for Demands of Complex Aerospace Systems?**	**Governor's Square 14**

Chair: Sophia Bright, IT Director, Strategy Design & Execution, The Boeing Company

Panelists:

Rick Dove
CEO
Paradigm Shift, International

Avinash Pinto
Principal Systems Engineer
The MITRE Corporation/FAA Center for Advanced Aviation System Development

Jimmie McEver
Senior Scientist
Asymmetric Operations Sector
Johns Hopkins University Applied Physics Laboratory

Ray Carnes
Chief Architect
The Boeing Company

Academic Scholar: William D. "Bill" Schindel
President
ICTT System Sciences

Tuesday, 6 June 2017						
158-CFD-11/FD-17	**Numerical Simulations of Turbulent Flows Using DNS and LES**					**Tower Court C**
Chaired by: J. DEBONIS, NASA Glenn Research Center and D. GAITONDE, The Ohio State University						
1400 hrs AIAA-2017-3610 **Prediction of Turbulent Temperature Fluctuations in Hot Jets** J. DeBonis, NASA Glenn Research Center, Cleveland, OH	1430 hrs AIAA-2017-3611 **Resolved Scalar Mixing in Large Eddy Simulations of a High Reynolds Number Plane Mixing Layer** S. Hug, W. McMullan, University of Leicester, Leicester, United Kingdom	1500 hrs AIAA-2017-3612 **Unstructured Large Eddy Simulations of the transonic compressor Rotor 37** D. Papadogiannis, X. Garnaud, Safran Group, Chateaufort, France	1530 hrs AIAA-2017-3613 **Dynamical Structures in a Swept Compression Ramp Shock/Turbulent-Boundary-Layer Interaction** D. Gonzalez, Naval Surface Warfare Center, Indian Head, MD; M. Adler, D. Gaitonde, Ohio State University, Columbus, OH	1600 hrs AIAA-2017-3614 **Large eddy simulation of supersonic intakes using fifth order free-stream preserving WENO scheme** S. G, K. Sinha Mahapatra, Indian Institute of Technology Kharagpur, Kharagpur, India		

Tuesday, 6 June 2017						
159-CFD-12/APA-22	**Numerical Simulations of FSI**					**Tower Court B**
Chaired by: C. BREHM, University of Kentucky and A. GAITONDE						
1400 hrs AIAA-2017-3615 **Open-Loop FLow Control on a Torsionally Flexible NACA0018 Wing** K. Turner, C. Fagley, J. Seidel, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1430 hrs AIAA-2017-3616 **Aeroelastic Gust Response of an Aircraft Using a Prescribed Velocity Method in Viscous Flows** S. Huntley, D. Jones, A. Gaitonde, University of Bristol, Bristol, United Kingdom	1500 hrs AIAA-2017-3617 **Influence of the Helicopter Configuration on its Electrostatic Charging** H. Grosshans, Catholic University of Leuven, Leuven, Belgium; R. Szsasz, Lund University, Lund, Sweden; M. Papalexandris, Catholic University of Leuven, Leuven, Belgium	1530 hrs AIAA-2017-3618 **Aeroelastic Stability of Cylindrical Shells in Supersonic Flow with Boundary Layer** M. Alder, German Aerospace Center (DLR), Brunswick, Germany	1600 hrs AIAA-2017-3619 **Direct particle-fluid simulation of flushing in die-sink electrical-discharge machining** G. Brito Gadeschi, L. Schneiders, M. Meinke, W. Schroeder, RWTH Aachen University, Aachen, Germany	1630 hrs AIAA-2017-3620 **Simulation of Fluid-Structure Interaction Using Domain-Free Discretization (DFD) and a Predictor-Corrector Coupling Approach** Y. Zhang, C. Zhou, Nanjing University of Aeronautics and Astronautics, Nanjing, China; H. Luo, Vanderbilt University, Nashville, TN	

Tuesday, 6 June 2017						
160-CFD-13	**Boundary and Interface Treatments**					**Tower Court A**
Chaired by: R. MITTAL, Johns Hopkins University and G. MENGALDO						
1400 hrs AIAA-2017-3621 **Immersed Boundary Lattice Green Function methods for External Aerodynamics** G. Mengaldo, S. Liska, K. Yu, T. Colonius, California Institute of Technology, Pasadena, CA; T. Jardin, Higher Institute of Aeronautics and Space, Toulouse, France	1430 hrs AIAA-2017-3622 **A Highly Scalable Sharp-Interface Immersed Boundary Method for Large-Scale Parallel Computers** C. Zhu, J. Seo, V. Vedula, R. Mittal, Johns Hopkins University, Baltimore, MD	1500 hrs AIAA-2017-3623 **An Immersed Boundary Method for preliminary design aerodynamic studies of complex configurations** S. Peron, T. Renaud, I. Mary, C. Benoit, M. Terracol, ONERA, Châtillon, France	1530 hrs AIAA-2017-3624 **Very High-Order Stable Sharp Immersed Interface Method: Application to Direct Numerical Simulations of Incompressible Flows** S. Hosseinverdi, H. Fasel, University of Arizona, Tucson, Tucson, AZ	1600 hrs AIAA-2017-3625 **Navier-Stokes Characteristic Boundary Conditions Using Ghost Cells** E. Motheau, A. Almgren, J. Bell, Lawrence Berkeley National Laboratory, Berkeley, CA		

Tuesday, 6 June 2017						
161-CFD-14	**Data-Driven Approaches for Modeling and Parameter Estimation**					**Tower Court D**
Chaired by: K. DURAISAMY, University of Michigan, Ann Arbor						
1400 hrs AIAA-2017-3626 **Data-driven augmentation of turbulence models for adverse pressure gradient flows** A. Singh, University of Michigan, Ann Arbor, Ann Arbor, MI; R. Matai, Iowa State University, Ames, IA; A. Mishra, K. Duraisamy, University of Michigan, Ann Arbor, Ann Arbor, MI; P. Durbin, Iowa State University, Ames, IA	1430 hrs AIAA-2017-3627 **Data-driven Adaptive Physics Modeling for Turbulence Simulations** J. Ling, Sandia National Laboratories, Livermore, CA; A. Kurzawski, University of Texas, Austin, Austin, TX	1500 hrs AIAA-2017-3628 **Data-Driven Predictive Modeling of Fluid Flow from Dynamic Mode Decomposition** C. Lu, B. Jayaraman, Oklahoma State University, Stillwater, OK	1530 hrs AIAA-2017-3629 **Parameter Estimation for a Turbulent Buoyant Jet with Rotating Cylinder Using Approximate Bayesian Computation** J. Christopher, C. Lapointe, N. Wimer, T. Hayden, I. Grooms, G. Rieker, University of Colorado, Boulder, Boulder, CO; et al.	1600 hrs AIAA-2017-3630 **Covariance Correction to the Ensemble Kalman Filter in a Data-Assimilated CFD Algorithm for the Convection-Diffusion-Reaction Equation** Y. Wang, X. Gao, Colorado State University, Fort Collins, CO		

Tuesday, 6 June 2017		
162-CFD-41 1400 - 1600 hrs	CFD Flow Visualization Showcase	Plaza Exhibit/Foyer

The CFD Flow Visualization Showcase will be held in the foyer area outside the Exposition Hall. The presenters of the CFD visualizations will describe their work and the significance of their animation as it plays on a large screen monitor. Multiple visualizations will be shown during each of the four 30-minute time slots during the event. At the conclusion of the event, awards will be presented for Most Artistic Flow Visualization Animation, Most Quantitatively Descriptive Flow Visualization Animation, and Most Comprehensive Flow Visualization Animation. The visualizations of the three winners will be displayed on a monitor in the Exposition Hall for the remainder of the exposition.

Tuesday, 6 June 2017		
163-F360-4 1400 - 1600 hrs	Supersonic Transport	Grand Ballroom I

Moderator: Peter Coen, Project Manager, Commercial Supersonic Technology, NASA Langley Research Center

Panelists:

Michael Buonanno
Deputy Chief Engineer, QueSST, X-plane
Lockheed Martin Corporation

Robert Cowart
Director
Supersonic Technology Development
Gulfstream Aerospace Corporation

Vik Kachoria
President and CEO
Spike Aerospace, Inc.

Blake Scholl
Founder and CEO
Boom Supersonic

Gurdip Singh Ubhi
Business Development Executive
Rolls-Royce Corporation

Tuesday, 6 June 2017						
164-FD-18	High Speed Laminar-Turbulent Transition I					Terrace
Chaired by: K. CASPER, Sandia National Laboratories						
1400 hrs AIAA-2017-3631 **Direct Numerical Simulation of Acoustic Noise Generation from the Nozzle Wall of a Hypersonic Wind Tunnel** J. Huang, L. Duan, Missouri University of Science and Technology, Rolla, MO	1430 hrs AIAA-2017-3632 **Measurements in the Boeing/AFOSR Mach-6 Quiet Tunnel on Hypersonic Boundary-Layer Transition** B. Chynoweth, J. Edelman, K. Gray, G. McKiernan, S. Schneider, Purdue University, West Lafayette, IN	1500 hrs AIAA-2017-3633 **Analysis of Receptivity to Kinetic Fluctuations in the Reentry-F Flight Experiment** L. Edwards, A. Tumin, University of Arizona, Tucson, Tucson, AZ	1530 hrs AIAA-2017-3634 **Stabilization of hypersonic boundary layers by linear and nonlinear optimal perturbations** P. Paredes, M. Choudhari, F. Li, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2017-3635 **A Mechanism for Spectral Broadening and Implications for Saturation Amplitude Estimates** A. Batista, J. Kuehl, Baylor University, Waco, TX	1630 hrs AIAA-2017-3636 **An Efficient Pulse Tracking Strategy for Hypersonic Transition Prediction** O. Browne, A. Haas, H. Fasel, University of Arizona, Tucson, Tucson, AZ; C. Brehm, University of Kentucky, Lexington, Lexington, KY	1700 hrs AIAA-2017-3637 **Application of SST k-ω Transition Model to Flow Past Smooth and Rough Airfoils** Y. Hou, T. Wray, R. Agarwal, Washington University in St. Louis, St. Louis, MO

Tuesday, 6 June 2017						
165-FD-19	Experimental Studies or Numerical Simulations II					Beverly
Chaired by: A. SESCU, Mississippi State University						
1400 hrs AIAA-2017-3638 **Compressible Turbulent Flow in a Convergent-Divergent Nozzle :An LES Study** S. Mahapatra, T. Anskar, S. Ghosh, Indian Institute of Technology Kharagpur, Kharagpur, India	1430 hrs AIAA-2017-3639 **Comparison of PIV and CFD Measurements of an Advanced Supersonic Research Concept Model** A. Jones, K. Mejia, C. Ulk, The Boeing Company, Seattle, WA; Y. Murahashi, T. Nagata, A. Ochi, Kawasaki Heavy Industries, Ltd., Kakamigahara, Japan	1500 hrs AIAA-2017-3640 **Large eddy simulation of flow over a wall-mounted cube placed in a turbulent boundary layer** S. Shinde, E. Johnsen, K. Maki, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2017-3641 **DNS of a Spatially Developing Turbulent Mixing Layer from Co-flowing Laminar Boundary Layers** J. Colmenares, S. Poroseva, University of New Mexico, Albuquerque, Albuquerque, NM; Y. Peet, Arizona State University, Tempe, AZ; S. Murman, NASA Ames Research Center, Moffett Field, CA			

Tuesday, 6 June 2017						
166-FD-20	Low-Re Flows and Bio-Inspired Flows					Capitol
Chaired by: C. LI, The Ohio State University and C. KANG, University of Alabama in Huntsville						
1400 hrs AIAA-2017-3642 **Three-Dimensional Vortex Development in a Laminar Separation Bubble formed over an Airfoil** J. Kurelek, B. Tuna, S. Yarusevych, University of Waterloo, Waterloo, Canada	1430 hrs AIAA-2017-3643 **Effects of Surface Morphing on the Wake Structure and Performance of Flapping Plates** J. Wang, University of Virginia, Charlottesville, Charlottesville, VA; C. Li, Ohio State University, Columbus, OH; Y. Ren, H. Dong, University of Virginia, Charlottesville, Charlottesville, VA	1500 hrs AIAA-2017-3644 **Quasi-periodic Vortical Signature of an Elastically Mounted Flapping Airfoil** C. Bose, S. Gupta, S. Sarkar, Indian Institute of Technology Madras, Chennai, India	1530 hrs AIAA-2017-3645 **Effects of aspect ratio and angle of attack on tip vortex structures and aerodynamic performance for rotating flat plates** C. Li, H. Dong, University of Virginia, Charlottesville, Charlottesville, VA; B. Cheng, Pennsylvania State University, University Park, PA	1600 hrs AIAA-2017-3646 **Free-stream turbulence effects on transition within a laminar separation bubble** M. Istvan, S. Yarusevych, University of Waterloo, Waterloo, Canada	1630 hrs AIAA-2017-3647 **Flow Periodicity Analysis Past a Flapping Airfoil Using Proper Orthogonal Decomposition** C. Bose, S. Sarkar, Indian Institute of Technology Madras, Chennai, India	

Tuesday, 6 June 2017						
167-FT-3	**Flight Testing**					**Director's Row J**
Chaired by: K. GARMAN, Federal Aviation Administration and D. OWENS, NASA-Langley Research Center and R. ROEDTS, Columbia Helicopters, Inc						
1400 hrs AIAA-2017-3648 **Exploitation of an OPA platform for in-flight validation of RPAS technologies** A. Rispoli, U. Mercurio, L. Vecchione, P. De matteis, F. Fusco, Italian Aerospace Research Center (CIRA), Capua, Italy	1430 hrs AIAA-2017-3649 **Developing a Flight Test Strategy for Adaptive Flight Control Laws** L. Berra, C. Campbell, T. Wilson, U.S. Air Force Test Pilot School, Edwards AFB, CA	1500 hrs AIAA-2017-3650 **Manned vs. Unmanned Considerations for Future X-Planes** J. Lechniak, NASA Armstrong Flight Research Center, Edwards, CA; J. Melton, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2017-3651 **Braking Capabilities on Flooded Runways: Flight Test Results Obtained with a Business Jet** G. Van Es, National Aerospace Laboratory (NLR), Amsterdam, The Netherlands	1600 hrs AIAA-2017-3652 **The aircraft spin - a mathematical approach and comparison to flight test** C. Bennett, N. Lawson, J. Gautrey, A. Cooke, Cranfield University, Cranfield, United Kingdom	1630 hrs AIAA-2017-3653 **C-17A Globemaster III Drag Reduction Flight Demonstrations** T. Lorang, J. Carr, The Boeing Company, Huntington Beach, CA	1700 hrs AIAA-2017-3654 **Simultaneous Pressure and Optical Measurements Around a Hemispherical in Subsonic and Transonic Flight** J. Morrida, N. De Lucca, S. Gordeyev, E. Jumper, University of Notre Dame, Notre Dame, IN

Tuesday, 6 June 2017						
168-MDO-7	**Shape and Topology Optimization**					**Director's Row I**
Chaired by: B. STANFORD, NASA Langley Research Center						
1400 hrs AIAA-2017-3655 **Aeroelastic Wingbox Stringer Topology Optimization** B. Stanford, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2017-3656 **Topology Optimization of a Bi-Stable Airfoil Using Nonlinear Elasticity** A. Bhattacharyya, C. Conlan-Smith, K. James, University of Illinois, Urbana-Champaign, Urbana, IL	1500 hrs AIAA-2017-3657 **Topology optimization for transient response of structures subjected to dynamic loads** R. Behrou, J. Guest, Johns Hopkins University, Baltimore, MD	1530 hrs AIAA-2017-3658 **Reduction of Airframe Noise Components Using a Discrete Adjoint Approach** B. Zhou, T. Albring, N. Gauger, Technical University of Kaiserslautern, Kaiserslautern, Germany; C. Ilario, T. Economon, J. Alonso, Stanford University, Stanford, CA	1600 hrs AIAA-2017-3659 **Dynamic Rotor Blade Displacement Tracking with Fiber-Optical Sensors for a Health and Usage Monitoring System** S. Suesse, Technical University of Munich, Munich, Germany		

Tuesday, 6 June 2017						
169-MDO-8	**Emerging Methods, Algorithms and Software Development II**					**Director's Row H**
Chaired by: D. ALLAIRE, Texas A&M University and S. SHAHPAR, Rolls-Royce PLC						
1400 hrs AIAA-2017-3660 **A Convolutional Neural Network Approach to Training Predictors for Airfoil Performance** E. Yilmaz, B. German, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2017-3661 **Surrogate Modeling to Enable Higher Fidelity Optimization** J. Vegh, E. Botero, T. MacDonald, J. Alonso, Stanford University, Stanford, CA; C. Ilario da Silva, T. Orra, Embraer, São José dos Campos, Brazil	1500 hrs AIAA-2017-3662 **Multidisciplinary Design Including Geometry-Enabled Wind Tunnel Fidelity Level Analysis** A. Donovan, PC Krause and Associates, West Lafayette, IN; D. Allison, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2017-3663 **Composing MDAO symphonies: graph-based generation and manipulation of large multidisciplinary systems** I. van Gent, G. La Rocca, L. Veldhuis, Delft University of Technology, Delft, The Netherlands	1600 hrs AIAA-2017-3664 **Assessment of the Recursive Projection Method for the Stabilization of Discrete Adjoint Solvers** T. Albring, T. Dick, N. Gauger, Technical University of Kaiserslautern, Kaiserslautern, Germany	1630 hrs AIAA-2017-3665 **Towards Augmented Design-Space Exploration via Combined Geometry and Physics Based Karhunen-Loève Expansion** A. Serani, E. Campana, M. Diez, Italian Institute for Naval Hydrodynamic Research and Ship Model Basin, Rome, Italy; F. Stern, University of Iowa, Iowa City, Iowa City, IA	

Tuesday, 6 June 2017						
170-MST-4	**Human Factors, Perception, and Cueing**					**Plaza Court 6**
Chaired by: S. ADVANI, International Development of Technology B.V. and P. ZAAL, NASA Ames Research Center						
1400 hrs AIAA-2017-3666 **Dual Extended Kalman Filter for the Identification of Time-Varying Human Manual Control Behavior** A. Popovici, P. Zaal, San Jose State University, Moffett Field, CA; D. Pool, Delft University of Technology, Delft, The Netherlands	1430 hrs AIAA-2017-3667 **Quantifying the Effects of Added Dynamics with Human Operator Control Behavior Measurements and Simulations** T. Lu, D. Pool, M. van Paassen, M. Mulder, Delft University of Technology, Delft, The Netherlands	1500 hrs AIAA-2017-3668 **The Influence of Discrimination Strategy on the JND in Human Haptic Perception of Manipulator Stiffness** W. Fu, M. van Paassen, M. Mulder, Delft University of Technology, Delft, The Netherlands	1530 hrs AIAA-2017-3669 **Objective Inceptor Cueing Test for Control Loading Systems: Principle and Initial Design** W. Fu, M. van Paassen, O. Stroosma, M. Mulder, Delft University of Technology, Delft, The Netherlands	1600 hrs AIAA-2017-3670 **UAV Operator mental workload - A neurophysiological comparison of mental workload and vigilance** D. Richards, Coventry University, Coventry, United Kingdom; K. Izzetoglu, Drexel University, Philadelphia, PA; G. Shelton-Rayner, Coventry University, Coventry, United Kingdom	1630 hrs AIAA-2017-3671 **Effects of Peripheral Visual Cues in Simulator-Based Training of Multimodal Control Skills** M. Mendes, D. Pool, M. van Paassen, Delft University of Technology, Delft, The Netherlands	1700 hrs AIAA-2017-3672 **Virtual Reality For Missile Combat Simulation** X. Shi, Tsinghua University, Beijing, China

Tuesday, 6 June 2017						
171-PDL-4	**Plasma/Laser Assisted Ignition and Combustion**					**Denver**
Chaired by: J. ZIMMERMAN, CU Aerospace						
1400 hrs Oral Presentation **A New Approach to Ignition: The Synergistic Effects of Nanosecond-Pulsed High-Frequency Discharges** T. Ombrello, J. Lefkowitz, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2017-3673 **Experimental Study of Ignition, Reignition and Flameholding by Q-DC Electrical Discharge in a Model Scramjet** S. Leonov, A. Houpt, B. Hedlund, University of Notre Dame, Notre Dame, IN	1500 hrs AIAA-2017-3674 **Simulating Microwave Plasma-Assisted Combustion in a Swirled Flow Reactor** J. Zimmerman, A. Palla, D. King, D. Carroll, CU Aerospace, LLC, Champaign, IL; R. Rajasegar, C. Mitsingas, University of Illinois, Urbana-Champaign, Urbana, IL; et al.	1530 hrs AIAA-2017-3675 **Effect of Dielectric Barrier Discharge Body Forces on Hydrogen Flames** L. Massa, Virginia Polytechnic Institute and State University, Blacksburg, VA; J. Retter, G. Elliott, J. Freund, University of Illinois, Urbana-Champaign, Urbana, IL	1600 hrs AIAA-2017-3676 **Collisional deactivation of N2(C3⊓u) and N2+(B2Σ+u) by hydrocarbon molecules in afterglow of the picosecond discharge** A. Starikovskiy, Princeton University, Princeton, NJ		

Tuesday, 6 June 2017						
172-TFM-6	**Vortex Dynamics**					**Spruce**
Chaired by: Z. RUSAK, Rensselaer Polytechnic Institute						
1400 hrs Oral Presentation **Review of Theoretical Studies of the Vortex Breakdown phenomenon (Invited)** S. Wang, University of Auckland, Auckland, New Zealand; Z. Rusak, Rensselaer Polytechnic Institute, Troy, NY		1500 hrs AIAA-2017-3677 **Swirling flow states in a finite-length straight circular pipe** Y. Zhang, Z. Rusak, Rensselaer Polytechnic Institute, Troy, NY; S. Wang, University of Auckland, Auckland, New Zealand	1530 hrs AIAA-2017-3678 **The critical state of compressible swirling flows** H. Lee, University of Michigan, Ann Arbor, Ann Arbor, MI; Z. Rusak, Rensselaer Polytechnic Institute, Troy, NY; S. Wang, University of Auckland, Auckland, New Zealand	1600 hrs AIAA-2017-3679 **Compressibility Effect on Topology of Vortex Ring Formed by Vortex Breakdown in Closed Cylinder at Low-Mach-Numbers** K. Yamada, K. Suzuki, University of Tokyo, Bunkyo, Japan	1630 hrs AIAA-2017-3680 **Leading edge vortex separation study by different vortex and flow separation identification methods** Y. Huang, M. Green, Syracuse University, Syracuse, NY	1700 hrs AIAA-2017-3681 **Analysis of high-speed rotating flow in polar (r – Θ) coordinate** S. Pradhan, Indian Institute of Science, Bengalaru, India

Tuesday, 6 June 2017						
173-TP-4	**Ablation II**					**Plaza Court 3**
Chaired by: A. MARTIN, University of Kentucky and D. KUNTZ, Sandia National Laboratories						
1400 hrs AIAA-2017-3682 **Reduced Reaction Mechanism for Rocket Nozzle Ablation Simulations** P. Cross, Naval Air Warfare Center, China Lake, CA; I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1430 hrs AIAA-2017-3683 **Fully Coupled Ablation Modeling of Non-Charring Hypersonic Leading Edges with Moving Meshes** S. Chen, I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1500 hrs AIAA-2017-3684 **Development of a unified model for flow-material interaction applied to porous charring ablators** J. Coheur, University of Liège, Liège, Belgium; A. Turchi, P. Schrooyen, T. Magin, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1530 hrs AIAA-2017-3685 **Decoupled Method for Reconstruction of Surface Conditions From Internal Temperatures On Ablative Materials With Uncertain Recession Model** B. Oliver, NASA Johnson Space Center, Houston, TX	1600 hrs AIAA-2017-3686 **Modeling Gasification of Carbon Fiber Preform in Oxygen Rich Environments** A. Omidy, A. Martin, H. Weng, J. Grana, University of Kentucky, Lexington, Lexington, KY	1630 hrs AIAA-2017-3687 **Detailed DSMC Surface Chemistry Modeling of the Oxidation of Light-Weight Carbon Preform Ablators** A. Borner, NASA Ames Research Center, Moffett Field, CA; K. Swaminathan Gopalan, K. Stephani, University of Illinois, Urbana-Champaign, Urbana, IL; V. Murray, S. Poovathingal, T. Minton, Montana State University, Bozeman, MT; et al.	

Tuesday, 6 June 2017		
174-NW-8 **1600 - 1630 hrs**	**Networking Coffee Break**	**Plaza Exhibit/Foyer**

Tuesday, 6 June 2017		
175-LECT-5 **1730 - 1830 hrs**	**Aeroacoustics Lecture**	**Grand Ballroom I**
The Long Road to Quiet Supersonic Propulsion **Dimitri Papamoschou** Professor, Mechanical and Aerospace Engineering, The Henry Samueli School of Engineering, University of California, Irvine		

Tuesday, 6 June 2017		
176-LECT-6 1730 - 1830 hrs	**Aerodynamic Measurement Technology Award Lecture**	Director's Row E
Direct Measurement of Skin Friction in Complex Flows **Joseph Schetz** Fred D. Durham Endowed Chair, Crofton Department of Aerospace & Ocean Engineering, Virginia Polytechnic Institute and State University		

Tuesday, 6 June 2017		
177-LECT-7 1730 - 1830 hrs	**Plasmadynamics and Lasers Award Lecture**	Majestic Ballroom
Comparative Analysis of the Heat and Dynamics Effects in Magneto-Plasma Aerodynamics **Valentin A Bityurin** Head of Division for Plasmadynamics and MHD Energy Conversion (retired), Joint Institute for High Temperatures, Russian Academy of Sciences		

Tuesday, 6 June 2017		
178-NW-9 1830 - 2000 hrs	**Reception in the Exposition Hall**	Plaza Exhibit/Foyer
A ticket for the luncheon is required and included in the registration fee where where indicated. Additional tickets for guests may be purchased upon registration, or on site as space is available.		

Wednesday

Wednesday, 7 June 2017		
179-NW-10 0730 - 0800 hrs	**Networking Coffee Break**	Plaza Foyer

Wednesday, 7 June 2017		
180-SB-3 0730 - 0800 hrs	**Speakers' Briefing**	Session Rooms

Wednesday, 7 June 2017		
181-PLNRY-3 0800 - 0900 hrs	**Plenary**	Plaza Ballroom
Beyond the Robots: Toward Situated Autonomy **David Mindell** Founder and CEO, Humatics Corporation Professor, Massachusetts Institute of Technology		

Wednesday, 7 June 2017		
182-NW-11 0900 - 0930 hrs	**Networking Coffee Break**	Plaza Exhibit/Foyer

Wednesday, 7 June 2017						
183-AA-30	**Acoustic/Fluid Dynamic Interactions IV: Wall Bounded Flows with/without Acoustic Treatment**					Plaza Court 7
Chaired by: K. KNOBLOCH, DLR-German Aerospace Center						
0930 hrs AIAA-2017-3688 **Comparison and Assessment of Recent Empirical Models for Turbulent Boundary Layer Wall Pressure Spectrum** S. Lee, A. Villaescusa, University of California, Davis, Davis, CA	1000 hrs AIAA-2017-3689 **Acoustic Generation by Pressure-Velocity Interactions in a Three-Dimensional, Turbulent Wall Jet** A. Nickels, L. Ukeiley, University of Florida, Gainesville, Gainesville, FL; R. Reger, L. Cattafesta, Florida State University, Tallahassee, FL	1030 hrs AIAA-2017-3690 **Semi-Empirical Prediction of Noise from Non-Zero Pressure Gradient Turbulent Boundary Layers** S. Miller, University of Florida, Gainesville, Gainesville, FL	1100 hrs AIAA-2017-3691 **CFD Analysis of an Installation Used to Measure the Skin-Friction Penalty of Acoustic Treatments** P. Spalart, The Boeing Company, Seattle, WA; A. Garbaruk, New Technologies and Services, St. Petersburg, Russia; B. Howerton, NASA Langley Research Center, Hampton, VA			

Wednesday, 7 June 2017						
184-AA-31	**Airframe/High-Lift Noise VI: Flap Related Noise**					**Plaza Court 4**
Chaired by: J. DELFS, DLR - German Aerospace Center						
0930 hrs AIAA-2017-3692 **A Study on Landing Gear Wake – Flap Interaction Noise** M. Pott-Pollenske, D. Almoneit, German Aerospace Center (DLR), Braunschweig, Germany; G. Saueressig, Lufthansa German Airlines, Frankfurt, Germany	1000 hrs AIAA-2017-3693 **Numerical computation of airfoil-gust lift response with applications to leading-edge noise generation** R. Miotto, W. Wolf, University of Campinas, Campinas, Brazil; J. Will, L. de Santana, University of Twente, Enschede, The Netherlands	1030 hrs AIAA-2017-3694 **On the Importance of Spatial Resolution for Flap Side Edge Noise Prediction** R. Mineck, Analytical Mechanics Associates, Inc., Hampton, VA; M. Khorrami, NASA Langley Research Center, Hampton, VA				

Wednesday, 7 June 2017						
185-AA-32	**CAA VI**					**Plaza Court 8**
Chaired by: P. JOSEPH, ISVR/University of Southampton and C. BAILLY, Ecole Centrale de Lyon						
0930 hrs AIAA-2017-3695 **Surface Impedance Determination via Numerical Resolution of the Inverse Helmholtz Problem** D. Patel, P. Gupta, C. Scalo, Purdue University, West Lafayette, IN	1000 hrs AIAA-2017-3696 **Aeroacoustic source term filtering based on Helmholtz decomposition** S. Schoder, M. Kaltenbacher, Technical University of Vienna, Wien, Austria	1030 hrs AIAA-2017-3697 **Pass-by noise signature of aerodynamic sound sources in urban environment: A numerical approach** N. Pignier, C. O'Reilly, S. Boij, Royal Institute of Technology (KTH), Stockholm, Sweden	1100 hrs AIAA-2017-3698 **Control of ultrasonic thermoacoustic instability via axial modulation of stack porosity** J. Lin, Stanford University, Stanford, CA; C. Scalo, Purdue University, West Lafayette, IN; L. Hesselink, Stanford University, Stanford, CA	1130 hrs AIAA-2017-3699 **A Geometric Block Interface Treatment for High-order, High-accuracy Codes** N. Mansouri, D. Hixon, S. Yazdani, University of Toledo, Toledo, OH	1200 hrs AIAA-2017-3700 **Numerical Modeling of Wire Screens for Flow and Noise Control** P. Okolo, K. Zhao, J. Kennedy, G. Bennett, Trinity College Dublin, Dublin, Ireland	

Wednesday, 7 June 2017						
186-AA-33	**Duct Acoustics IV**					**Governor's Square 10**
Chaired by: J. ALONSO-MIRALLES, UTC Aerospace Systems						
0930 hrs AIAA-2017-3701 **Interaction of a vortex with a contraction in a 2-dimensional channel: incompressible flow prediction of sound pulse** L. Hirschberg, Airbus, Les Mureaux, France; T. Schuller, École Centrale Paris, Châtenay-Malabry, France; C. Schram, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium; J. Collinet, M. Yiao, Airbus, Les Mureaux, France; A. Hirschberg, University of Twente, Enschede, The Netherlands	1000 hrs AIAA-2017-3702 **The modified Myers boundary condition for swirling flow.** J. Mathews, University of Cambridge, Cambridge, United Kingdom; V. Masson, S. Moreau, University of Sherbrooke, Québec, Canada; H. Posson, Airbus, Toulouse, France	1030 hrs AIAA-2017-3703 **Application of different simulation strategies to a butterfly valve for both Passive and Active acoustics behavior** J. Christophe, C. Schram, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium; P. Martinez-Lera, M. Tournour, K. Kucukcoskun, Siemens, Leuven, Belgium; W. De Roeck, Catholic University of Leuven, Leuven, Belgium; et al.	1100 hrs AIAA-2017-3704 **Eigen Analysis in General Curvilinear Coordinates for Prediction of Noise Propagation in Aeroengine Inlets** A. Wilson, University of Southampton, Southampton, United Kingdom			

Wednesday, 7 June 2017						
187-AA-34	**Jet Noise VI: Statistics**					**Governor's Square 12**
Chaired by: R. EWERT, DLR - German Aerospace Center						
0930 hrs AIAA-2017-3705 **A Survey of the Turbulence Statistics of a Model-Scale Installed Jet at Low and Moderate Mach Numbers** A. Proenca, J. Lawrence, R. Self, University of Southampton, Southampton, United Kingdom	1000 hrs AIAA-2017-3706 **A statistical jet-noise model based on the resolvent framework** A. Towne, Stanford University, Stanford, CA; G. Brès, Cascade Technologies, Inc., Palo Alto, CA; S. Lele, Stanford University, Stanford, CA	1030 hrs AIAA-2017-3707 **Sound of transverse momentum fluxes in circular subsonic jets** V. Rosa, A. Proenca, R. Self, Institute of Sound and Vibration Research, Southampton, United Kingdom; C. Ilario, Embraer, São José dos Campos, Brazil; Z. Wang, I. Naqavi, University of Cambridge, Cambridge, United Kingdom	1100 hrs AIAA-2017-3708 **Exploring the link between nozzle dynamics and wavepackets in a Mach 0.9 turbulent jet** O. Kaplan, P. Jordan, University of Poitiers, Poitiers, France; A. Cavalieri, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil			

Wednesday, 7 June 2017						
188-AA-35/ATIO.TFPC-5	**Small Propeller-Rotor Noise I**					**Plaza Court 5**
Chaired by: S. RIZZI, NASA Langley Research Center and D. NARK, NASA Langley Research Center						
0930 hrs Oral Presentation **Propeller Noise Prediction – A Review and Discussion of New Challenges (Invited)** K. Brentner, Pennsylvania State University, University Park, PA	1000 hrs AIAA-2017-3709 **Small Propeller and Rotor Testing Capabilities of the NASA Langley Low Speed Aeroacoustic Wind Tunnel** N. Zawodny, H. Haskin, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-3710 **An Aeroacoustic Study of Propellers for Small Electric Propulsion Aircraft** C. Britcher, D. Landman, B. Duvall, V. Dodda, C. Lowe, M. Patel, Old Dominion University, Norfolk, VA	1100 hrs AIAA-2017-3711 **Experimentally Testing Commercial and Custom Designed Quadcopter Propeller Static Performance and Noise Generation** C. Wisniewski, A. Byerley, U.S. Air Force Academy, Colorado Springs, CO; K. Van Treuren, A. Hays, Baylor University, Waco, TX	1130 hrs AIAA-2017-3712 **Ground Based Acoustic Signal Acquisition Using an Unmanned Aerial Vehicle Acoustic Sensing Payload** D. Alvord, A. Medda, Georgia Institute of Technology, Atlanta, GA	1200 hrs AIAA-2017-3713 **High-Lift Propeller Noise Prediction for a Distributed Electric Propulsion Flight Demonstrator** D. Nark, W. Jones, P. Buning, J. Derlaga, NASA Langley Research Center, Hampton, VA	

Wednesday, 7 June 2017						
189-AA-36	**Turbomachinery Noise IV: Broadband Noise**					**Governor's Square 11**
Chaired by: A. ALI, Pratt & Whitney						
0930 hrs AIAA-2017-3714 **CAA Prediction of Rotor-Stator Interaction Using Synthetic Turbulence: Application to a Low-Noise Serrated OGV** G. Reboul, A. Cader, C. Polacsek, T. Le Garrec, R. Barrier, N. Ben Nasr, ONERA, Châtillon, France	1000 hrs AIAA-2017-3715 **Radial mode analysis of fan broadband noise** U. Tapken, B. Pardowitz, M. Behn, German Aerospace Center (DLR), Berlin, Germany	1030 hrs AIAA-2017-3716 **On the Application of Trailing-edge Serrations for Noise Control from Tandem Airfoil Configurations** X. Liu, M. Azarpeyvand, University of Bristol, Bristol, United Kingdom	1100 hrs AIAA-2017-3717 **Inclusion of vane geometry in gust-cascade interaction prediction via a BVI method** D. Villafranco, S. Grace, Boston University, Boston, MA			

Wednesday, 7 June 2017						
190-AA-55	**Array Methods Panel**					**Capitol**
Chaired by: C. BAHR, NASA-Langley Research Center						
0930 hrs AIAA-2017-3718 **A Comparison of Microphone Phased Array Methods Applied to the Study of Airframe Noise in Wind Tunnel Testing** C. Bahr, W. Humphreys, NASA Langley Research Center, Hampton, VA; D. Ernst, T. Ahlefeldt, C. Spehr, German Aerospace Center (DLR), Göttingen, Germany; A. Pereira, University of Lyon, Lyon, France; et al.	1000 hrs AIAA-2017-3719 **A Microphone Array Method Benchmarking Exercise using Synthesized Input Data** E. Sarradj, G. Herold, Technical University of Berlin, Berlin, Germany; P. Sijtsma, Pieter Sijtsma Advanced AeroAcoustics, Wezep, The Netherlands; R. Merino Martinez, Delft University of Technology, Delft, The Netherlands; T. Geyer, Technical University of Brandenburg, Cottbus, Germany; C. Bahr, NASA Langley Research Center, Hampton, VA; et al.	1030 hrs **Open Discussion**				

Wednesday, 7 June 2017						
191-ADS-7	**Aerodynamic Decelerator Systems: Precision Aerial Delivery II**					**Majestic Ballroom**
Chaired by: K. BERGERON, US Army NSRDEC and S. DUNKER, Airborne Systems						
0930 hrs AIAA-2017-3720 **Advanced Multibody Flight Dynamic Modeling of Guided Airdrop Systems** M. Costello, S. Burdette, Georgia Institute of Technology, Atlanta, GA; A. Mycroft, Earthly Dynamics Corporation, Atlanta, GA; K. Bergeron, G. Noetscher, Army Research, Development and Engineering Command, Natick, MA	1000 hrs AIAA-2017-3721 **Using an Array of In-Canopy Sensors for Guided Airdrop System State Estimation** S. Burdette, M. Costello, Georgia Institute of Technology, Atlanta, GA; E. Scheuermann, Earthly Dynamics Corporation, Atlanta, GA	1030 hrs AIAA-2017-3722 **Hyperadaptive Control of Precision Guided Airdrop Systems Subject to Large Deviations in Nominal Flight Behavior** M. Cacan, M. Costello, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2017-3723 **Guided-Airdrop Vision-Based Navigation** C. Dever, Self, Cambridge, MA; L. Hamilton, R. Truax, L. Wholey, Draper Laboratory, Cambridge, MA; K. Bergeron, U.S. Army Natick Soldier Research, Development and Engineering Center, Natick, MA			

Wednesday, 7 June 2017						
192-ADS-8	**Aerodynamic Decelerator Systems: Space Systems I**					**Vail**
Chaired by: O. YAKIMENKO, Naval Postgraduate School and L. SHOOK, Sierra Nevada Corporation						
0930 hrs AIAA-2017-3724 **Supersonic Parachute Testing Using a MAXUS Sounding Rocket Piggy-Back Payload** J. Lingard, A. Saunders, J. Underwood, S. Rogers, Vorticity, Ltd., Chalgrove, United Kingdom; J. Merrifield, Fluid Gravity Engineering, Ltd., Emsworth, United Kingdom; L. Ferracina, ATG Europe, Noordwijk, The Netherlands	1000 hrs AIAA-2017-3725 **Permeability of Two Parachute Fabrics - Measurements, Modeling, and Application** J. Cruz, NASA Langley Research Center, Hampton, VA; C. O'Farrell, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; E. Hennings, P. Runnells, Naval Air Warfare Center, China Lake, CA	1030 hrs AIAA-2017-3726 **Static Wind Tunnel Testing of a Legged Venus Lander** C. O'Farrell, G. Merrifield, J. Rabinovitch, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1100 hrs AIAA-2017-3727 **A C1-discontinuous-Galerkin Spectral-element Shell Structural Solver** N. Burgess, L. Diosady, Science and Technology Corporation, Moffett Field, CA; S. Murman, NASA Ames Research Center, Moffett Field, CA			

Wednesday, 7 June 2017						
193-AFM-3	**Unmanned Aerial Systems I**					**Governor's Square 17**
Chaired by: B. JOLLY, USAF						
0930 hrs AIAA-2017-3728 **Validation of Canopy and Payload Relative Motion Estimation for Parafoil Aerial Vehicle using Computer Vision** Y. Kumar, A. Sharma, S. ., S. Shalvi, P. Srivastava, O. Prakash, University of Petroleum and Energy Studies, Dehradun, India; et al.	1000 hrs AIAA-2017-3729 **Datalink delay induced UAV payload releasement error compensation based on Forward Estimated Kalman Filter(FEKF)** H. Piao, Shenyang Aircraft Design and Research Institute, Shenyang, China; K. Zhang, Northwestern Polytechnical University, Xi'an, China; S. Zhang, H. Wang, Shenyang Aircraft Design and Research Institute, Shenyang, China	1030 hrs AIAA-2017-3730 **Robust Nonlinear Tracking Control for Unmanned Aircraft with Synthetic Jet Actuators** P. Kazarin, W. MacKunis, C. Moreno, V. Golubev, Embry-Riddle Aeronautical University, Daytona Beach, FL	1100 hrs AIAA-2017-3731 **Optimal Control of a Zero-Gravity Flight for an Unmanned Aerial Vehicle** M. Sadraey, Southern New Hampshire University, Nashua, NH			

Wednesday, 7 June 2017						
194-AMT-6	**Surface Pressure Measurements**					**Director's Row E**
Chaired by: H. SAKAUE, University of Notre Dame						
0930 hrs AIAA-2017-3732 **The Investigation of Shock Wave Boundary Layer Interactions Using Fast Pressure Sensitive Paint and Surface Stress Sensitive Film Measurement Techniques** M. Woike, D. Davis, M. Clem, NASA Glenn Research Center, Cleveland, OH; J. Crafton, Innovative Scientific Solutions, Inc., Dayton, OH	1000 hrs AIAA-2017-3733 **Quantification of Uncertainty in the Correction of Remotely Measured Unsteady Pressure Signals on Pitching Airfoils** M. Hind, P. Nikoueeyan, Resono Pressure Systems, Laramie, WY; J. Naughton, University of Wyoming, Laramie, Laramie, WY	1030 hrs AIAA-2017-3734 **Experimental study of Shockwave Formation Patterns Over an Airfoil on Laminar Flow and Its Relationship with Boundary Layer Transition** H. Fanini Leite, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; A. Avelar, J. Pessoa Falcão Filho, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil	1100 hrs AIAA-2017-3735 **Lifetime-Based PSP and TSP Measurements on Rotating Blades with High Rotation Rate** L. Jiao, D. Peng, Y. Liu, Shanghai Jiao Tong University, Shanghai, China	1130 hrs AIAA-2017-3736 **Study on delta wing skin friction measurement based on liquid crystal coatings in hypersonic wind tunnel** X. Chen, S. Wen, J. Pan, D. Yao, China Aerospace Science and Technology Corporation (CASC), Beijing, China		

Wednesday, 7 June 2017						
195-APA-23	**Innovative Aerodynamic Concepts**					**Gold**
Chaired by: R. DOWGWILLO, Boeing and R. RAMAMURTI, Naval Research Laboratory						
0930 hrs AIAA-2017-3737 **Parametric aerodynamic study of Blended-Wing-Body platforms at low subsonic speeds for UAV applications** P. Panagiotou, K. Yakinthos, Aristotle University of Thessaloniki, Thessaloniki, Greece	1000 hrs AIAA-2017-3738 **Preliminary investigation on stall characteristics of a Regional BWB for low speed approach** O. Velazquez, J. Weiss, F. Morency, University of Québec, Montréal, Canada	1030 hrs AIAA-2017-3739 **Development of A Fixed-Wing mini UAV with Transitioning Flight Capability** M. Bronz, French Civil Aviation University, Toulouse, France; E. Smeur, Delft University of Technology, Delft, The Netherlands; H. Garcia de Marina, G. Hattenberger, French Civil Aviation University, Toulouse, France	1100 hrs AIAA-2017-3740 **On the Aerodynamic Design of the Hyperloop Concept** M. Opgenoord, P. Caplan, Massachusetts Institute of Technology, Cambridge, MA	1130 hrs AIAA-2017-3741 **Aerodynamic Simulation of High-Speed Capsule in the Hyperloop System** Y. Yang, H. Wang, Hunan University, Changsha, China; M. Benedict, D. Coleman, Texas A&M University, College Station, TX		

Wednesday, 7 June 2017						
196-APA-24	**Propeller Aerodynamics II**					**Colorado**
Chaired by: N. RAJMOHAN , Aerion Corporation and D. O'BRIEN, US Army RDECOM						
0930 hrs AIAA-2017-3742 **Flow Studies around a Small Propeller in Converting Maneuver** S. Shkarayev, University of Arizona, Tucson, Tucson, AZ; V. Kurnosov, National Academy of Sciences, Kharkiv, Ukraine; D. Gomez, T. Jardin, J. Moschetta, Higher Institute of Aeronautics and Space, Toulouse, France	1000 hrs AIAA-2017-3743 **Static Testing of Propulsion Elements for Small Multirotor Unmanned Aerial Vehicles** R. Deters, S. Kleinke, Embry-Riddle Aeronautical University, Daytona Beach, FL; M. Selig, University of Illinois, Urbana-Champaign, Urbana, IL	1030 hrs AIAA-2017-3744 **An Experimental Investigation on Rotor-to-Rotor Interactions of Small UAV Propellers** W. Zhou, Z. Ning, H. Li, H. Hu, Iowa State University, Ames, IA	1100 hrs AIAA-2017-3745 **A Rolling Rig for Propeller Performance Testing** O. Dantsker, M. Selig, University of Illinois, Urbana-Champaign, Urbana, IL; R. Mancuso, Al Volo, LLC, Urbana, IL	1130 hrs AIAA-2017-3746 **Experimental Study of a Ducted Contra-rotating Lift Fan for V/STOL UAV Application** S. Deng, S. Yue, H. Wang, Northwestern Polytechnical University, Xi'an, China	1200 hrs AIAA-2017-3747 **An Experimental Study on the Aerodynamic and Aeroacoustic Performances of a Bio-Inspired UAV Propeller** Z. Ning, H. Hu, Iowa State University, Ames, IA	

Wednesday, 7 June 2017						
197-APA-25	**Low Speed, Low Reynolds Number Aerodynamics**					**Century**
Chaired by: K. MULLENERS, EPFL and J. FREEMAN, Air Force Institute of Technology						
0930 hrs AIAA-2017-3748 **SD7003 airfoil in large-scale free stream turbulence** S. Herbst, C. Kähler, R. Hain, University of the German Federal Armed Forces, Neubiberg, Germany	1000 hrs AIAA-2017-3749 **Airfoil Flow-Separation and Stall Detection Using Surface-Mounted Pitot Tubes** M. Aleman, A. Saini, A. Gopalarathnam, North Carolina State University, Raleigh, NC	1030 hrs AIAA-2017-3750 **The Investigation on Aerodynamic Performance of the X-Wing Tail-Sitter VTOL MAV** W. Tang, B. Song, Y. Cao, W. Yang, Northwestern Polytechnical University, XI'AN, China; M. Wang, University of Southampton, Southampton, United Kingdom				

Wednesday, 7 June 2017						
198-APA-26	**Special Session: Aerodynamic Design Optimization I**					**Silver**
Chaired by: S. NADARAJAH						
0930 hrs AIAA-2017-3751 **Aerodynamic Design of the RAE 2822 in Transonic Viscous Flow: Single- and Multi-point Optimization Studies** A. Amrit, X. Du, A. Thelen, L. Leifsson, Iowa State University, Ames, IA; S. Koziel, Reykjavik University, Reykjavik, Iceland	1000 hrs AIAA-2017-3752 **Investigation of Multimodality in Aerodynamic Shape Optimization Based on the Reynolds Averaged Navier-Stokes Equations** G. Streuber, D. Zingg, University of Toronto, Toronto, Canada	1030 hrs AIAA-2017-3753 **Multimodality in Aerodynamic Wing Design Optimization** N. Bons, X. He, C. Mader, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2017-3754 **An Adjoint-based Aerodynamic Shape Optimization Strategy for Trimmed Aircraft with Active Engines** A. Merle, A. Stueck, A. Rempke, German Aerospace Center (DLR), Braunschweig, Germany	1130 hrs AIAA-2017-3755 **Adjoint-Based Aerodynamic Optimization of Benchmark CRM Wing** D. Shi-Dong, C. Chen, S. Nadarajah, McGill University, Montréal, Canada		

Wednesday, 7 June 2017						
199-ASE-5	**Deicing and Icing CFD**					**Columbine**
Chaired by: P. STRUK, NASA Glenn Research Center and C. DOOLITTLE, UTAS						
0930 hrs AIAA-2017-3756 **CFD analysis of a coupled Bleed Air and Electrothermal icing protection system** F. Petrosino, Italian Aerospace Research Center (CIRA), Capua, Italy; P. Mormile, M. Musto, N. Bianco, University of Naples "Federico II", Naples, Italy; G. Mingione, Italian Aerospace Research Center (CIRA), Capua, Italy; G. Rotondo, University of Naples "Federico II", Naples, Italy	1000 hrs AIAA-2017-3757 **Numerical Analysis of Anti-Icing Property of NSDBD Plasma Actuator on Airfoil** Y. Jia, W. Sang, Y. Cai, Northwestern Polytechnical University, Xi'an, China	1030 hrs AIAA-2017-3758 **Eulerian Method for Ice Crystal Icing with Application to Particle Trajectories and Accretion on a Three-element Airfoil** E. Norde, E. van der Weide, H. Hoeijmakers, University of Twente, Enschede, The Netherlands	1100 hrs AIAA-2017-3759 **Modification of the Extended Messinger Model for Mixed Phase Icing and Industrial Applications with TAICE** E. Ayan, Turkish Aerospace Industries, Inc., Ankara, Turkey; S. Ozgen, Middle East Technical University, Ankara, Turkey	1130 hrs AIAA-2017-3760 **Ice accretion on a NACA 23012 airfoil** E. Oztekin, Diakon Solutions, LLC, Cape May, NJ; J. Riley, Federal Aviation Administration, Atlantic City, NJ	1200 hrs AIAA-2017-3761 **Numerical Study of an Iced Airfoil Using Window-Embedded RANS/LES Hybrid Method** M. Xiao, Y. Zhang, H. Chen, Tsinghua University, Beijing, China	

Wednesday, 7 June 2017						
200-ATIO.ACD-5	**Aircraft Performance, Stability and Control**					**Governor's Square 16**
Chaired by: W. ANEMAAT, DARcorporation and R. PEREZ, Royal Mil College of Canada						
0930 hrs AIAA-2017-3762 **Use of a Certification Constraints Module for Aircraft Design Activities** P. Schmollgruber, N. Bartoli, J. Bedouet, S. Defoort, ONERA, Toulouse, France; Y. Gourinat, E. Benard, Higher Institute of Aeronautics and Space, Toulouse, France	1000 hrs AIAA-2017-3763 **Handling Qualities Optimization in Aircraft Conceptual Design** D. Cosenza, R. Vos, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2017-3764 **Minimum Control Speed Estimation for Conceptual Design** E. Hadder, T. Takahashi, Arizona State University, Tempe, AZ	1100 hrs AIAA-2017-3765 **A Bank Angle Protection Method Based on Potential Functions for Nonlinear Aircraft Model** D. Sun, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL	1130 hrs AIAA-2017-3766 **Mission and Aircraft Design of FLEXOP Unmanned Flying Demonstrator to Test Flutter Suppression within Visual Line of Sight** P. Stahl, F. Sendner, A. Hermanutz, C. Rößler, M. Hornung, Technical University of Munich, Munich, Germany	1200 hrs AIAA-2017-3767 **Simulation-Driven Approach for Predicting Flight Loads During Complex Dynamic Maneuvers** R. Duca, S. Shah, G. Goron, D. Sarojini, I. Chakraborty, S. Briceno, Georgia Institute of Technology, Atlanta, GA; et al.	

Wednesday, 7 June 2017						
201-ATIO.ATM-9	**Environmental Impact**					**Plaza Court 1**
Chaired by: K. MARAIS, Purdue University						
0930 hrs AIAA-2017-3768 **Sensitivity Analysis of Fleet-level Carbon Emission, Biofuel, and Emission Scheme in the U.S. Commercial Airlines** H. Chao, D. DeLaurentis, Purdue University, West Lafayette, IN; B. Agusdinata, Arizona State University, Tempe, AZ	1000 hrs AIAA-2017-3769 **Foundations of a Framework to Evaluate Impacts on Future Noise Situations at Airports** F. Will, C. Engelke, T. Wunderlich, M. Hornung, Technical University of Munich, Munich, Germany	1030 hrs AIAA-2017-3770 **Assessment of arrival traffic synchronisation with RTAs and fuel-efficient trajectories** A. Pawelek, Warsaw University of Technology, Warsaw, Poland; R. Dalmau, Technical University of Catalonia, Castelldefels, Spain; P. Lichota, Warsaw University of Technology, Warsaw, Poland; X. Prats, Technical University of Catalonia, Castelldefels, Spain	1100 hrs AIAA-2017-3771 **Technological and Operational Scenarios on Aircraft Fleet-Level towards ATAG and IATA 2050 Emission Targets** K. Ploetner, R. Rothfeld, M. Urban, M. Hornung, Bauhaus Luftfahrt e.V., Taufkirchen, Germany; G. Tay, Technical University of Munich, Garching, Germany; O. Oguntona, Munich Aerospace e.V., Taufkirchen, Germany			

Wednesday, 7 June 2017						
202-ATIO.ATM-10	**ATM Analysis**					**Plaza Court 2**
Chaired by: Y. JUNG, NASA Ames Research Center						
0930 hrs AIAA-2017-3772 **An Analysis Simulation Tool for Continuous Descent Operations at Guangzhou-Baiyun International Airport** H. Zhu, J. Zhang, Z. Zheng, J. Liu, Nanjing University of Aeronautics and Astronautics, Nanjing, China	1000 hrs AIAA-2017-3773 **A Cluster-Based Approach for the Assessment of Air Transportation Networks in Selected Global Regions** G. Tay, H. Kalsi, M. Hornung, Technical University of Munich, Munich, Germany	1030 hrs AIAA-2017-3774 **Real Time Metrics and Analysis of Operational Airport Surface Operations** S. Sharma, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2017-3775 **Applying Graph Theory to Problems in Air Traffic Management** A. Farrahi, Universities Space Research Association, Mountain View, CA; A. Goldberg, Kestrel Institute, Palo Alto, CA; L. Bagasol, Universities Space Research Association, Mountain View, CA; J. Jung, NASA Ames Research Center, Moffett Field, CA			

Wednesday, 7 June 2017						
203-ATIO.GA-3	**Trends in General Aviation Safety**					**Plaza Court 3**
Chaired by: K. KNOPP, FAA						
0930 hrs AIAA-2017-3776 **Improving Hazard Analysis of Integrated Modular Avionics System based on System-Theoretic Process Analysis** H. Rong, Q. Gu, China National Aeronautical Radio Electronics Research Institute, Shanghai, China; Z. Chen, D. Xu, Commercial Aircraft Corporation of China, Ltd. (COMAC), Shanghai, China	1000 hrs AIAA-2017-3777 **Visual Scan Patterns of Expert and Cadet Pilots in VFR Landing** J. Diaz, C. Bil, A. Dyer, RMIT University, Melbourne, Australia	1030 hrs AIAA-2017-3778 **Ground Collision Severity Standards for UAS Operating in the National Airspace System (NAS)** D. Arterburn, C. Duling, N. Goli, University of Alabama, Huntsville, Huntsville, AL	1100 hrs AIAA-2017-3779 **Identifying Instantaneous Anomalies in General Aviation Operations** T. Puranik, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1130 hrs AIAA-2017-3780 **Understanding the Use of In-Flight Weather Information Products and Services** A. Rao, S. Pruchnicki, S. Young, Ohio State University, Columbus, OH		

Wednesday, 7 June 2017						
204-ATIO.TFPC-6/FT-4	**NASA X-57 Technologies and Design**					**Governor's Square 15**
Chaired by: M. PATTERSON, NASA Langley Research Center and S. GINN, NASA AFRC						
0930 hrs AIAA-2017-3781 **A Method for Designing Conforming Folding Propellers** B. Litherland, M. Patterson, J. Derlaga, N. Borer, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2017-3782 **Approach Considerations in Aircraft with High-Lift Propeller Systems** M. Patterson, N. Borer, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-3783 **Steady State Thermal Analyses of SCEPTOR X-57 Wingtip Propulsion** S. Schnulo, J. Chin, A. Smith, NASA Glenn Research Center, Cleveland, OH; A. Paul-Dubois-Taine, Joby Aviation, Santa Cruz, CA	1100 hrs AIAA-2017-3784 **Transient Thermal Analyses of Passive Systems on SCEPTOR X-57** J. Chin, S. Schnulo, A. Smith, NASA Glenn Research Center, Cleveland, OH	1130 hrs Oral Presentation **X-57 Power and Command System Design** S. Clarke, M. Redifer, K. Papathakis, A. Samuel, NASA Armstrong Flight Research Center, Edwards, CA; T. Foster, Empirical Systems Aerospace, Inc., San Luis Obispo, CA	1200 hrs AIAA-2017-3785 **Whirl Flutter Stability and Its Influence on the Design of the Distributed Electric Propeller Aircraft X-57** C. Hoover, J. Shen, University of Alabama, Tuscaloosa, Tuscaloosa, AL; A. Kreshock, Army Research Laboratory, Hampton, VA; B. Stanford, D. Piatak, J. Heeg, NASA Langley Research Center, Hampton, VA	

Wednesday, 7 June 2017						
205-BAL-5	**Balloon Flight Considerations**					**Savoy**
Chaired by: D. FAIRBROTHER, NASA / Goddard Space Flight Center / Wallops Flight Facility						
0930 hrs AIAA-2017-3786 **Service life of stratospheric balloon gondola recovery parachutes. - Part I** S. Fischer, NASA Wallops Flight Facility, Wallops Island, VA	1000 hrs AIAA-2017-3787 **Stratospheric C4ISR Unmanned Station (STRATACUS)** R. Athar, T. Mathews, J. Lavigne, K. Burns, A. Fry, Northrop Grumman Corporation, San Diego, CA; R. Alliss, Northrop Grumman Corporation, McLean, VA; et al.	1030 hrs AIAA-2017-3788 **Measuring Radiation in the Stratosphere: A High Altitude Balloon Journey** R. Tobin, A. Burr, S. Gilman, W. Hainsworth, A. Howell, K. Martin, Embry-Riddle Aeronautical University, Prescott, AZ				

Wednesday, 7 June 2017		
206-CASE-3 **0930 - 1230 hrs**	**Adaptive Verification and Validation (V&V)**	**Governor's Square 14**

Chair: Laura McGill, Vice President, Engineering, Raytheon Missile Systems

Panelists:

Villy Angelico
Lead for Cost Effective V&V
The Boeing Company

Maj. Gen. Matthew Malloy
Commander
Air Force Operational Test and Evaluation Center

Derrick Hinton
Acting Director
Test Resource Management Center (TRMC)
Department of Defense

James Eiele
Lead for Verification, Validation & Accreditation
Department of Navy

Academic Scholar: Wilson Felder
Distinguished Service Professor
Stevens Institute of Technology

Wednesday, 7 June 2017						
207-CFD-15	**Special Session: Capabilities and Challenges In CFD I: Academia, Government, and Industry Perspectives**					**Windows**
Chaired by: H. HUYNH, NASA Glenn Research Center and E. JOHNSEN, University of Michigan						
0930 hrs Oral Presentation **High-Fidelity Aerospace Simulations in the Exascale Era** D. Mavriplis, University of Wyoming, Laramie, Laramie, WY	1000 hrs Oral Presentation **CFD Vision 2030 and its Implementation** M. Rogers, NASA Ames Research Center, Moffett Field, CA; M. Malik, NASA Langley Research Center, Hampton, VA	1030 hrs Oral Presentation **Northrop Grumman Perspectives on the Capabilities and Challenges in CFD** S. Agrawal, Northrop Grumman Corporation, El Segundo, CA	1100 hrs AIAA-2017-3789 **Capabilities and Challenges in CFD: A Perspective from the DoD HPCMP CREATE™-AV Kestrel Development Team** D. McDaniel, S. Morton, CREATE Kestrel Team, Eglin AFB, FL	1130 hrs AIAA-2017-3790 **Mesh Generation Challenges: A Commercial Software Perspective** S. Karman, N. Wyman, J. Steinbrenner, Pointwise, Inc., Fort Worth, TX	1200 hrs AIAA-2017-3791 **Future Directions in Computational Fluid Dynamics** F. Witherden, A. Jameson, Stanford University, Stanford, CA	

Wednesday, 7 June 2017						
208-CFD-16/FD-21/APA-27	**Numerical Simulations of Turbulent and Unsteady Flows**					**Tower Court C**
Chaired by: C. RUMSEY, NASA-Langley Research Center and V. BHAGWANDIN, US Army Research Laboratory						
0930 hrs AIAA-2017-3792 **Design of an Axisymmetric Afterbody Test Case for CFD Validation** K. Disotell, C. Rumsey, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2017-3793 **Unsteady Simulation of Incompressible Flows on Unstructured Grids Using the Implicit IRK-SIMPLER Algorithm** M. Fischels, R. Rajagopalan, Iowa State University, Ames, IA	1030 hrs AIAA-2017-3794 **Fuel Injector Reynolds Number Effects on Performance and Emissions of a Trapped Vortex Combustor** K. Zbeeb, Western Illinois University, Moline, IL	1100 hrs AIAA-2017-3795 **Impact of distortions due to separation in S-duct inlet on compressor stage behavior and performances** J. Marty, R. Barrier, E. Garnier, ONERA, Meudon, France	1130 hrs AIAA-2017-3796 **The simulation of separated flows in aeronautics using high-order scheme WCNS with SSG/LRR-ω model** S. Wang, Y. Dong, X. Deng, National University of Defense Technology, Changsha, China; G. Wang, J. Wang, Sun Yat-sen University, Guangzhou, China		

Wednesday, 7 June 2017						
209-CFD-17	**Numerical Approaches for Analyzing Multiscale Flows**					**Tower Court D**
Chaired by: Q. WANG, MIT and T. HAGA, Japan Aerospace Exploration Agency						
0930 hrs AIAA-2017-3797 **Lyapunov spectrum of scale-resolving turbulent simulations. Application to chaotic adjoints** P. Fernandez, Q. Wang, Massachusetts Institute of Technology, Cambridge, MA	1000 hrs AIAA-2017-3798 **Sparsity-Promoting Dynamic Mode Decomposition Analysis on Aeroacoustics of a Clustered Supersonic Jet** H. Koizumi, S. Tsutsumi, T. Haga, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1030 hrs AIAA-2017-3799 **An Analysis of the Ensemble Adjoint Approach to Sensitivity Analysis in Chaotic Systems** N. Chandramoorthy, Q. Wang, Massachusetts Institute of Technology, Cambridge, MA	1100 hrs AIAA-2017-3800 **Sensitivity Analysis of Force Models for a Four-Way Coupled Eulerian-Lagrangian Dispersed Multiphase Flow** S. Nili, C. Park, R. Haftka, S. Balachandar, N. Kim, University of Florida, Gainesville, Gainesville, FL	1130 hrs AIAA-2017-3801 **Development and Application of Temporal Adaptation Methods to Computationally Intensive CFD Simulations** A. Grubb, M. Smith, Georgia Institute of Technology, Atlanta, GA		

Wednesday, 7 June 2017						
210-CFD-18	**Meshing and Visualization**					**Tower Court B**
Chaired by: A. LOFTHOUSE, US Air Force Academy and R. DAVIS, University of California Davis						
0930 hrs AIAA-2017-3802 **Elliptic Smoothing Extended for General Elements and Boundary Surfaces** J. Masters, D. McDaniel, W. Cothran, Arnold Engineering Development Complex, Arnold AFB, TN	1000 hrs AIAA-2017-3803 **A framework for multi-block structured grid smoothing for 2D/3D aircraft configurations** K. Hasanzadeh Lashkajani, E. Laurendeau, École Polytechnique de Montréal, Montréal, Canada	1030 hrs AIAA-2017-3804 **High-Fidelity Aerodynamic Analysis of Aircraft in Various Configurations with MEGG3D** Y. Ito, M. Murayama, K. Yamamoto, Japan Aerospace Exploration Agency (JAXA), Mitaka, Japan; K. Tanaka, Ryoyu Systems Company, Ltd., Minato, Japan	1100 hrs AIAA-2017-3805 **Experimental Investigation on the Effects of Wall Funtions at Different Configurations of a Multi Element Wing** T. Unni, Delhi Technological University, New Delhi, India	1130 hrs AIAA-2017-3806 **A Subzone-Based In Situ Technique for I/O Efficient Analysis and Exploratory Visualization** S. Imlay, C. Mackey, Tecplot, Inc., Bellevue, WA	1200 hrs AIAA-2017-3807 **Three Dimensional Flow Visualization in Virtual Reality** R. Dhillon, M. Green, Syracuse University, Syracuse, NY	

Wednesday, 7 June 2017		
211-F360-5 **0930 - 1130 hrs**	**Human-Machine Interaction**	**Grand Ballroom I**

Moderator: Dale Richards, Senior Research Fellow, Human Factors, Coventry University

Panelists:

Danette Allen
Senior Technologist for Intelligent Flight Systems
NASA Langley Research Center

Andrew Lacher
Senior Principal
Unmanned and Autonomous Research Strategist
The MITRE Corporation

David Mindell
Founder and CEO, Humatics Corporation
Professor, Massachusetts Institute of Technology

Wednesday, 7 June 2017						
212-FD-22	Experimental Studies or Numerical Simulations III					Tower Court A
Chaired by: P. HAMLINGTON and A. JONES, Boeing						
0930 hrs AIAA-2017-3808 **Investigation of Turbulence Properties in Wall-Bounded Flows with Pressure Gradients and Separation** L. Schiavo, University of Campinas, Campinas, Brazil; J. Azevedo, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil; W. Wolf, University of Campinas, Campinas, Brazil	1000 hrs AIAA-2017-3809 **Computation of compressible turbulent jet flows using modified LRR - omega model.** X. Xu, X. Li, J. Gao, Beihang University, Beijing, China	1030 hrs AIAA-2017-3810 **Experiments on Reattaching Shear Layers and its Linear Stabilty Properties** P. Ormonde, A. Cavalieri, R. Annes da Silva, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil				

Wednesday, 7 June 2017						
213-FD-23	Multiphysics and Cross-Disciplinary Fluid Dynamics II					Beverly
Chaired by: Y. LIAN, University of Louisville and M. SAHIN						
0930 hrs AIAA-2017-3811 **Train of Frozen Boxcars Model for Fluidic Harvesters** A. Danesh-Yazdi, Pennsylvania State University, Erie, PA; O. Goushcha, Manhattan College, Riverdale, NY; N. Elvin, Y. Andreopoulos, City College of New York, New York, NY	1000 hrs AIAA-2017-3812 **Investigation of Impact of Multiple Drops on Thin Liquid Film** Y. Guo, Y. Lian, University of Louisville, Louisville, KY	1030 hrs AIAA-2017-3813 **An Experimental Study on Small UAV Propellers with Serrated Trailing Edges** Z. Ning, R. Wlezien, H. Hu, Iowa State University, Ames, IA	1100 hrs AIAA-2017-3814 **A Monolithic Fluid Structure Interaction Algorithm Applied to Red Blood Cells in a Capillary** A. Cetin, M. Sahin, Istanbul Technical University, Istanbul, Turkey	1130 hrs AIAA-2017-3815 **Flow Boiling Heat Transfer and Pressure Drop Characteristics in Silicon Nanowire Manifold Microchannels** S. Wang, H. Chen, C. Chen, University of Missouri, Columbia, Columbia, MO		

Wednesday, 7 June 2017						
214-FD-24	Special Session: Research Frontiers in Bio-Inspired Propulsion I					Terrace
Chaired by: M. WEI, Kansas State University and X. ZHENG						
0930 hrs Oral Presentation **Lagrangian coherent structures in the three-dimensional bio-inspired wake** M. Green, Syracuse University, Syracuse, NY	1000 hrs Oral Presentation **Unresolved Issues of Plunging Airfoils and Wings** I. Gursul, University of Bath, Bath, United Kingdom	1030 hrs AIAA-2017-3816 **Aeromechanics of Hovering Flight in Perturbed Flows: Insights from Computational Models and Animal Experiments** C. Zhang, R. Mittal, Johns Hopkins University, Baltimore, MD; T. Hedrick, University of North Carolina, Chapel Hill, Chapel Hill, NC	1100 hrs Oral Presentation **Exploring Nature's Flying Mechanism in a Dual Space** M. Wei, Kansas State University, Manhattan, KS	1130 hrs AIAA-2017-3817 **On the passive pitching mechanism in turning flapping flights using a torsional spring model** Q. Zhong, G. Liu, Y. Ren, H. Dong, University of Virginia, Charlottesville, Charlottesville, VA	1200 hrs AIAA-2017-3818 **On the sound production and radiation of bio-inspired propulsors** B. Geng, X. Zheng, Q. Xue, University of Maine, Orono, Orono, ME; J. Wang, G. Liu, Y. Ren, University of Virginia, Charlottesville, Charlottesville, VA; et al.	

Wednesday, 7 June 2017						
215-GT-3/TP-5	Collaborative Efforts in Ground-Based Experiments and Modeling (Invited)					Director's Row J
Chaired by: K. STEPHANI, University of Illinois at Urbana-Champaign and T. WADHAMS, CUBRC						
0930 hrs Oral Presentation **A Collaborative Modeling-Experimental Study of Chemical Kinetics for Pyrolyzing Ablators** I. Boyd, S. Chen, University of Michigan, Ann Arbor, Ann Arbor, MI; N. Martin, D. Fletcher, University of Vermont, Burlington, Burlington, VT	1000 hrs Oral Presentation **Novel Methods for the Prediction of Hypersonic Boundary Layer Transition: Theory and Experiments** G. Candler, J. Nichols, University of Minnesota, Twin Cities, Minneapolis, MN	1030 hrs Oral Presentation **Ablative material: on the importance of modeling the experiments** A. Martin, University of Kentucky, Lexington, Lexington, KY	1100 hrs Oral Presentation **Molecular Beam Surface Scattering Experiments and Ablation Modeling** T. Schwartzentruber, University of Minnesota, Twin Cities, Minneapolis, MN; S. Poovathingal, V. Murray, T. Minton, Montana State University, Bozeman, MT	1130 hrs Oral Presentation **Successes and Challenges in ground testing and simulation of radiation and shock tubes** B. Cruden, NASA Ames Research Center, Mountain View, CA	1200 hrs Oral Presentation **Experimental Studies to Evaluate the Modeling of Real Gas Effects and Turbulence in Hypervelocity Flows** M. Holden, T. Wadhams, M. MacLean, A. Dufrene, CUBRC, Buffalo, NY	

Wednesday, 7 June 2017						
216-MDO-6	Emerging Methods, Algorithms and Software Development I					Director's Row I
Chaired by: J. HICKEN, Rensselaer Polytechnic Institute						
0930 hrs AIAA-2017-3819 **A Comparison of Naive Bayes Classifiers with Applications to Self-Aware Aerospace Vehicles** B. Burrows, D. Allaire, Texas A&M University, College Station, TX	1000 hrs AIAA-2017-3820 **Sensor placement strategy to inform decisions** L. Mainini, K. Willcox, Massachusetts Institute of Technology, Cambridge, MA	1030 hrs AIAA-2017-3821 **Reconfigurable model execution in the OpenMDAO framework** J. Hwang, NASA Glenn Research Center, Cleveland, OH	1100 hrs AIAA-2017-3822 **A Cross-Language Remote Procedure Call Framework** R. Snyder, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2017-3823 **Combining semantic web technologies and KBE to solve industrial MDO problems** A. Raju Kulkarni, M. Hoogreef, G. La Rocca, Delft University of Technology, Delft, The Netherlands		

Wednesday, 7 June 2017						
217-MDO-10	Non-Deterministic Design Methods and Applications					Director's Row H
Chaired by: K. WILLCOX, Massachusetts Institute of Technology						
0930 hrs AIAA-2017-3824 **Investigation of Aerothermoelastic Model Sensitivity under Transitional Fluid Loading in High Speed Flow** Z. Riley, Universal Technology Corporation, Dayton, OH; B. Smarslok, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2017-3825 **Bayesian Network Approach to Multidisciplinary, Multi-Objective Design Optimization under Uncertainty** S. Nannapaneni, Vanderbilt University, Nashville, TN; C. Liang, Ford Motor Company, Dearborn, MI; S. Mahadevan, Vanderbilt University, Nashville, TN	1030 hrs AIAA-2017-3826 **Reliable Multidisciplinary Design of a Supersonic Nozzle Using Multifidelity Surrogates** R. Fenrich, J. Alonso, Stanford University, Stanford, CA	1100 hrs AIAA-2017-3827 **Comparison of metaheuristics algorithms on robust design optimization of a plain-fin-tube heat exchanger** P. Tsirikoglou, S. Abraham, F. Contino, Vrije Universiteit Brussel, Brussels, Belgium; Ö. Bağci, J. Vierendeels, Ghent University, Gent, Belgium; G. Ghorbaniasl, Vrije Universiteit Brussel, Brussels, Belgium			

Wednesday, 7 June 2017						
218-MST-5	Modeling and Simulation Issues for Aerodynamics and Propulsion					Plaza Court 6
Chaired by: A. ELMILIGUI, NASA Langley Research Center and D. KEATING, The Charles Stark Draper Laboratory, Inc.						
0930 hrs AIAA-2017-3828 **Modeling Flow Separation for Real-Time Flight Simulation Using Vortex Methods** K. Loftfield, R. Luckner, Technical University of Berlin, Berlin, Germany	1000 hrs AIAA-2017-3829 **Modeling and simulation of high-speed aircraft direction rectification using co-simulation method** Q. Yin, H. Nie, X. Wei, J. Li, Nanjing University of Aeronautics and Astronautics, Nanjing, China	1030 hrs AIAA-2017-3830 **Validation of a System Theory Model for Aircraft Engine Simulation** K. Dwinger, J. Friedrichs, Technical University of Braunschweig, Braunschweig, Germany	1100 hrs AIAA-2017-3831 **Integrated model and matching control of turbo shaft triple engines with helicopter rotor** R. Shi, J. Zhou , Q. Zhang , X. Pi, Q. Wen, China Aviation Powerplant Research Institute, Zhuzhou, China; S. Fan, Northwestern Polytechnical University, Xi'an, China			

Wednesday, 7 June 2017						
219-PDL-5	Diagnostics and Experimental Techniques I: Aero-Optics					Denver
Chaired by: M. RENNIE, University of Notre Dame						
0930 hrs AIAA-2017-3832 **Effects of Acoustic Waves on Optical Wavefronts in Flight on AAOL-T** N. De Lucca, S. Gordeyev, E. Jumper, University of Notre Dame, Notre Dame, IN; D. Wittich, Air Force Research Laboratory, Kirtland AFB, NM	1000 hrs AIAA-2017-3833 **Three-Dimensional Measurement of Fluid Density Distribution** J. Wells, M. Rennie, University of Notre Dame, Notre Dame, IN; J. Riley, D. Goorskey, MZA Associates Corporation, Dayton, OH	1030 hrs AIAA-2017-3834 **A Spectral Description of Aero-Optical Phase Distortions and the Effects of Turbulent Flow Scales** E. Mathews, K. Wang, M. Wang, E. Jumper, University of Notre Dame, Notre Dame, IN	1100 hrs AIAA-2017-3835 **Studies of Density Fields in Non-Adiabatic Boundary Layers Using Wavefront Sensors** J. Sontag, S. Gordeyev, University of Notre Dame, Notre Dame, IN	1130 hrs AIAA-2017-3836 **Effect of Modeling Hypersonic Flow Physics on Electro-Optical Sensor Assessment** L. Mackey, I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI; T. Leger, Ohio Aerospace Institute, Wright-Patterson AFB, OH; R. Gosse, K. Vogiatzis, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Wednesday, 7 June 2017		
220-RLA-3 0930 - 1100 hrs	Rising Leaders in Aerospace Panel Session - Your Next Move: How to Build a Strong Foundation for Long-Term Career Success	Grand Ballroom II

Moderator: Ben Marchionna, Skyspecs
Panelists:

Erin Fischer
Engineer
Flight Control Systems (XB-1 supersonic demonstrator)
Boom Technology

Greg Krauland
Technical Program Manager (XB-1 Program)
Boom Technology

Charlie Hoffert
Structures Design Engineer
Boom Technology

Wednesday, 7 June 2017						
221-TFM-7/APA-28	Multi-Phase Flows					Spruce
Chaired by: J. HARTWIG, NASA Glenn Research Center and R. KREEGER, NASA Glenn Research Center						
0930 hrs AIAA-2017-3837 **Wall Lubrication Force Models for Bubbly Two-Phase Flow Simulation** X. Yang, O. Peroomian, Metacomp Technologies, Inc., Agoura Hills, CA	1000 hrs AIAA-2017-3838 **Computational modeling and experimental investigation of gas bubble (drop) behavior using surface tension and cohesive angle change under decreased gravity** M. Shoikhedbrod, Electromagnetic Impulse, Inc., North York, Canada	1030 hrs AIAA-2017-3839 **Computational modeling and experimental investigation of gas bubble (drop) behavior under decreased gravity and microgravity conditions** M. Shoikhedbrod, Electromagnetic Impulse, Inc., North York, Canada	1100 hrs AIAA-2017-3840 **The generalized Onsager model for a binary gas mixture with swirling feed** S. Pradhan, Indian Institute of Science, Bengaluru, India			

Wednesday, 7 June 2017		
222-D4U-2 0800 - 1830 hrs	**DEMAND for UNMANNED®**	

Demand for Unmanned® Host: I. J. Hudson, former Technology Reporter, NBC4 Washington (WRC-TV)

0800–0900 hrs
Plaza Ballroom

Beyond the Robots: Toward Situated Autonomy
Speaker: David Mindell, Founder and CEO, Humatics Corporation, and Professor, Massachusetts Institute of Technology

0930–1130 hrs
Grand Ballroom I

Human-Machine Interaction

Moderator: Dale Richards, Senior Research Fellow, Human Factors, Coventry University
Panelists:

Danette Allen
NASA Senior Technologist for Intelligent Flight Systems
NASA Langley Research Center

Andrew Lacher
Senior Principal
Unmanned and Autonomous Research Strategist
The MITRE Corporation

David Mindell
Founder and CEO, Humatics Corporation
Professor, Massachusetts Institute of Technology

1400–1530 hrs
Grand Ballroom II

Solutions to UAS Air Traffic Management (UTM) Challenges
Participants include the DEMAND for Unmanned Host IJ Hudson; John Cavolowsky, the NASA Airspace Operations and Systems Program Director, and participants from the NASA UTM team live via webcast from NASA Ames Research Center.

1600–1730 hrs
Tower Court A

UAS Airship Carrier Concepts: CONOPS for Long-Duration Airborne UAS Operations

Panelists:

Michael O'Neal
Director of Modeling and Simulation
U.S. Marine Corps Systems Command

Oleg Yakimenko
Director
Autonomous Systems Engineering and Integration Laboratory at the Systems Engineering Department
Naval Postgraduate School

Paul Adams
Airship Pilot
TP-Aerospace Inc.

1730–1830 hrs
South Convention Lobby

DEMAND for UNMANNED & Transformational Electric Flight Workshop Reception

For program updates, visit www.aviation.aiaa.org/DEMANDforUNMANNED

Wednesday, 7 June 2017		
223-LNCH-2 1230 - 1400 hrs	**Award Luncheon — Celebrating Achievements in Aircraft and Atmospheric Systems**	**Plaza Ballroom**

A ticket for the luncheon is required and included in the registration fee where where indicated. Additional tickets for guests may be purchased upon registration, or on site as space is available. The following awards will be presented: Chanute Flight Test Award, Hap Arnold Award For Excellence in Aeronautical Program Management, Otto C. Winzen Lifetime Achievement Award, Theodor W. Knacke Aerodynamic Decelerator Systems Award, Sustained Service Award

Wednesday, 7 June 2017						
224-AA-37	**Advanced Testing Techniques I**					**Plaza Court 7**
Chaired by: C. SPEHR, DLR - German Aerospace Center and C. BAHR, NASA-Langley Research Center						
1400 hrs AIAA-2017-3841 **High-Resolution CLEAN-SC: Theory and Experimental Validation** P. Sijtsma, Pieter Sijtsma Advanced AeroAcoustics, Wezep, The Netherlands; R. Merino Martinez, A. Malgoezar, M. Snellen, Delft University of Technology, Delft, The Netherlands	1430 hrs AIAA-2017-3842 **Microphone localization with self calibrating acoustic GPS** D. Ernst, T. Ahlefeldt, S. Haxter, C. Spehr, German Aerospace Center (DLR), Göttingen, Germany	1500 hrs AIAA-2017-3843 **Compressive sensing based mode detection method for duct spinning mode** W. Yu, Z. Ma, Peking University, Beijing, China; X. Huang, Hong Kong University of Science and Technology, Hong Kong, Hong Kong	1530 hrs AIAA-2017-3844 **Measurements of the noise emitted by the V2500 engines in flight and in static measurements on the ground** H. Siller, A. Bassetti, W. Hage, German Aerospace Center (DLR), Berlin, Germany; S. Funke, Rolls-Royce Group plc, Dahlewitz, Germany	1600 hrs AIAA-2017-3845 **Ground Effects For Aircraft Noise Certification** M. Albert, P. Bousquet, D. Lizarazu, Airbus, Toulouse, France		

Wednesday, 7 June 2017						
225-AA-38	**CAA VII**					**Plaza Court 8**
Chaired by: F. HU, Old Dominon University and D. MINCU, ONERA						
1400 hrs AIAA-2017-3846 **Trailing-edge noise prediction using synthetic turbulence and acoustic perturbation equations in a hybrid methodology** A. Kadar, P. Martinez-Lera, Siemens, Leuven, Belgium; C. Schram, von Kármán Institute for Fluid Dynamics, Chaussee de Waterloo, Belgium; W. De Roeck, W. Desmet, Catholic University of Leuven, Leuven, Belgium; M. Tournour, Siemens, Leuven, Belgium	1430 hrs AIAA-2017-3847 **Numerical study on Multiple Pure Tones in a thin annular duct with impact of inflow distortion** M. Staggat, S. Guerin, A. Moreau, A. Holewa, German Aerospace Center (DLR), Berlin, Germany	1500 hrs AIAA-2017-3848 **Investigation into the sources of trailing edge noise using the Acoustic Perturbation Equations, LES, and RANS-based FRPM technique** S. Proskurov, A. Markesteijn, Queen Mary University of London, London, United Kingdom; V. Semiletov, University of Cambridge, Cambridge, United Kingdom; S. Karabasov, Queen Mary University of London, London, United Kingdom	1530 hrs AIAA-2017-3849 **Efficient prediction of aeroacoustic scattering in the frequency domain** L. Siozos-Rousoulis, G. Masure, Z. Huang, T. De Troyer, G. Ghorbaniasl, Vrije Universiteit Brussel, Brussels, Belgium	1600 hrs AIAA-2017-3850 **POD Reduced-Order Model for Aeroacoustic Applications** R. Arina, Technical University of Turin, Turin, Italy		

Wednesday, 7 June 2017						
226-AA-39	**Jet Noise VII: CFD Subsonic**					**Governor's Square 12**
Chaired by: S. KARABASOV, Queen Mary University of London and C. BOGEY, Ecole Centrale de Lyon						
1400 hrs AIAA-2017-3851 **Reynolds number dependence on the flow and acoustic fields of temporal round jets at Mach 0.9** C. Bogey, École Centrale de Lyon, Ecully, France	1430 hrs AIAA-2017-3852 **GPU CABARET Solutions for the NASA SHJAR Jet Noise Experiment: Flow and Noise Modeling** A. Markesteijn, S. Karabasov, Queen Mary University of London, London, United Kingdom	1500 hrs AIAA-2017-3853 **Numerical analysis of chevron nozzle noise** V. Pauz, A. Niemoeller, M. Meinke, W. Schroeder, RWTH Aachen University, Aachen, Germany	1530 hrs AIAA-2017-3854 **LES-RANS of installed ultra-high bypass-ratio coaxial jet aeroacoustics with a finite span wing-flap geometry and flight stream - Part 1: round nozzle** J. Tyacke, Z. Wang, P. Tucker, University of Cambridge, Cambridge, United Kingdom	1600 hrs AIAA-2017-3855 **LES-RANS of installed ultra-high bypass-ratio coaxial jet aeroacoustics with a finite span wing-flap geometry and flight stream – Part 2: chevron nozzle** Z. Wang, J. Tyacke, P. Tucker, University of Cambridge, Cambridge, United Kingdom	1630 hrs AIAA-2017-3856 **Jet Noise Simulations Using Quasi-1D Schemes on Unstructured Meshes** A. Duben, T. Kozubskaya, Russian Academy of Sciences, Moscow, Russia	1700 hrs AIAA-2017-3857 **Noise Reduction for an Unheated Mach 0.9 Jet by Fluidic Injection** P. Rajput, New York University, New York, NY; S. Kumar, New York University, Abu Dhabi, United Arab Emirates; I. Kalkhoran, New York University, New York, NY

Wednesday, 7 June 2017						
227-AA-40	**Jet Noise VIII: Experiments**					**Governor's Square 10**
Chaired by: K. ZAMAN, NASA Glenn Research Center and D. MCLAUGHLIN						
1400 hrs AIAA-2017-3858 **Jet Noise Source Location by Acoustic Beamforming and Nearfield Sound Contours – A Comparison** N. Breen, K. Ahuja, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2017-3859 **Reduction of Jet Noise by the Nozzle-Exit Boundary Layer** A. Karon, K. Ahuja, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2017-3860 **Tones encountered with a coannular nozzle and a method for their suppression** K. Zaman, J. Bridges, A. Fagan, C. Miller, NASA Glenn Research Center, Cleveland, OH	1530 hrs AIAA-2017-3861 **Reynolds Number and the Jet Noise Scaling Relationships** A. Karon, K. Ahuja, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2017-3862 **Aeroacoustic Analysis of a Mach 0.9 Round Jet using Synchronized Microphone Array and Shake-The-Box 3D Lagrangian Particle Tracking Measurements** N. Depuru Mohan, University of Cambridge, Cambridge, United Kingdom; P. Manovski, Department of Defence, Melbourne, Australia; R. Geisler, J. Agocs, T. Ahlefeldt, M. Novara, German Aerospace Center (DLR), Göttingen, Germany; et al.	1630 hrs AIAA-2017-3863 **Azimuthal variation of Near Field Pressure Fluctuations due to Chevron in Compressible Jet** S. Nikam, K.J. Somaiya College of Engineering, Mumbai, India; S. Sharma, Indian Institute of Technology Bombay, Mumbai, India	1700 hrs AIAA-2017-3864 **Measurement and analysis of phased array data on haystacked tones from a source located in a free jet** B. Tester, University of Southampton, Southampton, United Kingdom; P. Sijtsma, Pieter Sijtsma Advanced AeroAcoustics, Wezep, The Netherlands

Wednesday, 7 June 2017						
228-AA-41	**Propeller, Rotorcraft and V/STOL Noise II**					**Plaza Court 5**
Chaired by: H. BROUWER						
1400 hrs AIAA-2017-3865 **Applicability of Early Acoustic Theory for Modern Propeller Design** M. Kotwicz Herniczek, D. Feszty, Carleton University, Ottawa, Canada; S. Mesliou, J. Park, Pratt & Whitney, Longueuil, Canada	1430 hrs AIAA-2017-3866 **Effect of Rotation on the 3D Boundary Layer around a Propeller Blade** B. Marinus, Royal Military Academy, Brussels, Belgium; H. Akila, National Polytechnic School, Algiers, Algeria; L. Constantin, S. Cracana, Military Technical Academy, Bucharest, Romania	1500 hrs AIAA-2017-3867 **Bio-Inspired Finlets for the Reduction of Marine Rotor Noise** I. Clark, W. Alexander, W. Devenport, Virginia Polytechnic Institute and State University, Blacksburg, VA	1530 hrs AIAA-2017-3868 **The Ingestion of Wake Turbulence into an Open Rotor** N. Molinaro, A. Balantrapu , C. Hickling, W. Alexander, W. Devenport, Virginia Polytechnic Institute and State University, Blacksburg, VA; S. Glegg, Florida Atlantic University, Boca Raton, FL	1600 hrs AIAA-2017-3869 **Influence of Blade Deformations on Open-Rotor Low-Speed and High-Speed Aerodynamics and Aeroacoustics** F. Falissard, ONERA, Meudon, France; A. Chelius, ONERA, Châtillon, France; R. Boisard, R. Gaveriaux, ONERA, Meudon, France; S. Canard-Caruana, ONERA, Châtillon, France; G. Delattre, ONERA, Meudon, France; et al.	1630 hrs AIAA-2017-3870 **Development of a Hybrid Method for the Prediction of Advanced Open Rotor Tone Noise** C. Ekoule, A. McAlpine, A. Parry, University of Southampton, Southampton, United Kingdom; M. Kingan, University of Auckland, Auckland, New Zealand; N. Sohoni, Cambridge University, Cambridge, United Kingdom	

Wednesday, 7 June 2017						
229-AA-42	**Turbomachinery Noise V**					**Governor's Square 11**
Chaired by: E. ENVIA, NASA Glenn Research Center and S. GRACE, Boston University						
1400 hrs AIAA-2017-3871 **Modelling Fan Noise Produced by Downstream Mounting Structural Blockage** A. Kozlov, H. Atassi, University of Notre Dame, Notre Dame, IN; A. Ali, D. Topol, Pratt & Whitney, East Hartford, CT	1430 hrs AIAA-2017-3872 **Evaluating the Acoustic Benefits of Over-the-Rotor Acoustic Treatments Installed on the Advanced Noise Control Fan** M. Gazella, Air Force Research Laboratory, Wright-Patterson AFB, OH; T. Takakura, University of Notre Dame, Notre Dame, IN; D. Sutliff, R. Bozak, NASA Glenn Research Center, Cleveland, OH; B. Tester, University of Southampton, Southampton, United Kingdom	1500 hrs AIAA-2017-3873 **Analysis of the Acoustic Field of a Ducted Axial Fan** S. Alavi Moghadam, M. Meinke, W. Schroeder, RWTH Aachen University, Aachen, Germany	1530 hrs AIAA-2017-3874 **Effect of Temperature Variations on the Acoustic Properties of Engine Liners** A. Hazir, D. Casalino, Exa GmbH, Stuttgart, Germany	1600 hrs AIAA-2017-3875 **Unsteady Simulations of a Fan/Outlet-Guide-Vane System. Part 1: Aerodynamics and Turbulence** M. Shur, M. Strelets, A. Travin, New Technologies and Services, St. Petersburg, Russia; P. Spalart, T. Suzuki, The Boeing Company, Seattle, WA	1630 hrs AIAA-2017-3876 **Unsteady Simulations of a Fan/Outlet-Guide-Vane System. Part 2: Tone Noise Computation** T. Suzuki, P. Spalart, The Boeing Company, Seattle, WA; M. Shur, M. Strelets, A. Travin, St. Petersburg State Polytechnic University, St. Petersburg, Russia	

Wednesday, 7 June 2017						
230-ADS-9	**Aerodynamic Decelerator Systems: Precision Aerial Delivery III**					**Majestic Ballroom**
Chaired by: T. FIELDS, University of Missouri-Kansas City and T. JANN, DLR - German Aerospace Center						
1400 hrs AIAA-2017-3877 **Euler Elastica Terminal Parafoil Guidance** P. Handley, B. Streetman, M. Neave, Draper Laboratory, Cambridge, MA; K. Bergeron, G. Noetscher, Army Research, Development and Engineering Command, Natick, MA	1430 hrs AIAA-2017-3878 **Comparison of Parafoil Dynamic Modes with Varying Payload Connections** N. Slegers, George Fox University, Newberg, OR	1500 hrs AIAA-2017-3879 **Probability of Collision between Guided Parafoil Systems and an Open Loop Deconfliction Solution** B. Streetman, S. Lim, M. Neave, Draper Laboratory, Cambridge, MA	1530 hrs AIAA-2017-3880 **A New Type of Airflow Sensor for Gliding Parachutes** T. Jann, C. Greiner-Perth, German Aerospace Center (DLR), Braunschweig, Germany	1600 hrs AIAA-2017-3881 **Wind Modeling for Airdrop Simulation** A. Cinnamon, Dayton Analytics, Dayton, OH; J. Mudrak, KBR Wyle, Dayton, OH; A. Gilkey, Infoscitex Corporation, Dayton, OH	1630 hrs AIAA-2017-3882 **Energy Harvesting for Parafoil and Payload Aircraft Systems** M. Dowling, M. Costello, Georgia Institute of Technology, Atlanta, GA	

Wednesday, 7 June 2017						
231-ADS-10	**Aerodynamic Decelerator Systems: Materials and Testing**					**Vail**
Chaired by: M. WARD and H. ALTMANN, Airbus Defence and Space GmbH						
1400 hrs AIAA-2017-3883 **Bleed Air Control: Towards the Complete In-Canopy System for Autonomous Aerial Delivery** E. Scheuermann, M. Ward, M. Costello, Earthly Dynamics Corporation, Atlanta, GA; K. Bergeron, G. Noetscher, Army Research, Development and Engineering Command, Natick, MA	1430 hrs AIAA-2017-3884 **A 100 ft Cargo Parachute System Employing Radial Reefing, Inlet Parachute, and Modular Canopy Construction** J. Watkins, M. Kandis, Pioneer Aerospace Corporation, South Windsor, CT; R. Fox, Fox Parachute Services, LLC, Belleville, WV; B. Rooney, Army Research, Development and Engineering Command, Natick, MA	1500 hrs AIAA-2017-3885 **Feasibility of a Flying Wing-based Aerial Delivery Vehicle** T. Kraft, T. Fields, University of Missouri, Kansas City, Kansas City, MO; O. Yakimenko, Naval Postgraduate School, Monterey, CA	1530 hrs AIAA-2017-3886 **On the Development of the Integrated Simulation Environment and Cost-Efficient Micro AGU for Self-Guided Parachutes** J. Moore, JM Technologies, LLC, Tucson, AZ; O. Yakimenko, Naval Postgraduate School, Monterey, CA	1600 hrs AIAA-2017-3887 **Physics Based Modeling of Fibrous High Porosity Insulation Materials Using Compartive Cut-Bar Experimentation** M. Irvan, J. Maddox, C. Barrow, A. Keen, University of Kentucky, Paducah, Paducah, KY	1630 hrs AIAA-2017-3888 **Aircraft Wing Tip Vortex Testing Methodology, Simulation and Analysis Techniques** K. Allen, Yuma Proving Ground, Yuma Proving Ground, AZ	

Wednesday, 7 June 2017						
232-AFM-4	**Unmanned Aerial Systems II**					**Governor's Square 17**
Chaired by: C. KARLGAARD, Analytical Mechanics Associates Inc						
1400 hrs AIAA-2017-3889 **A Biomimemic Energy-Conserving/ Harvesting Trajectory Planning for a sUAV** S. Gudmundsson, V. Golubev, S. Drakunov, C. Reinholtz, Embry-Riddle Aeronautical University, Daytona Beach, FL	1430 hrs AIAA-2017-3890 **UAS for Three Dimensional Wind Measurements** G. Donnell, J. Feight, J. Jacob, Oklahoma State University, Stillwater, OK	1500 hrs AIAA-2017-3891 **Control and Flight Testing of a Miniature Compound Autogyro** N. Liu, Z. Cai, Y. Ma, Y. Wang, Beihang University, Beijing, China				

Wednesday, 7 June 2017						
233-AFM-5/FT-5	**Flight Testing and System Identification**					**Governor's Square 15**
Chaired by: J. GRAUER, NASA Langley Research Center and K. SHWEYK, Boeing Engineering Operations & Technology						
1400 hrs AIAA-2017-3892 **A Tool-kit for Rotorcraft Regime Recognition Codes Validation** S. Ayyalasomayajula, N. Nigam, P. Chen, Intelligent Automation, Inc., Rockville, MD; A. Sridharan, I. Chopra, University of Maryland, College Park, College Park, MD	1430 hrs AIAA-2017-3893 **Adaptive State Estimation for Flight Path Reconstruction and Aircraft System Identification** G. Moszczynski, P. Grant, University of Toronto, Toronto, Canada	1500 hrs AIAA-2017-3894 **Experimental Investigation of Optimal Gap Distance between Rotors of a Quadrotor UAV** D. Kaya, A. Kutay, O. Tekinalp, Middle East Technical University, Ankara, Turkey	1530 hrs AIAA-2017-3895 **Airdata calibration using error state filter** K. Chandrasekaran, S. Jain, Y. Yarlagadda, National Aerospace Laboratories, Bangalore, India; A. Saraf, Aeronautical Development Agency, Bangalore, India	1600 hrs AIAA-2017-3896 **Longitudinal Aircraft Parameter Estimation Using Neuro-Fuzzy and Genetic Algorithm Based Method** A. Ghosh Roy , N. Peyada, Indian Institute of Technology Kharagpur, Kharagpur, India		

Wednesday, 7 June 2017						
234-AMT-7	**Gas Scalar Measurements, Molecular Tagging Velocimetry, and Thermometry**					**Director's Row E**
Chaired by: T. MEYER, Purdue University and T. IOPPOLO, Southern Methodist University						
1400 hrs AIAA-2017-3897 **Krypton Tagging Velocimetry in the Stevens Shock Tube** M. Mustafa, N. Parziale, Stevens Institute of Technology, Hoboken, NJ	1430 hrs AIAA-2017-3898 **High-Pressure Spontaneous Raman Scattering Based Temperature Measurements** T. Haller, H. Reising, N. Clemens, P. Varghese, University of Texas, Austin, Austin, TX	1500 hrs AIAA-2017-3899 **An experimental and theoretical investigation of femtosecond laser excitation in $N_2 + O_2$ mixtures** Y. Zhang, M. Shneider, R. Miles, Princeton University, Princeton, NJ	1530 hrs AIAA-2017-3900 **Detection of iron and aluminum atomic vapors by LIF technique : application to solid propellant combustion** G. Vilmart, N. Dorval, B. Attal-Tretout, A. Bresson, ONERA, Palaiseau, France	1600 hrs AIAA-2017-3901 **High-Spatial-Resolution OH PLIF Visualization in a Cavity-Stabilized Ethylene-Air Turbulent Flame** C. Geipel, R. Rockwell, H. Chelliah, University of Virginia, Charlottesville, Charlottesville, VA; A. Cutler, C. Spelker, Z. Hashem, George Washington University, Washington, D.C.; et al.	1630 hrs AIAA-2017-3902 **Spatially Resolved Atomic Hydrogen Concentration Measurements in Sooting Hydrocarbon Flames Using Femtosecond Two-Photon LIF** A. Jain, Y. Wang, W. Kulatilaka, Texas A&M University, College Station, TX	

Wednesday, 7 June 2017						
235-APA-29	**Unsteady Aerodynamics**					**Century**
Chaired by: K. VANDEN, USAF and M. SCHOENENBERGER, NASA Langley Research Center						
1400 hrs AIAA-2017-3903 **Study of Three-Dimensional Transonic Buffet on Swept Wings** F. Plante, École Polytechnique de Montréal, Montréal, Canada; J. Dandois, F. Sartor, ONERA, Meudon, France; E. Laurendeau, École Polytechnique de Montréal, Montréal, Canada	1430 hrs AIAA-2017-3904 **A Practical Application of an Unsteady Formulation of the Kutta-Joukowski Theorem** J. Cole, Bucknell University, Lewisburg, PA; M. Maughmer, Pennsylvania State University, University Park, PA; G. Bramesfeld, Ryerson University, Toronto, Canada; M. Kinzel, Pennsylvania State University, University Park, PA	1500 hrs AIAA-2017-3905 **Efficient Evaluation of Dynamic Response Data with a Linearized Frequency Domain Solver at Transonic Separated Flow Condition.** M. Widhalm, German Aerospace Center (DLR), Braunschweig, Germany; R. Thormann, University of Liverpool, Liverpool, United Kingdom	1530 hrs AIAA-2017-3906 **Reduced Order Modelling of Aircraft Gust Response for Use in Early Design Stages** S. Williams, D. Jones, A. Gaitonde, C. Wales, S. Huntley, University of Bristol, Bristol, United Kingdom	1600 hrs AIAA-2017-3907 **Effect of Unsteady Aerodynamics on Drivability of Road Vehicles using LES and Modal Analysis** J. Ikeda, Hokkaido University, Sapporo, Japan; M. Tsubokura, Kobe University, Kobe, Japan; T. Hasegawa, R. Kobayashi, Subaru Corporation, Ota, Japan		

Wednesday, 7 June 2017						
236-APA-30	**Flow Control Applications and Demonstrations IV**					**Silver**
Chaired by: J. FREEMAN, Air Force Institute of Technology and P. ANSELL, University of Illinois at Urbana-Champaign						
1400 hrs AIAA-2017-3908 **Numerical Analysis of Pylon-Blowing Systems for Pusher-Propeller Applications** A. Jindal, T. Sinnige, S. Hulshoff, L. Veldhuis, Delft University of Technology, Delft, The Netherlands	1430 hrs AIAA-2017-3909 **Numerical Assessment of Virtual Control Surfaces for Compressor Blades** V. Motta, L. Malzacher, D. Peitsch, Technical University of Berlin, Berlin, Germany	1500 hrs AIAA-2017-3910 **Lift Augmentation by Thermal Forcing at the Trailing Edge** S. Vashishtha, M. Baig, N. Hasan, Aligarh Muslim University, Aligarh, India	1530 hrs AIAA-2017-3911 **Shock Boundary Layer Interaction Control in Supersonic Intake using Cavity with Porous Surface.** H. G, M. Kaushik, K. Sinhamahapatra, Indian Institute of Technology Kharagpur, Kharagpur, India	1600 hrs AIAA-2017-3912 **Passive Control of Normal-shock-wave/Boundary-layer Interaction Using Porous Medium: Computational Study** S. Roy, K. Subramaniam, S. Ghosh, Indian Institute of Technology Madras, Chennai, India	1630 hrs AIAA-2017-3913 **Computational Optimization Under Uncertainty of an Active Flow Control Jet** L. Welch, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Freeman, Air Force Institute of Technology, Wright-Patterson AFB, OH; P. Beran, Air Force Research Laboratory, Wright-Patterson AFB, OH	

Wednesday, 7 June 2017						
237-APA-31	**Propeller Aerodynamics III**					**Colorado**
Chaired by: J. CODER, University of Tennessee and N. RAJMOHAN , Aerion Corporation						
1400 hrs AIAA-2017-3914 **Effect of Blade Shape Accuracy on Counter Rotating Open Rotor Aerodynamic and Acoustics** R. Boisard, F. Falissard, A. Chelius, Y. Mauffrey, ONERA, Palaiseau, France	1430 hrs AIAA-2017-3915 **Comparison Between Coupled CFD/CSM Hot Shape Prediction and AIPX-7 CROR Experimental Data** Y. Mauffrey, A. Geeraert, S. Verley, ONERA, Châtillon, France	1500 hrs AIAA-2017-3916 **Propeller simulations using an overset technique based on geometric intersections** B. Mohamed, M. Jubera, T. Duhil De Benaze, G. Pont, P. Brenner, Airbus, Les Mureaux, France	1530 hrs AIAA-2017-3917 **Acoustic Prediction of High Speed Propeller Noise Using URANS and a Ffowcs Williams-Hawkings Solver** J. Hambrey, D. Feszty, Carleton University, Ottawa, Canada; S. Mesliovi, J. Park, Pratt & Whitney, Montréal, Canada	1600 hrs AIAA-2017-3918 **Multiple Fidelity Modeling of Interactional Aerodynamics** A. Mishra, B. Davoudi, K. Duraisamy, University of Michigan, Ann Arbor, Ann Arbor, MI	1630 hrs AIAA-2017-3919 **The Collaborative Development of New CFD Methods Adapted for Tilt Rotor Aircraft in the HiPerTilt Project** F. Dehaeze, Leonardo Helicopters, Yeovil, United Kingdom; C. Allen, University of Bristol, Bristol, United Kingdom; G. Barakos, University of Glasgow, Glasgow, United Kingdom	

Wednesday, 7 June 2017						
238-APA-32	**Solar and Electric Propulsion Aircraft Applications**					**Gold**
Chaired by: J. MILGRAM, NSWC Carderock Div.						
1400 hrs AIAA-2017-3920 **Low-Cost High-Endurance Solar-Powered Unmanned Aerial Vehicle** J. Rosales, A. Gross, New Mexico State University, Las Cruces, NM	1430 hrs AIAA-2017-3921 **Computational Analysis of Powered Lift Augmentation for the LEAPTech Distributed Electric Propulsion Wing** K. Deere, S. Viken, M. Carter, J. Viken, NASA Langley Research Center, Hampton, VA; M. Wiese, N. Farr, Craig Technologies, Cape Canaveral, FL	1500 hrs AIAA-2017-3922 **Design of the Cruise and Flap Airfoil for the X-57 Maxwell Distributed Electric Propulsion Aircraft** J. Viken, S. Viken, K. Deere, M. Carter, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2017-3923 **Computational Analysis of a Wing Designed for the X-57 Distributed Electric Propulsion Aircraft** K. Deere, J. Viken, S. Viken, M. Carter, NASA Langley Research Center, Hampton, VA; M. Wiese, N. Farr, Craig Technologies, Cape Canaveral, FL	1600 hrs AIAA-2017-3924 **An Investigation into the Potential Benefits of Distributed Electric Propulsion on Small UAV's at Low Reynolds Numbers** E. Baris, D. Landman, Old Dominion University, Norfolk, VA	1630 hrs AIAA-2017-3925 **Comparison of High-Fidelity Computational Tools for Wing Design of a Distributed Electric Propulsion Aircraft** K. Deere, S. Viken, M. Carter, J. Viken, J. Derlaga, NASA Langley Research Center, Hampton, VA; A. Stoll, Joby Aviation, Santa Cruz, CA	

Wednesday, 7 June 2017						
239-ASE-6	**Experimental Methods for Icing Applications**					**Columbine**
Chaired by: A. WORK and G. BOTURA, United Technologies Aerospace Systems						
1400 hrs AIAA-2017-3926 **Altitude Scaling of Thermal Ice Protection Systems in Running Wet Operation** D. Orchard, National Research Council Canada, Ottawa, Canada; H. Addy, NASA Glenn Research Center, Cleveland, OH; W. Wright, Vantage Partners, LLC, Cleveland, OH; J. Tsao, Ohio Aerospace Institute, Cleveland, OH	1430 hrs AIAA-2017-3927 **Evaluation of Alternative Altitude Scaling Methods for Thermal Ice Protection System in NASA Icing Research Tunnel** S. Lee, Vantage Partners, LLC, Cleveland, OH; H. Addy, A. Broeren, NASA Glenn Research Center, Cleveland, OH; D. Orchard, National Research Council Canada, Ottawa, Canada	1500 hrs AIAA-2017-3928 **Measurements of Ice Adhesion over Ice Mitigation Coatings Pertinent to Aircraft Icing and Anti-/De-Icing** P. Beeram, R. Waldman, H. Hu, Iowa State University, Ames, IA	1530 hrs AIAA-2017-3929 **Evaluation of Low Altitude Icing Conditions for Small Unmanned Aircraft** A. Avery, J. Jacob, Oklahoma State University, Stillwater, OK	1600 hrs AIAA-2017-3930 **Icing Certification of Korean Utility Helicopter KUH-1: Artificial Icing Flight Test** S. van 't Hoff, J. van der Vorst, National Aerospace Laboratory (NLR), Amsterdam, The Netherlands; R. Flemming, Self, Trumbull, CT; D. Parkins, American Kestrel Company, Ithaca, NY	1630 hrs AIAA-2017-3931 **Experimental Study of the Dynamics of Water Film on an Aluminum Substrate under Wind Shear** M. Leng, S. Chang, Beihang University, Beijing, China; Y. Lian, University of Louisville, Louisville, KY; H. Wu, University of Hertfordshire, Hatfield, United Kingdom	

Wednesday, 7 June 2017						
240-ATIO.ATM-11	**Future ATM Concepts**					**Plaza Court 2**
Chaired by: B. HOLGUIN, Federal Aviation Administration						
1400 hrs AIAA-2017-3932 **Characterization of Metering, Merging and Spacing Requirements for Future Trajectory-Based Operations** S. Johnson, Adaptive Aerospace Group, Inc., Hampton, VA	1430 hrs AIAA-2017-3933 **Pairwise Trajectory Management (PTM): Concept Overview** K. Jones, T. Graff, National Institute of Aerospace, Hampton, VA; R. Chartrand, NASA Langley Research Center, Hampton, VA; V. Carreno, National Institute of Aerospace, Hampton, VA; J. Kibler, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2017-3934 **A Value Operations Methodology Framework to Strategically Rank Sustainable Airport Innovations** R. Curran, J. Knoester, E. Bavelaar, Delft University of Technology, Delft, The Netherlands	1530 hrs AIAA-2017-3935 **Value Operations Methodology Applied to Airport of the Future Concepts Assessment** R. Curran, A. Canet Sentis, Delft University of Technology, Delft, The Netherlands			

Wednesday, 7 June 2017						
241-ATIO.ATM-12	**UAS Operations I**					**Plaza Court 1**
Chaired by: V. SCHULTZ, NASA Langley Research Center						
1400 hrs AIAA-2017-3936 **Linear Program and Simulation Model for Aerial Package Delivery: A Case Study of Amazon Prime Air in Phoenix, AZ** L. Vempati, R. Crapanzano, C. Woodyard, C. Trunkhill, Embry-Riddle Aeronautical University, Daytona Beach, FL	1430 hrs AIAA-2017-3937 **DAIDALUS Results from UAS in the NAS Flight Test 4** M. Vincent, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2017-3938 **Low Level RPAS Traffic Management (LLRTM) Concept of Operation** C. Le Tallec, P. Le Blaye, ONERA, Palaiseau, France; M. Kasbari, Drones Innovation Consulting Technics (DICT), Pourrières, France	1530 hrs AIAA-2017-3939 **Attitudes toward UAV integration into the National Airspace System** D. Richards, S. Edgell, Coventry University, Coventry, United Kingdom			

Wednesday, 7 June 2017						
242-ATIO.DE-1/ATIO.ACD-6	**Design Tools and Optimization**					**Governor's Square 16**
Chaired by: P. JANSEN, Royal Military College of Canada and N. HINES, The Boeing Company						
1400 hrs AIAA-2017-3940 **Conceptual Fuselage Design with Direct CAD Modeling** B. Anderson, T. Takahashi, Arizona State University, Tempe, AZ	1430 hrs AIAA-2017-4397 **On the Design of a Strut-Braced Wing Configuration in a Collaborative Design Environment** E. Moerland, T. Pfeiffer, D. Böhnke, J. Jepsen, German Aerospace Center (DLR), Hamburg, Germany; S. Freund, C. Liersch, German Aerospace Center (DLR), Braunschweig, Germany; et al.	1500 hrs AIAA-2017-3941 **Two Variations to the Map L-Systems-based Topology Optimization Method** T. Ikonen, A. Sobester, University of Southampton, Southampton, United Kingdom	1530 hrs AIAA-2017-3942 **Updating Elicited Expert Judgements Using a Bayesian Framework** B. Profir, M. Eres, J. Scanlan, University of Southampton, Southampton, United Kingdom; R. Bates, Rolls-Royce Group plc, Derby, United Kingdom	1600 hrs AIAA-2017-4395 **Model-Based Systems Engineering for the Design of Civil Aircraft Avionics System** X. Jiang, S. Zhu, J. Tang, Commercial Aircraft Corporation of China, Ltd. (COMAC), Shanghai, China		

Wednesday, 7 June 2017		
243-CASE-4 **1400 - 1700 hrs**	**Complex Adaptive Systems Approaches to Cybersecurity**	**Governor's Square 14**

Chair: Jimmie McEver, Senior Scientist, Asymmetric Operations Sector, Johns Hopkins University Applied Physics Laboratory

Panelists:

Tim Evans
Founder
Adlumin

Russ Syphert
Chief Information Security Officer/Vice President
Technology and Analytics
Cyber Business Analytics

Academic Scholar: Zina Ben Miled
Associate Professor
Electrical and Computer Engineering
Purdue University

Wednesday, 7 June 2017						
244-CFD-19	**Special Session: Towards Industrial LES and DNS for Aeronautics**					**Windows**
Chaired by: H. HUYNH, NASA Glenn Research Center and C. HIRSCH, Numeca, International S. A.						
1400 hrs Oral Presentation **Towards Industrial LES/DNS in Aeronautics – Paving the Way for Future Accurate CFD ---The TILDA EU Project** C. Hirsch, NUMECA International, Brussels, Belgium	1430 hrs AIAA-2017-3943 **Application of High-Order Discontinuous Galerkin Method to LES/DES Test Cases Using Computers with High Number of Cores** I. Bosnyakov, S. Mikhaylov, V. Podaruev, A. Troshin, V. Vlasenko, A. Wolkov, TsAGI, Zhukovsky, Russia	1500 hrs Oral Presentation **Optimised Runge-Kutta time integration for the Spectral Difference method** J. Vanharen, G. Puigt, J. Boussuge, A. Balan, CERFACS, Toulouse, France	1530 hrs Oral Presentation **Progress towards an industry-friendly LES capability** W. Dawes, Cambridge Flow Solutions Ltd, Histon, Cambridge, United Kingdom	1600 hrs Oral Presentation **Implicit high-order DG discretization of a hybrid RANS-LES model** F. Bassi, L. Botti, A. Colombo, University of Bergamo, Dalmine, Italy		

Wednesday, 7 June 2017						
245-CFD-20	**High-Order Discontinuous Galerkin Methods**					**Tower Court D**
Chaired by: P. ORKWIS, University of Cincinnati and L. KHIEU, Vietnamese-German University						
1400 hrs AIAA-2017-3944 **A high-order discontinuous-Galerkin octree-based AMR solver for overset simulations** M. Brazell, A. Kirby, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY	1430 hrs AIAA-2017-3945 **A *p*-Poisson wall distance approach for turbulence modeling** N. Wukie, P. Orkwis, University of Cincinnati, Cincinnati, OH	1500 hrs AIAA-2017-3946 **On the Necessity of Superparametric Geometry Representation for Discontinuous Galerkin Methods on Domains with Curved Boundaries** P. Zwanenburg, S. Nadarajah, McGill University, Montréal, Canada	1530 hrs AIAA-2017-3947 **A Chimera-based, zonal discontinuous Galerkin method** N. Wukie, P. Orkwis, University of Cincinnati, Cincinnati, OH; C. Schrock, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2017-3948 **High-Order DNS and LES Simulations Using an Implicit Tensor-Product Discontinuous Galerkin Method** W. Pazner, Brown University, Providence, RI; P. Persson, University of California, Berkeley, Berkeley, CA	1630 hrs AIAA-2017-3949 **A Riemann-solver-free Runge-Kutta Discontinuous Galerkin Method for Conservation Laws** S. Tu, Jackson State University, Jackson, MS	1700 hrs AIAA-2017-3950 **Recovery-based Discontinuous Galerkin for Diffusion on Triangular Grid** L. Khieu, Vietnamese-German University, Thu Dau Mot, Viet Nam; B. Van Leer, University of Michigan, Ann Arbor, Ann Arbor, MI

Wednesday, 7 June 2017						
246-CFD-21	**Turbulence Modeling I: RANS, PANS, LES**					**Tower Court C**
Chaired by: S. GIRIMAJI, Texas A&M University (career opp) and M. OLSEN, NASA Ames Research Center						
1400 hrs AIAA-2017-3951 **Impact of subgrid-scale modeling and numerical dissipation in Large-Eddy Simulation** P. Fernandez, N. Nguyen, J. Peraire, Massachusetts Institute of Technology, Cambridge, MA	1430 hrs AIAA-2017-3952 **Inspecting Interactions of Discretization, Filter Formulation, and Stabilization in LES: Lessons from the Taylor-Green Vortex** A. Edoh, A. Karagozian, University of California, Los Angeles, Los Angeles, CA	1500 hrs AIAA-2017-3953 **Wall–Modeled Large Eddy Simulation of Transonic Flow over an Axisymmetric Bump with Shock-Induced Separation** P. Iyer, National Institute of Aerospace, Hampton, VA; G. Park, Stanford University, Stanford, CA; M. Malik, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2017-3954 **Revised Reynolds-Stress and Triple Product Models** M. Olsen, NASA Ames Research Center, Moffett Field, CA; R. Lillard, NASA Johnson Space Center, Houston, TX	1600 hrs AIAA-2017-3955 **Transonic Buffet Prediction using Partially Averaged Navier-Stokes** V. Bonnifet, G. Gerolymos, I. Vallet, Pierre-and-Marie-Curie University, Paris, France	1630 hrs AIAA-2017-3956 **Simulations of Supersonic Flow over a Wall-Mounted Cylinder Using OVERFLOW with ILES** S. Sherer, P. Morgan, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	

Wednesday, 7 June 2017						
247-CFD-22/APA-33	**Numerical Simulations of Unsteady Aerodynamics**					**Tower Court B**
Chaired by: A. SHARMA, Iowa State University and S. SILTON, US Army Research Laboratory						
1400 hrs AIAA-2017-3957 **Airfoil Thickness Effects on Dynamic Stall Onset** A. Sharma, Iowa State University, Ames, IA; M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2017-3958 **Wind Farm Simulations Using an Overset hp-Adaptive Approach with Blade-Resolved Turbine Models** A. Kirby, M. Brazell, Z. Yang, R. Roy, B. Reza Ahrabi, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY; et al.	1500 hrs AIAA-2017-3959 **Numerical Investigation of Active Flow Control for Fan-In-Wing Configuration in Forward Flight** C. Sheng, Q. Zhao, University of Toledo, Toledo, OH	1530 hrs AIAA-2017-3960 **Computational Modelling of Wing Downwash Profile with Reynolds-Averaged and Delayed Detached-Eddy Simulations** K. Tan, University of Glasgow, Singapore, Singapore; P. Wang, Singapore Institute of Technology, Singapore, Singapore; S. Srigrarom, University of Glasgow, Singapore, Singapore	1600 hrs AIAA-2017-3961 **Computational Study of the Wake of a Quadcopter Propeller in Hover** O. Lopez, University of the Andes, Bogota, Colombia; J. Escobar, Advector, Bogota, Colombia; A. Pérez, University of the Andes, Bogota, Colombia		

Wednesday, 7 June 2017		
248-F360-6 **1400 - 1600 hrs**	**Aircraft Electric Propulsion: Transforming Aviation**	**Grand Ballroom I**

Moderator: Andrew R. Gibson, President, Business Development/Aerospace Engineer, Empirical Systems Aerospace, LLC

Panelists:

Mike Hirschberg
Executive Director
AHS - The Vertical Flight Technical Society

Amy Jankovsky
Subproject Manager
Hybrid Gas-Electric Propulsion
NASA Glenn Research Center

Matt Knapp
Founder and Aero Chief Technology Officer
Zunum Aero

Joseph Oldham
Director
San Joaquin Valley Clean Transportation Center
CALSTART

Wednesday, 7 June 2017						
249-FD-25	**Applications of Fluid Mechanics**					**Capitol**
Chaired by: G. GOODWIN, Naval Research Laboratory and Y. HAN, Seattle University						
1400 hrs AIAA-2017-3962 **Investigation of An Effective Approach for Aerodynamics Computaion of Mars Entry Vehicles** H. Zhan, Z. Liu, A. Gong, W. Zhou, China Academy of Aerospace Aerodynamics, Beijing, China	1430 hrs AIAA-2017-3963 **Numerical simulations and performance analysis of a magnetically-driven bearingless micro-pump** G. Goodwin, J. Maxwell, Naval Research Laboratory, Washington, D.C.	1500 hrs AIAA-2017-3964 **Investigation of the Optimal Design of a Linear Aerospike Nozzle for Microsatellite Thrust Vector Control** A. Alcantara, C. Dong, H. Cheung, Y. Han, Seattle University, Seattle, WA	1530 hrs AIAA-2017-3965 **Bluff Body Flow Control Using Random Forcing** A. Ahmed, R. North, H. Moore, Auburn University, Auburn, AL	1600 hrs AIAA-2017-3966 **Application of a New DES Model Based on Wray-Agarwal Turbulence Model for Simulation of Wall-Bounded Flows with Separation** X. Han, T. Wray, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1630 hrs AIAA-2017-3967 **The Effects of Mach Number Control Precision on Airfoil Pressure Measurement in a Transonic Wind Tunnel** Y. Zhang, C. Gao, Z. Zhang, L. Feng, Northwestern Polytechnical University, Xi'an, China	1700 hrs AIAA-2017-3968 **Design and Optimization of the Tandem Arranged Cascade in a Transonic Compressor** H. Wang, Y. Wang, L. Wei, Northwestern Polytechnical University, Xi'an, China

Wednesday, 7 June 2017						
250-FD-26	**Experimental Studies or Numerical Simulations IV**					**Beverly**
Chaired by: S. POROSEVA, The University of New Mexico						
1400 hrs AIAA-2017-3969 **Flow Structure in the Near Wake of an Axisymmetric Supersonic Base Flow Using Tomographic PIV** B. Kirchner, G. Elliott, J. Dutton, University of Illinois, Urbana-Champaign, Urbana, IL	1430 hrs AIAA-2017-3970 **Investigation of the Low-Frequency Breathing Motion in Two Turbulent Separation Bubbles** A. LeFloch, A. Mohammed-Taifour, J. Weiss, University of Québec, Montréal, Canada	1500 hrs AIAA-2017-3971 **Effects of a Swirling Flow Motion on the Supersonic Near Wake Flow Behind Blunt-Based Afterbodies** S. Weidner, R. Hruschka, C. Rey, F. Leopold, French-German Research Institute of Saint-Louis (ISL), Saint-Louis, France; B. Frohnapfel, F. Seiler, Karlsruhe Institute of Technology, Karlsruhe, Germany	1530 hrs AIAA-2017-3972 **Flow Structure Identification in the Near Wake of an Axisymmetric Supersonic Base Flow Using MEEMD** M. Koll, J. Favale, B. Kirchner, G. Elliott, J. Dutton, University of Illinois, Urbana-Champaign, Urbana, IL	1600 hrs AIAA-2017-3973 **Relating Surface Pressure to Lagrangian Wake Topology Around a Circular Cylinder in Cross Flow** M. Rockwood, S. Brooks, M. Green, Syracuse University, Syracuse, NY	1630 hrs AIAA-2017-3974 **Effects of Background Stratification on the Compressible Rayleigh Taylor Instability** S. Wieland, University of Colorado, Boulder, Boulder, CO; S. Reckinger, Montana State University, Bozeman, MT; P. Hamlington, University of Colorado, Boulder, Boulder, CO; D. Livescu, Los Alamos National Laboratory, Los Alamos, NM	1700 hrs AIAA-2017-3975 **Simulation of Hypersonic Shock Wave Laminar Boundary Layer Interaction on Hollow Cylinder Flare, Part II** N. Kianvashrad, D. Knight, Rutgers University, Piscataway, NJ

Wednesday, 7 June 2017						
251-FD-27	**Special Topics in Fluid Dynamics**					**Tower Court A**
Chaired by: P. BALAKUMAR, NASA-Langley Research Center and E. RADENAC, ONERA						
1400 hrs AIAA-2017-3976 **Theory and validation of a 2D Finite-Volume integral boundary layer method intended for icing applications** C. Bayeux, E. Radenac, P. Villedieu, ONERA, Toulouse, France	1430 hrs AIAA-2017-3977 **Modeling on Electrowetting-On-Dielectric (EWOD)** H. Xu, B. Hernan, C. Chen, University of Missouri, Columbia, Columbia, MO	1500 hrs AIAA-2017-3978 **Direct Numerical Simulation of Flows over an NACA-0012 Airfoil at Low and Moderate Reynolds Numbers** P. Balakumar, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2017-3979 **Machine Learning Models of Errors in Large Eddy Simulation Predictions of Surface Pressure Fluctuations** M. Barone, J. Ling, K. Chowdhary, W. Davis, J. Fike, Sandia National Laboratories, Albuquerque, NM			

Wednesday, 7 June 2017						
252-FD-28	**Special Session: Research Frontiers in Bio-inspired Propulsion II**					**Terrace**
Chaired by: H. BART-SMITH and H. DONG, University of Virginia						
1400 hrs AIAA-2017-3980 **Propulsive Performance of Pitching Panels with Bio-Inspired Passive Directional Flexibility** R. Zhu, J. Wang, G. Lewis, J. Zhu, H. Dong, H. Bart-Smith, University of Virginia, Charlottesville, Charlottesville, VA; et al.	1430 hrs Oral Presentation **Effects of combining heave, pitch and flexibility on swimming performance** D. Floryan, T. Van Buren, A. Smits, Princeton University, Princeton, NJ	1500 hrs Oral Presentation **Nonsinusoidal Gaits for Improved Thrust and Efficiency of Fishlike Swimmers** C. Rowley, M. Fairchild, D. Floryan, Princeton University, Princeton, NJ	1530 hrs Oral Presentation **Models and Mechanisms of Fish Propulsion** G. Lauder, Harvard University, Cambridge, MA	1600 hrs Oral Presentation **Hydrodynamics and Low Dimensional Analysis of a Highly Deformable Fish Fin** J. Wang, G. Liu, Y. Ren, H. Dong, University of Virginia, Charlottesville, Charlottesville, VA; V. Di Santo, G. Lauder, Harvard University, Cambridge, MA	1630 hrs AIAA-2017-3981 **Enhancing the Efficiency of Bio-Inspired Propulsion via Intermittent Swimming Gaits** K. Moored, E. Akoz, Lehigh University, Bethlehem, PA; G. Liu, P. Han, H. Dong, University of Virginia, Charlottesville, Charlottesville, VA	

Wednesday, 7 June 2017						
253-GT-4	**Hypersonics Ground Testing**					**Director's Row J**
Chaired by: M. RHODE, NASA-Langley Research Center and K. BUTLER, AEDC - Arnold Engineering Development Complex						
1400 hrs AIAA-2017-3982 **Direct Skin Friction Measurements at Mach 14 in AEDC Hypervelocity Wind Tunnel 9** R. Meritt, Ahmic Aerospace, Beavercreek, OH; J. Schetz, Virginia Polytechnic Institute and State University, Blacksburg, VA; E. Marineau, G. Morauru, Arnold Engineering Development Complex, Silver Spring, MD; D. Daniel, Arnold Engineering Development Complex, Arnold AFB, TN	1430 hrs AIAA-2017-3983 **Operational Range and Flow Quality of Cold Hypersonic Wind Tunnel** J. Maxwell, Naval Research Laboratory, Washington, D.C.	1500 hrs AIAA-2017-3984 **Evaluation of the Stagnation-Point Velocity Gradient in Low-Enthalpy Hypersonic Flows** Z. Ilich, G. Grossir, O. Chazot, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1530 hrs AIAA-2017-3985 **Modeling of the VKI Longshot Gun Tunnel Compression Process Using a Quasi-1D Approach** G. Grossir, Z. Ilich, O. Chazot, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1600 hrs AIAA-2017-3986 **Blunt-Body Distributed Roughness: Correlation of Recent and Historical Data** B. Hollis, NASA Langley Research Center, Hampton, VA	1630 hrs AIAA-2017-3987 **Inverse design method on facility nozzle for generation of the non-uniform flow** K. Yu, J. Xu, B. Xu, S. Liu, X. Zhang, Nanjing University of Aeronautics and Astronautics, Nanjing, China	

Wednesday, 7 June 2017						
254-IS-1	**Intelligent Systems and Autonomy**					**Plaza Court 3**
Chaired by: B. ALLEN, NASA Langley Research Center and N. ALEXANDROV, NASA Langley Research Center						
1400 hrs AIAA-2017-3988 **An Autonomous Unmanned Science Mission** B. Allen, L. Tran, J. Neilan, A. Trujillo, B. Kelley, A. McQuarry, NASA Langley Research Center, Hampton, VA; et al.	1430 hrs AIAA-2017-3989 **Field Testing Visual Odometry: Results from Benchtop to Flight for Autonomous Science Mission Needs** J. Neilan, NASA Langley Research Center, Hampton, VA; J. Eddy, Virginia Polytechnic Institute and State University, Blacksburg, VA; L. Tran, B. Kelley, A. McQuarry, M. Vaughan, NASA Langley Research Center, Hampton, VA; et al.	1500 hrs Oral Presentation **Computer Vision for Precision Landing and Object Detection for Autonomous Package Pickup** L. Tran, J. Neilan, B. Kelley, A. McQuarry, B. Allen, R. Williams, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2017-3990 **Time-Coordination Strategies and Control Laws for Multi-Agent Unmanned Systems** J. Puig - Navarro, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL; B. Allen, NASA Langley Research Center, Hampton, VA	1600 hrs Oral Presentation **Gesture-based Interface for UAV Flight Path Generation** M. Chandarana, Carnegie Mellon University, Pittsburgh, PA; E. Meszaros, University of Chicago, Chicago, IL; A. Trujillo, B. Allen, NASA Langley Research Center, Hampton, VA	1630 hrs Oral Presentation **Speech-Based Natural Language Interface for UAV Trajectory Generation** E. Meszaros, University of Chicago, Chicago, IL; M. Chandarana, Carnegie Mellon University, Pittsburgh, PA; A. Trujillo, B. Allen, NASA Langley Research Center, Hampton, VA	1700 hrs AIAA-2017-3991 **Explainable AI Decisions for Human-Autonomy Interactions** N. Alexandrov, NASA Langley Research Center, Hampton, VA

Wednesday, 7 June 2017						
255-LTA-3	**LTA Engineering and Design**					**Savoy**
Chaired by: R. VAN TREUREN						
1400 hrs AIAA-2017-3992 **Several Concerns of Advanced Airships for Thrust-vectoring Application on Dynamic Study** X. Zhang, H. Liang, X. Guo, M. Zhu, Beihang University, Beijing, China	1430 hrs AIAA-2017-3993 **Development of Flight Mode Algorithms for Tethered Airships** S. Stevanovic, J. Santos, K. Kondak, German Aerospace Center (DLR), Munich, Germany; L. Goes, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; R. Pant, Indian Institute of Technology Bombay, Mumbai, India	1500 hrs AIAA-2017-3994 **Design and Fabrication of a Winch for Aerostat** H. Shah, B. Katare, V. Rane, U. Chawda, B. Sonawane, St. Joseph's College of Engineering and Technology, Palghar, India; R. Pant, Indian Institute of Technology Bombay, Mumbai, India	1530 hrs AIAA-2017-3995 **An Elevated Balloon-Kite Hybrid platform for Surveillance** C. Dusane, A. Wani, R. Pant, D. Chakraborty, B. Chakravarthy, Indian Institute of Technology Bombay, Mumbai, India	1600 hrs AIAA-2017-3996 **Design and Development of an Indoor Autonomous Airship** M. Biju, Nanyang Technological University, Singapore, Singapore; R. Pant, Indian Institute of Technology Bombay, Mumbai, India		

Wednesday, 7 June 2017						
256-MDO-11	**Aerodynamic Shape Optimization IV**					**Director's Row I**
Chaired by: A. NING, BYU						
1400 hrs AIAA-2017-3997 **Application of an Algorithmically Differentiated Turbomachinery Flow Solver to the Optimization of a Fan Stage** J. Backhaus, A. Schmitz, C. Frey, German Aerospace Center (DLR), Cologne, Germany; M. Sagebaum, Technical University of Kaiserslautern, Kaiserslautern, Germany; S. Mann, M. Nagel, MTU Aero Engines, Munich, Germany; et al.	1430 hrs AIAA-2017-3998 **Efficient Algorithmic Differentiation Techniques for Turbo-machinery Design** M. Sagebaum, E. Özkaya, N. Gauger, Technical University of Kaiserslautern, Kaiserslautern, Germany; J. Backhaus, C. Frey, German Aerospace Center (DLR), Cologne, Germany; S. Mann, MTU Aero Engines, Munich, Germany; et al.	1500 hrs AIAA-2017-3999 **Aerodynamic Shape Optimization Using Feature based CAD Systems and Adjoint Methods** D. Agarwal, S. Marques, T. Robinson, C. Armstrong, P. Hewitt, Queen's University Belfast, Belfast, United Kingdom	1530 hrs AIAA-2017-4000 **Aerodynamic Modeling and Optimization of a Blended-Wing-Body Transitioning UAV** C. Zeng, R. Abnous, S. Chowdhury, State University of New York, Buffalo, NY			

Wednesday, 7 June 2017						
257-MDO-12	**Aircraft Design Optimization I**					**Director's Row H**
Chaired by: S. CHOWDHURY, University at Buffalo and B. MESMER, University of Alabama						
1400 hrs AIAA-2017-4001 **Conceptual Design of the Parallel Electric-Gas Architecture with Synergistic Utilization Scheme (PEGASUS) Concept** K. Antcliff, F. Capristan, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2017-4002 **Trajectory Optimization of Electric Aircraft Subject to Subsystem Thermal Constraints** R. Falck, J. Chin, S. Schnulo, J. Burt, NASA Glenn Research Center, Cleveland, OH	1500 hrs AIAA-2017-4003 **Research on Design Domain of Propeller-Driven Hybrid-Mode Aerial Vehicle** W. Wenkai, Z. Hou, Z. Guo, L. Chen, Q. Chen, B. Zhu, National University of Defense Technology, Changsha, China	1530 hrs AIAA-2017-4004 **Range Extension of Hypersonic Cruise Vehicle with Lowest Technical Merit** W. Wenkai, Z. Hou, Z. Guo, L. Chen, J. Yang, National University of Defense Technology, Changsha, China	1600 hrs AIAA-2017-4005 **Pametrically Controlled Subdivision Surfaces for Conceptual Design** K. Amadori, C. Jouannet, Saab, Linköping, Sweden; J. Andersson, Linköping University, Linköping, Sweden	1630 hrs AIAA-2017-4006 **Optimization of High lift device system deployment for takeoff performance** F. Giacomelli, J. Reis, A. de Paula, L. Fernandez, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1700 hrs AIAA-2017-4007 **Aircraft conceptual design of a business jet (category Large) using Multidisciplinary Design Optimization techniques** R. Nascimento, P. Paglione, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; F. Palazzo, Embraer, São José dos Campos, Brazil

Wednesday, 7 June 2017						
258-MST-6	**Flight Control Modeling and Simulation**					**Plaza Court 6**
Chaired by: R. RUFF and D. KEATING, The Charles Stark Draper Laboratory, Inc.						
1400 hrs AIAA-2017-4008 **Modeling and Simulation for the Automation of Aerial Refueling of Military Transport Aircraft with the Probe-and-Drogue System** N. Fezans, T. Jann, German Aerospace Center (DLR), Braunschweig, Germany	1430 hrs AIAA-2017-4009 **Adaptive Control for Longitudinal Dynamics of Hypersonic Vehicle at Subsonic Speeds** T. Alsuwian, R. Ordonez, University of Dayton, Dayton, OH; L. Jacobsen, GoHypersonic, Inc., Dayton, OH	1500 hrs AIAA-2017-4010 **A neural network adaptive controller considering expert system for aero-engine** B. Yang, Beihang University, Beijing, China	1530 hrs AIAA-2017-4011 **A New Kind of Control Strategy on Explicit-Model-Following Control** Y. Cao, H. Zhan, W. Tang, Northwestern Polytechnical University, Xi'an, China; M. Wang, University of Southampton, Southampton, United Kingdom	1600 hrs AIAA-2017-4012 **Fault Diagnosis Method Study for Complex System Based on Kalman Filters with Application to Aircraft Engine** W. Niu, W. Niu, Aviation Industry Corporation of China (AVIC), Xi'an, China; J. Cheng, Xi'an Institute of Applied Optics, Xi'an, China		

Wednesday, 7 June 2017						
259-PDL-6	**Computational Methods: Plasma-Flow Interaction**					**Denver**
Chaired by: T. MOELLER, University of Tennessee Space Institute						
1400 hrs AIAA-2017-4013 **Power Control Simulation of a Single Fluid Plasma Thruster** J. Subramanian, S. T S, Indian Institute of Science, Bengaluru, India	1430 hrs AIAA-2017-4014 **Flux Treatment Methods for the Coupled Navier-Stokes and Maxwell Equations** R. Thompson, T. Moeller, University of Tennessee, Tullahoma, Tullahoma, TN	1500 hrs AIAA-2017-4015 **A Generalized Unstructured Coupled Continuum-Rarefied Flow Solver for Multi-Component Gas Mixtures** R. Harris, CFD Research Corporation, Huntsville, AL	1530 hrs AIAA-2017-4016 **Implicit-Explicit Time Integration for the Vlasov-Fokker-Planck Equations** D. Ghosh, M. Dorf, J. Hittinger, M. Dorr, Lawrence Livermore National Laboratory, Livermore, CA	1600 hrs AIAA-2017-4017 **PCA-Score Method for the Reduction of Collisional-Radiative Chemistry** A. Bellemans, T. Magin, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium; A. Coussement, A. Parente, Université Libre de Bruxelles, Brussels, Belgium	1630 hrs AIAA-2017-4018 **An efficient solver for magneto-plasma dynamic thruster equations** J. Subramanian, H. KR. M., S. T S, Indian Institute of Science, Bengaluru, India	

Wednesday, 7 June 2017						
260-TFM-8	**Boundary Layers and Wakes**					**Spruce**
Chaired by: A. SESCU, Mississippi State University						
1400 hrs AIAA-2017-4019 **Near continuum velocity and temperature coupled boundary layer flow over a flat plate.** X. He, C. Cai, Michigan Technological University, Houghton, MI	1430 hrs AIAA-2017-4020 **Effects of Partial Slip on Viscous Instabilities in Rotating-Disc Boundary-Layer Flows** S. Stephen, University of Sydney, Sydney, Australia	1500 hrs AIAA-2017-4021 **Alternative three-dimensional instability analysis of the wake of a circular cylinder** J. Perez, S. Le Clainche Martinez, J. Vega, Technical University of Madrid, Madrid, Spain	1530 hrs AIAA-2017-4022 **Generation of convective instability modes in the near-wake flow of the trailing edge of a flat plate** M. Dong, X. Wu, Imperial College London, London, United Kingdom			

Wednesday, 7 June 2017						
261-TP-6	**Non-Continuum Modeling**					**Plaza Court 4**
Chaired by: T. SCHWARTZENTRUBER, University of Minnesota and M. KIO, National Space Research & Development Agency						
1400 hrs AIAA-2017-4023 **Investigation of a Coupling Approach of DSMC and DG Methods for Tail-driven Processes** T. Pan, K. Stephani, University of Illinois, Urbana-Champaign, Urbana, IL	1430 hrs AIAA-2017-4024 **Multi-Group Maximum Entropy Model for Translational Non-Equilibrium** V. Jayaraman, University of Illinois, Urbana-Champaign, Urbana, IL; Y. Liu, NASA Ames Research Center, Moffett Field, CA; M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL	1500 hrs AIAA-2017-4025 **Modeling hypersonic reacting flows using DSMC with the Bias reaction model** S. Gimelshein, ERC, Inc., Edwards AFB, CA; I. Wysong, Air Force Research Laboratory, Edwards AFB, CA	1530 hrs AIAA-2017-4026 **An analysis of numerical convergence in discrete velocity gas dynamics for internal flows** A. Sekaran, P. Varghese, D. Goldstein, University of Texas, Austin, Austin, TX	1600 hrs AIAA-2017-4027 **DSMC Aerothermal Study for 3U CubeSat Probes in LEO** A. Pikus, A. Berger, M. Bolliger, D. Parkos, A. Alexeenko, Purdue University, West Lafayette, IN	1630 hrs AIAA-2017-4028 **Novel use of AMR Unstructured Grids in DSMC Compressible Flow Simulations** S. Sawant, O. Tumuklu, D. Levin, University of Illinois, Urbana-Champaign, Urbana, IL	

Wednesday, 7 June 2017		
262-TEFW-1 **1400 - 1830 hrs**	**Transformational Electric Flight Workshop and Expo**	

*This workshop and expo requires a separate registration fee. It is included in the registration fees as indicated.

1400–1600 hrs
Grand Ballroom I

Aircraft Electric Propulsion: Transforming Aviation

Moderator: Andrew R. Gibson, President, Business Development, Aerospace Engineer, Empirical Systems Aerospace
Panelists:

Mike Hirschberg
Executive Director
AHS International—The Vertical Flight Technical Society

Amy Jankovsky
Subproject Manager
Hybrid Gas-Electric Propulsion
NASA Glenn Research Center

Matt Knapp
Founder and Aero CTO
Zunum Aero

Joseph Oldham
Director
San Joaquin Valley Clean Transportation Center
CALSTART

1630–1700 hrs
Grand Ballroom II

Transformational Electric Flight Workshop and Expo Overview

1700–1730 hrs
Grand Ballroom II

Transformative Electric Flight Workshop Introduction & Updates
Michael Dudley
Director
NASA Aeronautics Research Institute

1730–1830 hrs
South Convention Lobby

Transformational Electric Flight Workshop & DEMAND for UNMANNED Reception

*For program updates, please visit: www.aviation.aiaa.org/ElectricFlight/

Wednesday, 7 June 2017		
263-NW-12 **1600 - 1630 hrs**	**Networking Coffee Break**	**Meeting Room Foyers**

Wednesday, 7 June 2017		
264-PANEL-1 1600 - 1730 hrs	Certification using Analysis and Simulation	Grand Ballroom I

Moderator: Robert Gregg, Chief Aerodynamicist, Boeing Commercial Airplanes

Panelists:

Ben Linder	Rich Wahls	Cord Rossow	John Fisher	Uwe Kerlin
Director of Flight Sciences Boeing Commercial Airplanes	Strategic Technical Advisor, Advanced Air Vehicles Program Aeronautics Research Mission Directorate NASA Langley Research Center	Head of the Institute of Aerodynamics and Flow Technology DLR	Senior Technical Specialist Aircraft Icing FAA	EG-TEC Leader Airbus

Wednesday, 7 June 2017		
265-ATIO.ATM-25 1730 - 1830 hrs	Airspace Technology Demonstration 3 (ATD-3) Applied Traffic Flow Management	Plaza Court 2

The Airspace Technology Demonstration 3 (ATD-3) Project will have a panel during the 2017 AIAA AVIATION Forum. ATD-3 is the third in a series of sub-projects under ATD and deals with the Applied Traffic Flow Management aspect in domestic en route airspace. The panel members will briefly describe the ATD/ATD-3 Projects and the technologies being developed under ATD-3. These technologies are the Multi-Flight Common Route (MFCR), Dynamic Routes for Arrivals in Weather (DRAW), Traffic Aware Strategic Aircrew Requests (TASAR), and Air/Ground Integration (AGI). The panel will present for about 40 minutes and 20 minutes will be assigned for questions and answers.

Moderators: Todd Farley and Pete Kostiuk, Robust Analytics

Panelists:

Leighton Quon	Kapil Sheth	Karl Bilimoria	David Wing

Wednesday, 7 June 2017		
266-LECT-8 1730 - 1830 hrs	Multidisciplinary Design Optimization Award Lecture	Windows

The Role of Flexibility in Multidisciplinary Design Optimization

Rakesh Kapania

Norris and Wendy Mitchell Professor of Aerospace Engineering, Aerospace and Ocean Engineering, Virginia Polytechnic Institute and State University

Wednesday, 7 June 2017		
267-LECT-9 1730 - 1830 hrs	Thermophysics Award Lecture	Governor's Square 17

Satellite Thermal Management: Decades of Challenges, Solutions and Lessons Learned

Bruce L. Drolen

Senior Technical Fellow (retired), Chief Engineer, Thermal Technology, Space Platforms and Payloads, Boeing Defense, Space and Security

Wednesday, 7 June 2017		
268-BANQ-1 1800 - 2030 hrs	ADS and Balloons Banquet	Plaza Ballroom A-B

Wednesday, 7 June 2017		
269-BANQ-2 1800 - 2030 hrs	Aeroacoustics Banquet	Plaza Ballroom D-E

Thursday, 8 June 2017		
270-NW-13 0730 - 0800 hrs	Networking Coffee Break	Plaza Foyer

Thursday, 8 June 2017		
271-SB-4 0730 - 0800 hrs	Speakers' Briefing	Session Rooms

Thursday, 8 June 2017		
272-PLNRY-4 0800 - 0900 hrs	Plenary Innovation and Disruption Opportunities for Civil and Military Transport Acquisitions & Operations	Plaza Ballroom

Moderator: Scott Fancher, Senior Vice President, Program Management, Integration & Development Programs, The Boeing Company

Panelists:

Naveed Hussain
Vice President
Aeromechanics Technology
The Boeing Company

Aaron Robinson
Senior Manager
Environmental Strategy and Sustainability
United Airlines

Donna Senft
Chief Scientist
Air Mobility Command
U.S. Air Force

Thursday, 8 June 2017		
273-NW-14 0900 - 0930 hrs	Networking Coffee Break	Plaza Exhibit/Foyer

Thursday, 8 June 2017						
274-AA-43	Airframe/High-Lift Noise VII: Flight Demonstration					Plaza Court 4
Chaired by: M. CHOUDHARI, NASA-Langley Research Center						
0930 hrs AIAA-2017-4029 **FQUROH: A Flight Demonstration Project for Airframe Noise Reduction Technology – the 1st Flight Demonstration** K. Yamamoto, T. Takaishi, M. Murayama, Y. Yokokawa, Y. Ito, H. Arizono, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; et al.	1000 hrs AIAA-2017-4030 **Airframe Noise Reduction of Flap Side-edge Using Vortex Generators** M. Murayama, K. Yamamoto, T. Takaishi, Y. Ito, H. Ura, Y. Yokokawa, Japan Aerospace Exploration Agency (JAXA), Mitaka, Japan; et al.	1030 hrs AIAA-2017-4031 **Noise Reduction Design for Flap Side-edges toward FQUROH Flight Demonstration** M. Murayama, K. Yamamoto, Y. Yokokawa, Y. Ito, T. Takaishi, Japan Aerospace Exploration Agency (JAXA), Mitaka, Japan; T. Hirai, Ryoyu Systems Company, Ltd., Minato, Japan; et al.	1100 hrs AIAA-2017-4032 **Acoustic Wind Tunnel Test with 18% scale Half-span Model toward FQUROH Flight Demonstration** Y. Yokokawa, T. Takaishi, H. Ura, M. Kohzai, M. Murayama, Y. Ito, Japan Aerospace Exploration Agency (JAXA), Mitaka, Japan; et al.	1130 hrs AIAA-2017-4033 **Noise Reduction Design for Landing Gear toward FQUROH Flight Demonstration** T. Takaishi, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; T. Inoue, H. Lee, Sumitomo Precision Products Company, Ltd., Amagasaki, Japan; M. Murayama, Y. Yokokawa, Y. Ito, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; et al.		

Thursday, 8 June 2017						
275-AA-44	CAA VIII: Fan/Core/Liner					Plaza Court 8
Chaired by: D. CASALINO, EXA GmbH and Y. DETANDT, Free Field Technologies						
0930 hrs AIAA-2017-4034 **Numerical simulation of a compressible channel flow with an acoustic liner** R. Sebastian, D. Marx, V. Fortuné, E. Lamballais, University of Poitiers, Poitiers, France	1000 hrs AIAA-2017-4035 **Optimal Design of the Acoustic Treatments Damping the Noise Radiated by a Turbo-Fan Engine** B. van Den Nieuwenhof, Y. Detandt, G. Lielens, E. Rosseel, Free Field Technologies, Brussels, Belgium; C. Soize, University of Paris-Est, Paris, France; V. Dangla, Free Field Technologies, Brussels, Belgium; et al.	1030 hrs AIAA-2017-4036 **Unsteady Flow Physics of the Blade-Tower Interaction of a Pylon-Mounted Fan** J. Fischer, Y. Yauwenas, C. Doolan, V. Timchenko, J. Reizes, University of New South Wales, Sydney, Australia				

Thursday, 8 June 2017						
276-AA-45	**Duct Acoustics V**					**Governor's Square 11**
Chaired by: F. BAKE, DLR-German Aerospace Center and A. WILSON						
0930 hrs AIAA-2017-4037 **Farfield Radiation of Induct-Cutoff Pressure Waves** S. Guerin, German Aerospace Center (DLR), Berlin, Germany	1000 hrs AIAA-2017-4038 **Innovative noise control in ducts** C. Schram, J. Christophe, von Kármán Institute for Fluid Dynamics, Waterloo, Belgium; R. Corin, Sontech, Stockholm, Sweden; H. Denayer, W. De Roeck, Catholic University of Leuven, Leuven, Belgium; S. Sack, Royal Institute of Technology (KTH), Stockholm, Sweden; et al.	1030 hrs AIAA-2017-4039 **Scattering of high order modes in diffuser and 90 degree bend ducts** J. Hurst, Technical University of Berlin, Berlin, Germany; U. Tapken, German Aerospace Center (DLR), Berlin, Germany; A. Fassbender, RWTH Aachen University, Aachen, Germany; L. Enghardt, German Aerospace Center (DLR), Berlin, Germany; P. Jeschke, RWTH Aachen University, Aachen, Germany	1100 hrs AIAA-2017-4040 **Acoustic Damping of Propellant Injectors with Through-Flow in Liquid Rocket Combustors** S. Lympany, K. Ahuja, Georgia Institute of Technology, Atlanta, GA			

Thursday, 8 June 2017						
277-AA-46	**Jet Noise IX: Experiments Supersonic II**					**Governor's Square 10**
Chaired by: C. TAM, Florida State University						
0930 hrs AIAA-2017-4041 **Measurements of Turbulent Convection Speeds in Multistream Jets Using Time-Resolved PIV** J. Bridges, M. Wernet, NASA Glenn Research Center, Cleveland, OH	1000 hrs AIAA-2017-4042 **Experimental and Numerical Study of Hard-wall Corrugations for Supersonic Jet Noise Reduction** S. Hromisin, Pennsylvania State University, University Park, PA; R. Powers, Naval Air Systems Command, Patuxent River, MD; D. McLaughlin, P. Morris, Pennsylvania State University, University Park, PA	1030 hrs AIAA-2017-4043 **Acoustic Shock Formation in Noise Propagation During Ground Run-Up Operations of Military Aircraft** B. Reichman, K. Gee, T. Neilsen, S. Swift, Brigham Young University, Provo, UT; A. Wall, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2017-4044 **Eddy Convection in Cold and Heated Supersonic Jets** S. Shea, K. Lowe, W. Ng, Virginia Polytechnic Institute and State University, Blacksburg, VA	1130 hrs AIAA-2017-4045 **Synthesis of Convection Velocity and Turbulence Measurements in Three-Stream Jets for Investigation of Noise Sources** M. Stuber, W. Ng, K. Lowe, Virginia Polytechnic Institute and State University, Blacksburg, VA		

Thursday, 8 June 2017						
278-AA-47	**Jet Noise X: Wavepackets III**					**Governor's Square 12**
Chaired by: K. GEE, Brigham Young University						
0930 hrs AIAA-2017-4046 **One Way Navier-Stokes and resolvent analysis for modeling coherent structures in a supersonic turbulent jet** G. Rigas, O. Schmidt, T. Colonius, California Institute of Technology, Pasadena, CA; G. Brès, Cascade Technologies, Inc., Palo Alto, CA	1000 hrs AIAA-2017-4047 **Wave-packet Representation of Shockcell Noise for a Single Round Jet** T. Suzuki, The Boeing Company, Seattle, WA	1030 hrs AIAA-2017-4048 **Beamforming-Based Wavepacket Model for Noise Environment Predictions of Tactical Aircraft** B. Harker, K. Gee, T. Neilsen, Brigham Young University, Provo, UT; A. Wall, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. James, Blue Ridge Research and Consulting, LLC, Asheville, NC	1100 hrs AIAA-2017-4049 **Level-educed Wavepacket Representation of Mach 1.8 Laboratory-Scale Jet Noise** T. Neilsen, A. Vaughn, K. Gee, Brigham Young University, Provo, UT; M. Akamine, K. Okamoto, University of Tokyo, Kashiwa, Japan; S. Tsutsumi, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; et al.			

Thursday, 8 June 2017						
279-AA-48/ATIO.TFPC-7	**Small Propeller-Rotor Noise II**					**Plaza Court 5**
Chaired by: C. BRITCHER, Old Dominon University and N. ZAWODNY, NASA Langley Research Center						
0930 hrs AIAA-2017-4050 **Annoyance to Noise Produced by a Distributed Electric Propulsion High-Lift System** S. Rizzi, D. Palumbo, J. Rathsam, A. Christian, NASA Langley Research Center, Hampton, VA; M. Rafaelof, National Institute of Aerospace, Hampton, VA	1000 hrs AIAA-2017-4051 **Initial Investigation into the Psychoacoustic Properties of Small Unmanned Aerial System Noise** A. Christian, R. Cabell, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-4052 **Progress Towards Detection and Identification of sUAS via Acoustic Signature** J. Feight, G. Donnell, J. Jacob, R. Gaeta, Oklahoma State University, Stillwater, OK	1100 hrs AIAA-2017-4053 **Characterization of the broadband noise of mini RPA propeller blades** H. Akila, National Polytechnic School, Algiers, Algeria; B. Marinus, Royal Military Academy, Brussels, Belgium; S. Larbi, National Polytechnic School, Algiers, Algeria	1130 hrs AIAA-2017-4054 **Tonal Noise Acoustic Interaction Characteristics of Multi-Rotor Vehicles** T. Zhou, R. Fattah, Hong Kong University of Science and Technology, Hong Kong, Hong Kong		

Thursday, 8 June 2017		
280-AA-49 0930 - 1230 hrs	Fan Broadband Noise Prediction	Governor's Square 14

Thursday, 8 June 2017					
281-ADS-11	Aerodynamic Decelerator Systems: Plenary and Panel				Majestic Ballroom
Chaired by: B. TUTT, Airborne Systems					
0930 hrs AIAA-2017-4055 **Models for the Aerodynamic Coefficients of Ringsail and Disk-Gap-Band Parachutes Operating on Mars** J. Cruz, NASA Langley Research Center, Hampton, VA; M. Snyder, Virginia Commonwealth University, Richmond, VA	1000 hrs AIAA-2017-4056 **Orion Multi-Purpose Crew Vehicle Solving and Mitigating the Two Main Parachute Pendulum Problem** Y. Ali, NASA Johnson Space Center, Houston, TX; B. Sommer, Lockheed Martin Corporation, Houston, TX; B. Anderson, T. Truong, C. Madsen, NASA Johnson Space Center, Houston, TX	1030 hrs AIAA-2017-4057 **Wind Tunnel Investigations of Billowing Effects on Rigid Ram Air Parachute Models** J. Seidel, U.S. Air Force Academy, Colorado Springs, CO; K. Bergeron, Army Research, Development and Engineering Command, Natick, MA	1100 hrs AIAA-2017-4058 **Influence of Angle of Attack on Profile Drag and Flow Induced Vibrations of Parachute Suspension Lines** T. Siefers, W. Farrar, C. Jones, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO; K. Bergeron, Army Research, Development and Engineering Command, Natick, MA	1130 hrs **Panel Discussion**	

Thursday, 8 June 2017						
282-AFM-6	Angle-of-Attack and Sideslip Angle Technologies for General Aviation Flight Safety (Invited)					Governor's Square 17
Chaired by: J. VALASEK, Texas A&M University						
0930 hrs AIAA-2017-4059 **Characterization of Derived Angle-of-Attack and Sideslip Angle Algorithms Using Monte Carlo and Piloted Simulation** J. Valasek, J. Harris, Texas A&M University, College Station, TX; S. Pruchnicki, M. McCrink, J. Gregory, Ohio State University, Columbus, OH; D. Sizoo, Federal Aviation Administration, Kansas City, KS	1000 hrs AIAA-2017-4060 **Low Cost Wearable Head-Up Display for Light General Aviation** P. Chinta, B. Martos, Embry-Riddle Aeronautical University, Daytona Beach, FL	1030 hrs AIAA-2017-4061 **Aerodynamic Parameter Estimation for Derived Angle-of-Attack Systems** M. McCrink, J. Gregory, Ohio State University, Columbus, OH	1100 hrs AIAA-2017-4062 **Effects of Atmospheric Motion on a Derived Angle-of-Attack Estimator** B. Jackson, K. Hoffler, Adaptive Aerospace Group, Inc., Hampton, VA	1130 hrs AIAA-2017-4063 **Direct Adaptive Augmentation of a Linear Controller for a Plant with Unmatched Uncertainties with an Application to Aircraft Fly-by-Wire Control** A. Noriega, Flight Level Engineering, Daytona Beach, FL; M. Balas, Embry-Riddle Aeronautical University, Daytona Beach, FL; B. Martos, Flight Level Engineering, Daytona Beach, FL	1200 hrs AIAA-2017-4064 **Effect of Angle of Attack Displays on Approach Stability** B. Dillman, Purdue University, West Lafayette, IN; D. Wilt, Florida Institute of Technology, Melbourne, FL; S. Pruchnicki, Ohio State University, Columbus, OH; T. Hall, Purdue University, West Lafayette, IN	

Thursday, 8 June 2017						
283-AMT-8	Volumetric Measurement Techniques					Director's Row E
Chaired by: P. DANEHY, NASA Langley Research Center and N. JIANG, Spectral Energies, LLC						
0930 hrs AIAA-2017-4065 **Application of Volumetric PIV with a Single Plenoptic Camera to Shock Wave-Boundary Layer Interactions** J. Bolton, C. Jones, C. Clifford, B. Thurow, Auburn University, Auburn, AL	1000 hrs AIAA-2017-4066 **Lightfield Imaging for Plasma Wind Tunnel Application** M. Eberhart, S. Loehle, University of Stuttgart, Stuttgart, Germany	1030 hrs AIAA-2017-4067 **Preliminary Comparison Between Conventional and Plenoptic Background Oriented Schlieren Imaging** J. Klemkowsky, T. Fahringer, B. Thurow, Auburn University, Auburn, AL; B. Bathel, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2017-4068 **Towards Volumetric Measurement of Density using Scanning Sheet Filtered Rayleigh Scattering** J. George, T. Jenkins, MetroLaser, Inc., Laguna Hills, CA	1130 hrs AIAA-2017-4069 **Two camera plenoptic-PIV** T. Fahringer, B. Thurow, Auburn University, Auburn, AL		

Thursday, 8 June 2017						
284-APA-34	**Wind Turbine Aerodynamics I**					**Colorado**
Chaired by: P. MORGAN, Ohio Aerospace Institute and K. SREENIVAS, SimCenter: Center for Excellence in Applied Computational Science and Engineering						
0930 hrs AIAA-2017-4070 **Tower Fairing Concept for Downwind Turbines** C. Noyes, E. Loth, University of Virginia, Charlottesville, Charlottesville, VA	1000 hrs AIAA-2017-4071 **CFD Analysis of Tandem Wind Turbines Using a Rotating Actuator Disk Model** W. Huang, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1030 hrs AIAA-2017-4072 **CFD-based Performance Analysis of Morphing Aileron for Vertical Axis Wind Turbines** J. Tan, M. Paraschivoiu, Concordia University, Montréal, Canada	1100 hrs AIAA-2017-4073 **Investigation of Wind Turbine Wakes over Complex Terrain Based on Actuator Disk Method** K. Zheng, W. Tian, Shanghai Jiao Tong University, Shanghai, China; J. Qin, Harbin Institute of Technology, Harbin, China; H. Hu, Iowa State University, Ames, IA	1130 hrs AIAA-2017-4074 **A FAST Investigation of a 2 Blade, Load-Aligned, Downwind Rotor for a 13.2 MW Wind Turbine** C. Noyes, E. Loth, C. Qin, University of Virginia, Charlottesville, Charlottesville, VA		

Thursday, 8 June 2017						
285-APA-35	**Aerodynamic Testing: Wind-tunnel and Flight Testing I**					**Gold**
Chaired by: G. GATLIN, NASA Langley Research Center and C. TILMANN, AFRL/RQV						
0930 hrs AIAA-2017-4075 **Aeordynamic databased of a subscale demonstrator** C. Jouannet, Saab, Linköping, Sweden; D. Lundström, A. Sobron, P. Krus, Linköping University, Linköping, Sweden; R. Annes da Silva, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; F. Martini Catalano, University of São Paulo, São Carlos, Brazil	1000 hrs AIAA-2017-4076 **Measuring Atmospheric Gusts at Low Altitude** A. Yeung, G. Bramesfeld, Ryerson University, Toronto, Canada	1030 hrs AIAA-2017-4077 **Design Methodology and Flight-Testing Protocols for a Dynamically-Scaled General Aviation Aircraft** G. Ananda , M. Vahora, O. Dantsker, M. Selig, University of Illinois, Urbana-Champaign, Urbana, IL	1100 hrs AIAA-2017-4078 **GA-USTAR Phase 1: Development and Flight Testing of the Baseline Upset and Stall Research Aircraft** O. Dantsker, G. Ananda , M. Selig, University of Illinois, Urbana-Champaign, Urbana, IL	1130 hrs AIAA-2017-4079 **Surface Pressure Ballistic Range Test of Mars 2020 Capsule in Support of MEDLI2** M. Schoenenberger, NASA Langley Research Center, Hampton, VA; T. Brown, Army Research Laboratory, Aberdeen Proving Ground, MD; L. Yates, Aerospace Computing, Inc., Moffett Field, CA		

Thursday, 8 June 2017						
286-APA-36	**Special Session: Aerodynamic Design Optimization II**					**Silver**
Chaired by: L. LEIFSSON, Iowa State University						
0930 hrs AIAA-2017-4080 **CAD-based shape optimisation of the NASA CRM wing-body intersection using differentiated CAD-kernel** O. Mykhaskiv, P. Mohanamuraly, J. Mueller, Queen Mary University of London, London, United Kingdom; S. Xu, S. Timme, University of Liverpool, Liverpool, United Kingdom	1000 hrs AIAA-2017-4081 **Aerodynamic Shape Optimization Progress on ADODG Benchmark Problems Using the elsA Software** A. Dumont, M. Méheut, ONERA, Meudon, France; D. Baumgärtner, K. Bletzinger, Technical University of Munich, Munich, Germany	1030 hrs AIAA-2017-4082 **Investigation of the Effectiveness of Shape Parameterization Techniques for Robust Aerodynamic Optimization** A. Vuruskan, S. Hosder, Missouri University of Science and Technology, Rolla, MO	1100 hrs AIAA-2017-4083 **Multidisciplinary Adjoint Optimization of Trubomachinery Components Including Aerodynamic and Stress Performance** T. Verstraete, Queen Mary University of London, London, United Kingdom; L. Mueller, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium; J. Mueller, Queen Mary University of London, London, United Kingdom	1130 hrs AIAA-2017-4084 **Combining Adjoint-Based and Surrogate-Based Optimizations for Benchmark Aerodynamic Design Problems** H. Wang, Z. Han, S. Han, Y. Zhang, W. Song, Northwestern Polytechnical University, Xi'an, China		

Thursday, 8 June 2017						
287-ASE-7	**Engine Ice Crystal Icing**					**Columbine**
Chaired by: M. BRAVIN, Boeing Commercial Airplanes and J. MASON, Boeing						
0930 hrs AIAA-2017-4085 **Ice Crystal Icing Research at NASA Glenn Research Center** A. Flegel, NASA Glenn Research Center, Cleveland, OH	1000 hrs AIAA-2017-4086 **Preliminary Evaluation of Altitude Scaling for Turbofan Engine Ice Crystal Icing** J. Tsao, Ohio Aerospace Institute, Cleveland, OH	1030 hrs AIAA-2017-4087 **Viscous Three Dimensional Simulation of Flow in an Axial Low Pressure Compressor at Engine Icing Operating Points** D. Rigby, Vantage Partners, LLC, Cleveland, OH; A. Ameri, Ohio State University, Columbus, OH; J. Veres, P. Jorgenson, NASA Glenn Research Center, Cleveland, OH	1100 hrs AIAA-2017-4088 **Validation of a Compact Isokinetic Total Water Content Probe for Wind Tunnel Characterization at NASA Glenn Icing Research Tunnel and at NRC Ice Crystal Tunnel** C. Davison, C. Landreville, National Research Council Canada, Ottawa, Canada; T. Ratvasky, NASA Glenn Research Center, Cleveland, OH			

Thursday, 8 June 2017		
288-ATIO.ACD-7 **0930 - 1230 hrs**	**CADWG 21 - Concept Design Tools and Processes for Bespoke, Traditional and Truly Mass Produced Aircraft**	**Governor's Square 16**

Thursday, 8 June 2017						
289-ATIO.ACD-8/APA-37	**Sailplane Aerodynamics**					**Century**
Chaired by: J. MILGRAM, NSWC Carderock Div. and N. PFEIFFER, Pfeiffer Consulting						
0930 hrs AIAA-2017-4089 **Technology Development in Sailplane Design** N. Pfeiffer, Pfeiffer Consulting, Wichita, KS	1000 hrs AIAA-2017-4090 **A Sailplane Split-Winglet Design Study** T. Krebs, G. Bramesfeld, Ryerson University, Toronto, Canada	1030 hrs AIAA-2017-4091 **The Design of a New Racing Sailplanes: A New Thermal Mix Model and the Role of Transitional CFD** M. Maughmer, Pennsylvania State University, University Park, PA; J. Coder, University of Tennessee, Knoxville, Knoxville, TN; C. Wannenmacher, Schempp-Hirth Flugzeugbau, GmbH, Kirchheim unter Tech, Germany; W. Würz, University of Stuttgart, Stuttgart, Germany	1100 hrs AIAA-2017-4092 **Design Space Exploration for Hybrid Solar/Soaring Aircraft** J. Bird, J. Langelaan, Pennsylvania State University, University Park, PA	1130 hrs AIAA-2017-4093 **AtmosPerf: A Numeric Method to Evaluate Autonomous Gliders for Exploration of Outer Solar System Atmospheres** C. Colletti, R. LeBeau, Saint Louis University, St. Louis, MO; G. Bramesfeld, Ryerson University, Toronto, Canada		

Thursday, 8 June 2017						
290-ATIO.ATM-13	**En Route Operations**					**Plaza Court 3**
Chaired by: T. REYNOLDS, Massachusetts Institute of Technology						
0930 hrs AIAA-2017-4094 **Flight Test Evaluation of the ATD-1 Interval Management Application** K. Swieringa, S. Wilson, B. Baxley, R. Roper, NASA Langley Research Center, Hampton, VA; T. Abbott, SAIC, Hampton, VA; I. Levitt, Federal Aviation Administration, Atlantic City, NJ; et al.	1000 hrs AIAA-2017-4095 **Flight Crew Survey Responses from the Interval Management (IM) Avionics Phase 2 Flight Test** B. Baxley, K. Swieringa, S. Wilson, R. Roper, C. Hubbs, P. Goess, NASA Langley Research Center, Hampton, VA; et al.	1030 hrs AIAA-2017-4096 **Prototype Tool and Focus Group Evaluation for an Advanced Trajectory-Based Operations Concept** N. Guerreiro, D. Jones, B. Barmore, R. Butler, G. Hagen, J. Maddalon, NASA Langley Research Center, Hampton, VA; et al.	1100 hrs AIAA-2017-4097 **Design and Development of a Rapid Research Design and Development Platform for In Situ Testing of Tools and Concepts for Trajectory-Based Operations** M. Underwood, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2017-4098 **A Five-Year Projection of North Atlantic Oceanic Flight Activity** M. Bolaños, A. Meilus, T. Graham, Federal Aviation Administration, Washington, D.C.		

Thursday, 8 June 2017						
291-ATIO.ATM-14	**ATM Systems I**					**Plaza Court 2**
Chaired by: S. HASAN, LMI						
0930 hrs AIAA-2017-4099 **A methodology for efficient CDA trajectories automatic generation based on precision 3D curved approach in presence of obstacles.** A. Errico, V. Di Vito, Italian Aerospace Research Center (CIRA), Capua, Italy	1000 hrs AIAA-2017-4100 **Integrated Demand Management (IDM) - Minimizing Unanticipated Excessive Departure Delay while Ensuring Fairness from a Traffic Management Initiative** H. Yoo, C. Brasil, San Jose State University, Moffett Field, CA; N. Smith, P. Lee, NASA Ames Research Center, Moffett Field, CA; C. Mohlenbrink, N. Buckley, San Jose State University, Moffett Field, CA; et al.	1030 hrs AIAA-2017-4101 **Evaluation Results of the NAS Flow Advisory Manager for System Impact Assessment and Flow Planning** C. Brinton, B. Capozzi, C. Kaler, B. King, Mosaic ATM, Inc., Leesburg, VA	1100 hrs AIAA-2017-4102 **Data Communications Availability and Operations** J. Rakas, A. Bauranov, University of California, Berkeley, Berkeley, CA			

Thursday, 8 June 2017						
292-ATIO.TFPC-8/ATIO.USPC-1	**UAS Missions, Concepts, and Technologies**					**Governor's Square 15**
Chaired by: D. MARONEY, The MITRE Corporation						
0930 hrs AIAA-2017-4103 **Future Demand and Benefits for Small Unmanned Aerial Systems (UAS) Package Delivery** M. Narkus-Kramer, LMI, McLean, VA	1000 hrs AIAA-2017-4104 **Toward an Architecture for Subalpine Forest Health Monitoring Using Commercial Off-the-Shelf Unmanned Aircraft Systems and Sensors** Y. Shen, M. Cattau, S. Borenstein, D. Weibel, E. Frew, University of Colorado, Boulder, Boulder, CO	1030 hrs AIAA-2017-4105 **Designing an UAV Propulsion System for Dedicated Acceleration and Deceleration Requirements** F. Sendner, P. Stahl, C. Rößler, M. Hornung, Technical University of Munich, Munich, Germany				

Thursday, 8 June 2017						
293-CFD-23	**Special Session: Recent Advances in Adjoint-Based Methods for CFD**					**Windows**
Chaired by: E. JOHNSEN, University of Michigan						
0930 hrs Oral Presentation **Adjoint-Based Sensitivity of Ignition in High-Speed Turbulent Flows** J. Capecelatro, University of Michigan, Ann Arbor, Ann Arbor, MI; D. Bodony, J. Freund, University of Illinois, Urbana-Champaign, Urbana, IL	1000 hrs Oral Presentation **Advances in adjoint-based methods: application towards multiphase systems** D. Bodony, M. Banks, S. Bidadi, University of Illinois, Urbana-Champaign, Urbana, IL	1030 hrs Oral Presentation **The Adjoint-Weighted Residual Method and Summation-By-Parts Discretizations** J. Hicken, J. Crean, K. Panda, J. Yan, Rensselaer Polytechnic Institute, Troy, NY	1100 hrs Oral Presentation **Barriers to Adjoint Error Estimation of Large-Scale Fluid Simulation** M. Park, NASA Langley Research Center, Hampton, VA	1130 hrs Oral Presentation **Adjoint-Based Error Estimation and Adaptation for Large-Scale Unsteady Flow Simulations** K. Fidkowski, University of Michigan, Ann Arbor, Ann Arbor, MI		

Thursday, 8 June 2017						
294-CFD-24	**Shock Capturing I**					**Tower Court D**
Chaired by: M. LIOU, NASA Glenn Research Center and S. MURMAN, NASA Ames Research Center						
0930 hrs AIAA-2017-4106 **A DGSEM Shock-capturing Scheme for Scale-resolving Simulations** S. Murman, N. Burgess, L. Diosady, A. Garai, NASA Ames Research Center, Moffett Field, CA	1000 hrs AIAA-2017-4107 **The Root Cause of the Overheating Problem** M. Liou, NASA Glenn Research Center, Cleveland, OH	1030 hrs AIAA-2017-4108 **High Order and High Resolution Nonlinear Weighted Compact Schemes** A. Subramaniam, M. Wong, S. Lele, Stanford University, Stanford, CA	1100 hrs AIAA-2017-4109 **Pressure-Equation-Based SLAU2 for Oscillation-Free Supercritical Flow Computations** K. Kitamura, Yokohama National University, Yokohama, Japan; E. Shima, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1130 hrs AIAA-2017-4110 **Higher-Order Multi-Dimensional Limiting Strategy for Subcell Resolution** H. You, C. Kim, Seoul National University, Seoul, South Korea		

Thursday, 8 June 2017						
295-CFD-25	**Error Estimation**					**Tower Court B**
Chaired by: C. GROTH, University of Toronto and K. FIDKOWSKI, University of Michigan						
0930 hrs AIAA-2017-4111 **Output Error Control Using r-Adaptation** K. Ding, K. Fidkowski, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2017-4112 **Applications of the Unsteady Error Transport Equation on Unstructured Meshes** G. Yan, C. Ollivier Gooch, University of British Columbia, Vancouver, Canada	1030 hrs AIAA-2017-4113 **Block-Based Anisotropic AMR with *A Posteriori* Adjoint-Based Error Estimation for Three-Dimensional Inviscid and Viscous Flows** N. Narechania, L. Freret, C. Groth, University of Toronto, Toronto, Canada				

Thursday, 8 June 2017						
296-CFD-26	**Optimization and Design Using CFD**					**Tower Court C**
Chaired by: P. HAMLINGTON, University of Colorado, Boulder and N. CHIEREGHIN						
0930 hrs AIAA-2017-4114 **Shape Optimization of a Curved Duct with Free Form Deformations** N. Chiereghin, University of Bath, Bath, United Kingdom; L. Guglielmi, A. Savill, Cranfield University, Bedford, United Kingdom; E. Manca, A. Rigobello, M. Barison, University of Padova, Padova, Italy; et al.	1000 hrs AIAA-2017-4115 **Optimization for Internal Turbulent Compressible Flows Using Adjoints** C. Lapointe, J. Christopher, N. Wimer, T. Hayden, G. Rieker, P. Hamlington, University of Colorado, Boulder, Boulder, CO	1030 hrs AIAA-2017-4116 **Optimization of the Lift and Drag Forces on Autorotors** S. Walters, X. Gao, S. Guzik, Colorado State University, Fort Collins, CO	1100 hrs AIAA-2017-4117 **Power Loss of Slipper/Swashplate based on Elastohydrodynamic Lubrication Model in Axial Piston Pump** B. Wang, H. Jiang, L. Wang, Harbin Institute of Technology, Harbin, China			

Thursday, 8 June 2017						
297-F360-7 **0930 - 1130 hrs**	**Internet of Things as Applied to Aircraft Systems for Industrial Drones**					**Grand Ballroom I**
Moderator: David Loda, Executive Director, NCPS Research LLC Panelists: **Barry Alexander** Captain Boeing 747-800 Atlas Air Cargo **Zhennan Cao** President STARC Solutions **Wu Hui** General Manager (HRG) HIT Robot Group Co. Ltd. **Academic Scholar: Sam Kogan** Founder/CEO Gen5 Group, LLC						

Thursday, 8 June 2017						
298-FD-29	**Stall and Wake Control**					**Beverly**
Chaired by: M. VISBAL, USAF AFRL/RQVA and I. GURSUL, University of Bath						
0930 hrs AIAA-2017-4118 **Control of Dynamic Stall Over a Pitching Finite-Aspect-Ratio Wing** M. Visbal, D. Garmann, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2017-4119 **High-Frequency Forcing to Delay Dynamic Stall at Relevant Reynolds Number** S. Benton, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2017-4120 **Bio-inspired Active and Passive Surface Flow Control for Aerodynamic Eciency** S. Chowdhury, State University of New York, Buffalo, NY; V. Maldonado , University of Texas, San Antonio, San Antonio, TX	1100 hrs AIAA-2017-4121 **Mini-Spoilers for Afterbody Base Drag Reduction** D. Bulathsinghala, Z. Wang, I. Gursul, University of Bath, Bath, United Kingdom	1130 hrs AIAA-2017-4122 **Control of Multiple Vortices over a Double Delta Wing** X. Zhang, Z. Wang, I. Gursul, University of Bath, Bath, United Kingdom		

Thursday, 8 June 2017						
299-FD-30	**Supersonic and Hypersonics Flows**					**Tower Court A**
Chaired by: L. DUAN, Missouri University of Science and Technology						
0930 hrs AIAA-2017-4123 **Study of 2-D Shock-Wave / Turbulent Boundary Layer Interaction** P. Touré, E. Schuelein, German Aerospace Center (DLR), Göttingen, Germany	1000 hrs AIAA-2017-4124 **Shock-Boundary Layer Interaction Control using Innovative Micro-Vortex Generators in Supersonic Intake** H. G, M. Kaushik, K. Sinhamahapatra, Indian Institute of Technology Kharagpur, Kharagpur, India	1030 hrs AIAA-2017-4125 **Three-Dimensional Simulations of Hypersonic Double Wedge Flow Experiments** J. Reinert, S. Gs, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN; J. Komives, Air Force Institute of Technology, Wright-Patterson AFB, OH				

Thursday, 8 June 2017						
300-FD-31	**Special Session: NASA's Revolutionary Computational Aerosciences**					**Terrace**
Chaired by: M. MALIK, NASA-Langley Research Center and M. ROGERS, NASA-Ames Research Center						
0930 hrs AIAA-2017-4126 **Boundary Condition Study for the Juncture Flow Experiment in the NASA Langley 14x22-Foot Subsonic Wind Tunnel** C. Rumsey, J. Carlson, J. Hannon, L. Jenkins, S. Bartram, NASA Langley Research Center, Hampton, VA; T. Pulliam, NASA Ames Research Center, Moffett Field, CA; et al.	1000 hrs AIAA-2017-4127 **CFD Analysis in Advance of the NASA Juncture Flow Experiment** H. Lee, Science and Technology Corporation, Moffett Field, CA; T. Pulliam, NASA Ames Research Center, Moffett Field, CA; D. Neuhart, M. Kegerise, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-4128 **Benchmark Smooth Body Flow Separation Experiments** D. Simmons, F. Thomas, T. Corke, University of Notre Dame, Notre Dame, IN	1100 hrs AIAA-2017-4129 **Stereoscopic PIV Measurements of a Turbulent Compressible Mixing Layer for CFD Validation** K. Kim, G. Lee, B. Johnson, G. Elliott, J. Dutton, University of Illinois, Urbana-Champaign, Urbana, IL			

Thursday, 8 June 2017						
301-GT-5	**Subsonic Ground Testing**					**Director's Row J**
Chaired by: R. PARYZ, NASA Langley Research Center and M. RIVERS, NASA Langley Research Center						
0930 hrs AIAA-2017-4130 **Study of the Subsonic Wall Interference in Stall of the NASA CRM at the NRC 1.5 m Trisonic Wind Tunnel** A. Toledano, J. Weiss, F. Morency, University of Québec, Montréal, Canada; C. Broughton, A. Benmeddour, National Research Council Canada, Ottawa, Canada	1000 hrs AIAA-2017-4131 **Anomaly Detection in Large-Scale Wind Tunnel Tests Using Gaussian Processes** I. Crandell, A. Millican, S. Leman, E. Smith, W. Alexander, W. Devenport, Virginia Polytechnic Institute and State University, Blacksburg, VA; et al.	1030 hrs AIAA-2017-4132 **Simulation of Atmospheric Boundary Layer Flow for Air Inlet Testing in F1 Wind-Tunnel** S. Mouton, S. Masseboeuf, R. Mariani, ONERA, Toulouse, France				

Thursday, 8 June 2017						
302-ITAR-1	**Unmanned Aircraft Design** ITAR					**Savoy**
Chaired by: B. MCGRATH, Johns Hopkins University Applied Physics Laboratory and J. LECHNIAK						
0930 hrs Oral Presentation **X-56A Structural Dynamics Ground Testing at NASA AFRC** S. Truong, A. Chin, C. Herrera, N. Spivey, NASA Armstrong Flight Research Center, Edwards, CA	1000 hrs AIAA-2017-4538 **A Multidisciplinary Approach to the Design of a Low-Cost Attritable Aircraft** J. Kao, University of Dayton, Dayton, OH; G. Reich, T. White, Air Force Research Laboratory, Wright-Patterson AFB, OH; S. Burton, American Optimization, LLC, Liberty Township, OH	1030 hrs Oral Presentation **The Leading Human Factors Deficiencies in Unmanned Aircraft Systems** S. Howe, NASA Armstrong Flight Research Center, Edwards, CA				

Thursday, 8 June 2017						
303-LTA-4	**Airship Development**					**Vail**
Chaired by: C. LAMBERT, SkySentry LLC						
0930 hrs AIAA-2017-4133 **ZRCV: The Giant That Almost Was** R. Van Treuren, Naval Airship Association, Edgewater, FL	1000 hrs AIAA-2017-4134 **Lighter-Than-Air (LTA) 'Aircraft Carriers' of Persistent, Cheap Micro-Weaponized UAV Swarms for Fleet BMD Overwatch, EW, and Wide-Area ASW/Surveillance** J. Bosma, ArcXeon, LLC, Bothell, WA	1030 hrs AIAA-2017-4135 **Application of Large UAV Test Principles to LTA Platforms** M. McDaniel, Naval Air Warfare Center, Patuxent River, MD	1100 hrs AIAA-2017-4136 **Reconfigurable Cellular Composite Structures for Lighter than Air Vehicles** G. Copplestone, Massachusetts Institute of Technology, Cambridge, MA; K. Cheung, NASA Ames Research Center, Moffett Field, CA	1130 hrs Oral Presentation **Airship do Brasil - A case study as one of Latin America's sole LTA company** M. De Felippes, Airship of Brazil (ADB), Brasilia, Brazil		

Thursday, 8 June 2017						
304-MDO-13	**Emerging Methods - The AGILE Project**					**Plaza Court 7**
Chaired by: J. MARTINS, University of Michigan and T. LEFEBVRE, ONERA						
0930 hrs AIAA-2017-4137 **The AGILE Paradigm: the next generation of collaborative MDO** P. Ciampa, B. Nagel, German Aerospace Center (DLR), Hamburg, Germany	1000 hrs AIAA-2017-4138 **A Collaborative Architecture supporting AGILE Design of Complex Aeronautics Products** P. Ciampa, E. Moerland, D. Seider, German Aerospace Center (DLR), Hamburg, Germany; E. Baalbergen, National Aerospace Laboratory (NLR), Amsterdam, The Netherlands; R. Lombardi, R. D'Ippolito, NOESIS Solutions N.V., Leuven, Belgium	1030 hrs AIAA-2017-4139 **Knowledge architecture supporting collaborative MDO in the AGILE paradigm** I. van Gent, Delft University of Technology, Delft, The Netherlands; P. Ciampa, German Aerospace Center (DLR), Hamburg, Germany; B. Aigner, RWTH Aachen University, Aachen, Germany; J. Jepsen, German Aerospace Center (DLR), Hamburg, Germany; G. La Rocca, Delft University of Technology, Delft, The Netherlands; J. Schut, KE-Works, Delft, The Netherlands	1100 hrs AIAA-2017-4140 **Methodological enhancements in MDO process investigated in the AGILE European project** T. Lefebvre, N. Bartoli, S. Dubreuil, ONERA, Toulouse, France; M. Panzeri, R. Lombardi, R. D'Ippolito, NOESIS Solutions N.V., Leuven, Belgium; et al.	1130 hrs AIAA-2017-4141 **Aeroelastic Shape and Sizing Optimization of Aircraft Products supported by AGILE Design Paradigm** F. Daoud, Airbus, Manching, Germany	1200 hrs AIAA-2017-4142 **Collaborative System of Systems Multidisciplinary Design Optimization for Civil Aircraft:AGILE EU project** P. Prakasha, German Aerospace Center (DLR), Hamburg, Germany; A. Mirzoyan, Central Institute of Aviation Motors, Moscow, Russia; P. Ciampa, German Aerospace Center (DLR), Hamburg, Germany	

Thursday, 8 June 2017						
305-MDO-14	**Aeroelastic and Aero-Structures Optimization I**					**Director's Row I**
Chaired by: F. ENGELSEN, The Boeing Company						
0930 hrs AIAA-2017-4143 **Adjoint Formulation of Continuum Sensitivity Analysis for Static and Transient Problems** M. Kulkarni, Embry-Riddle Aeronautical University, Daytona Beach, FL	1000 hrs AIAA-2017-4144 **A Robust and Flexible Coupling Framework for Aeroelastic Analysis and Optimization** J. Kiviaho, K. Jacobson, M. Smith, G. Kennedy, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2017-4145 **Aero-Structural Optimization of the NASA Common Research Model** S. Keye, T. Klimmek, M. Abu-Zurayk, M. Schulze, C. Ilic, German Aerospace Center (DLR), Braunschweig, Germany	1100 hrs AIAA-2017-4146 **Application of Shape Function for Aeroelastic Tailoring of the Composite Wing Structure** J. Zeng, W. Qian, C. Liu, Commercial Aircraft Corporation of China, Ltd. (COMAC), Beijing, China			

Thursday, 8 June 2017						
306-MDO-15	**Aircraft Design Optimization II**					**Director's Row H**
Chaired by: S. CHOWDHURY, University at Buffalo						
0930 hrs AIAA-2017-4147 **Solar-Electric and Gas Powered, Long-Endurance UAV Sizing via Geometric Programming** M. Burton, W. Hoburg, Massachusetts Institute of Technology, Cambridge, MA	1000 hrs AIAA-2017-4148 **Design of an Unmanned Aerial Vehicle for Long-Endurance Communication Support** B. Ozturk, M. Burton, W. Hoburg, Massachusetts Institute of Technology, Cambridge, MA	1030 hrs AIAA-2017-4149 **Conceptual Design and Optimization of Small Transitioning UAVs using SUAVE** E. Botero, J. Alonso, Stanford University, Stanford, CA	1100 hrs AIAA-2017-4150 **Dynamics and Control Design of a Blended Wing-body Transitioning UAV** R. Abnous, C. Zheng, S. Chowdhury, State University of New York, Buffalo, NY	1130 hrs AIAA-2017-4151 **Development of a Multidisciplinary Design Optimization Framework Applied on UAV Design by Considering Models for Mission, Surveillance, and Stealth Performance** A. Papageorgiou, J. Ölvander, Linköping University, Linköping, Sweden; K. Amadori, Saab, Linköping, Sweden	1200 hrs AIAA-2017-4152 **A Mission-Based Approach for the Holistic Evaluation of Aerial Platforms: Implementation and Proof of Concept** S. Morawietz, M. Strohal, P. Stütz, University of the German Federal Armed Forces, Neubiberg, Germany	

Thursday, 8 June 2017						
307-MST-7	**Environmental Effects and Surprise in Simulation**					**Plaza Court 6**
Chaired by: D. CARTMELL, Boeing Engineering Operations & Technology and C. TAYLOR, The MITRE Corporation						
0930 hrs AIAA-2017-4153 **Determination of Stochastic Wind Speed Model Parameters Using Allan Deviation Approach** M. Rhudy, Pennsylvania State University, Reading, PA; J. Gross, Y. Gu, West Virginia University, Morgantown, WV	1000 hrs AIAA-2017-4154 **Aircraft Touchdown Speed Estimation** A. Fazeli, K. Narayan, United Technologies Corporation, Oakville, Canada	1030 hrs AIAA-2017-4155 **Managing the Unexpected – Human-in-the-Loop Simulation as Effective Tool for the Assessment of the Risk Information System in an Operationally Relevant Context** J. Buch, D. Niedermeier, German Aerospace Center (DLR), Braunschweig, Germany; I. Stepniczka, University of Vienna, Vienna, Austria				

Thursday, 8 June 2017						
308-PDL-7	**Diagnostics and Experimental Techniques II**					**Denver**
Chaired by: A. STARIKOVSKIY, Princeton University						
0930 hrs AIAA-2017-4156 **Development of an Electric Field Imaging Method using Femtosecond Laser Electric Field Probe** B. Goldberg, A. Dogariu, Princeton University, Princeton, NJ; S. O'Byrne, University of New South Wales at the Australian Defence Force Academy, Canberra, Australia; R. Miles, Princeton University, Princeton, NJ	1000 hrs AIAA-2017-4157 **Two-Photon Induced Polarization Spectroscopy with Atomic Oxygen and Xenon for Plasma Diagnostics** A. Meindl, D. Leiser, S. Loehle, S. Fasoulas, University of Stuttgart, Stuttgart, Germany	1030 hrs AIAA-2017-4158 **Optical Diagnostics on Equilibrium and Non-equilibrium Low Power Plasmas** H. Koch, M. Winter, J. Beyer, University of Kentucky, Lexington, Lexington, KY	1100 hrs AIAA-2017-4159 **Dielectric Barrier Discharge Control and Thrust Enhancement by Diode Surface** A. Starikovskiy, R. Miles, Princeton University, Princeton, NJ	1130 hrs AIAA-2017-4160 **Experimental Investigations of Impulse Generation and Stabilization Performance on Spherical Target Irradiated by Donut-Mode Beam** D. Tran, X. Chongfa, K. Mori, Nagoya University, Nagoya, Japan		

Thursday, 8 June 2017						
309-TFM-9	**Shock - BL Interaction**					**Capitol**
Chaired by: R. KUMAR, Florida State University						
0930 hrs AIAA-2017-4161 **Variable turbulent Prandtl number model for shock/boundary-layer interaction** S. Roy, U. Pathak, K. Sinha, Indian Institute of Technology Bombay, Mumbai, India	1000 hrs AIAA-2017-4162 **A Physics Based Turbulence Model for Shock-Boundary Layer Interactions** P. Raje, K. Sinha, Indian Institute of Technology Bombay, Mumbai, India	1030 hrs AIAA-2017-4163 **Optimal spatial growth of streaks in oblique shock/boundary layer interaction** A. Dwivedi, J. Nichols, M. Jovanovic, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN				

Thursday, 8 June 2017						
310-TFM-10	**Turbulence Modeling and Theory**					**Spruce**
Chaired by: M. MUNSON, U.S. Army Research Office						
0930 hrs AIAA-2017-4164 **Compressible turbulent plane channel flow: DNS data and outlook** G. Gerolymos, I. Vallet, Pierre-and-Marie-Curie University, Paris, France	1000 hrs AIAA-2017-4165 **Further Applications of the Integral Formula for Determination of the Reynolds Stress in Turbulent Flows** T. Lee, J. Park, Arizona State University, Tempe, AZ	1030 hrs AIAA-2017-4166 **Robust Bayesian Calibration of a RANS Model for Jet-in-Crossflow Simulations** J. Ray, S. Lefantzi, Sandia National Laboratories, Livermore, CA; S. Arunajatesan, L. DeChant, Sandia National Laboratories, Albuquerque, NM	1100 hrs AIAA-2017-4167 **K-ε Turbulence Model Parameter Estimates Using an Approximate Self-similar Jet-in-Crossflow Solution** L. DeChant, J. Ray, S. Lefantzi, J. Ling, S. Arunajatesan, Sandia National Laboratories, Albuquerque, NM	1130 hrs AIAA-2017-4168 **Development of adaptive subgrid scale models based on a large-scale vorticity sensor** J. Chapelier, C. Scalo, Purdue University, West Lafayette, IN; B. Wasistho, Kord Technologies, Huntsville, AL		

Thursday, 8 June 2017

311-TEFW-2 0800 - 1730 hrs	Transformational Electric Flight Workshop and Expo	

*This workshop and expo requires a separate registration fee. It is included in the registration fees as indicated.

0800–0900 hrs
Plaza Ballroom

Innovation and Disruption Opportunities for Civil and Military Transport Acquisitions & Operations

Moderator: Scott Fancher, Senior Vice President, Program Management, Integration & Development Programs, The Boeing Company
Panelists:

Aaron Robinson
Senior Manager
Environmental Strategy and Sustainability
United Airlines

Naveed Hussain
Vice President
Aeromechanics Technology
The Boeing Company

Donna Senft
Chief Scientist
Air Mobility Command
U.S. Air Force

0930–1200 hrs
Grand Ballroom II

Electric Aircraft Prototyping

Speakers:

Tine Tomažič
Director of R&D
Pipistrel

Geoffrey Bower
Chief Engineer
A^3 by Airbus Group

Sean Clarke
Principal Investigator for NASA's X-57 Maxwell
experimental aircraft and Advanced Systems
Development Engineer
NASA Armstrong Flight Research Center

Francesco Giannini
Aircraft Designer
Advanced Concepts
Aurora Flight Sciences

David Josephson
Engineer/CEO
Josephson Engineering, Inc.

1200–1330 hrs
Grand Ballroom II

Urban VTOL Panel Discussion Luncheon

Moderator: Brian J. German, Associate Professor, Daniel Guggenheim School of Aerospace Engineering, Georgia Institute of Technology
Speakers:

JoeBen Bevirt
Founder
Joby Aviation

Geoffrey Bower
Chief Engineer
A^3 by Airbus Group

Gregory J. Bowles
Vice President
Global Innovation & Policy
General Aviation Manufacturers Association

Mark D. Moore
Director of Aviation
Uber Engineering

Tine Tomažič
Director of R&D
Pipistrel

David Josephson
Engineer/CEO
Josephson Engineering, Inc.

1400 – 1600
Grand Ballroom II

Transformative Vertical Flight Workshop Breakout Sessions

1630 – 1730
South Convention Lobby

Transformative Vertical Flight Workshop Reception

*Reception For program updates, please visit: www.aviation.aiaa.org/ElectricFlight/

Thursday, 8 June 2017		
312-LNCH-3 1230 - 1400 hrs	Luncheon in the Exposition Hall	Plaza Exhibit/Foyer
A ticket for the luncheon is required and included in the registration fee where where indicated. Additional tickets for guests may be purchased upon registration, or on site as space is available.		

Thursday, 8 June 2017						
313-AA-50	Acoustic/Fluid Dynamic Interactions V: Trailing Edge Serrations					Plaza Court 7
Chaired by: S. OERLEMANS						
1400 hrs AIAA-2017-4169 **Leading edge serrations for the reduction of aerofoil separation self-noise** G. Lacagnina, University of Southampton, Southampton, United Kingdom; S. Hasheminejad, Brunel University London, London, United Kingdom; C. Paruchuri, P. Joseph, University of Southampton, Southampton, United Kingdom; T. Chong, Brunel University London, London, United Kingdom; O. Stalnov, Technion-Israel Institute of Technology, Haifa, Israel	1430 hrs AIAA-2017-4170 **Sound Scattering by a Serrated Flat Plate in Mean Flows** B. Peng, X. Huang, Hong Kong University of Science and Technology, Kowloon, Hong Kong	1500 hrs AIAA-2017-4171 **Near–wall pressure fluctuations over noise reduction add–ons** F. Avallone, W. van der Velden, R. Merino Martinez, D. Ragni, Delft University of Technology, Delft, The Netherlands	1530 hrs AIAA-2017-4172 **Numerical study on combed teeth serrations for wind turbine noise reduction** W. van der Velden, Delft University of Technology, Delft, The Netherlands; S. Oerlemans, Siemens, Brande, Denmark	1600 hrs AIAA-2017-4173 **Numerical analysis of noise reduction mechanisms of serrated trailing edges under zero lift condition** W. van der Velden, F. Avallone, D. Ragni, Delft University of Technology, Delft, The Netherlands	1630 hrs AIAA-2017-4174 **Concave serrations on broadband trailing edge noise reduction** D. Ragni, F. Avallone, W. van der Velden, Delft University of Technology, Delft, The Netherlands	1700 hrs AIAA-2017-4175 **Exploiting the Misalignment of the Serrated Trailing Edge for Improved Aerofoil Broadband Noise Reduction** P. Woodhead, T. Chong, J. Wissink, Brunel University London, Uxbridge, United Kingdom

Thursday, 8 June 2017						
314-AA-51	Advanced Testing Techniques II					Governor's Square 11
Chaired by: R. DOUGHERTY, OptiNav Inc and W. HUMPHREYS, NASA Langley Research Center						
1400 hrs AIAA-2017-4176 **Evaluation of Methods for In-Situ Calibration of Field-Deployable Microphone Phased Arrays** W. Humphreys, D. Lockard, M. Khorrami, W. Culliton, R. McSwain, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2017-4177 **Comparison of Inverse Deconvolution Algorithms for High-resolution Aeroacoustic Source Characterization** G. Herold, T. Geyer, Brandenburg University of Technology, Cottbus, Germany; E. Sarradj, Technical University of Berlin, Berlin, Germany	1500 hrs AIAA-2017-4178 **Aerofoil Source Estimation from Nearfield Array Measurements** F. Casagrande Hirono, P. Joseph, F. Fazi, University of Southampton, Southampton, United Kingdom	1530 hrs AIAA-2017-4179 **Efficient Beamforming Techniques for Investigating Turbulence Ingestion Noise with an Inhomogeneous Inflow** C. Hickling, W. Alexander, N. Molinaro, W. Devenport, Virginia Polytechnic Institute and State University, Blacksburg, VA; S. Glegg, Florida Atlantic University, Boca Raton, FL			

Thursday, 8 June 2017						
315-AA-52	CAA IX: Methods					Plaza Court 8
Chaired by: D. HIXON, University of Toledo and E. BRAMBLEY, University of Warwick						
1400 hrs AIAA-2017-4180 **Validation of a three-dimensional mapping scheme to couple mean flow data to high-order acoustic propagation solvers** M. Muriel Gracia, H. Denayer, W. De Roeck, W. Desmet, Catholic University of Leuven, Leuven, Belgium	1430 hrs AIAA-2017-4181 **Comparison of Three Popular Methods for the Prediction of High Speed Propeller Noise** J. Hambrey, M. Kotwicz Herniczek, D. Feszty, Carleton University, Ottawa, Canada; S. Meslioui, J. Park, Pratt & Whitney, Montréal, Canada	1500 hrs AIAA-2017-4182 **Explicit Filters with Spectral-Like Accuracy: Review of Design Criteria and Latest Developments** F. Falissard, ONERA, Meudon, France	1530 hrs AIAA-2017-4183 **Novel techniques to enhance the focal-resolution and characterization of experimental flow-induced dipole sources using time-reversal** A. Mimani, C. Doolan, D. Moreau, University of New South Wales, Sydney, Australia	1600 hrs AIAA-2017-4184 **GPU CABARET Solver Extension to Handle Complex Geometries utilizing snappyHexMesh with Asynchronous Time Stepping** A. Markesteijn, S. Karabasov, Queen Mary University of London, London, United Kingdom	1630 hrs AIAA-2017-4185 **Dispersion Improved CABARET for Computational Aeroacoustics** A. Chintagunta, A. Markesteijn, S. Naghibi, S. Karabasov, Queen Mary University of London, London, United Kingdom	

Thursday, 8 June 2017						
316-AA-53	**Duct Acoustics VI: Liners**					**Governor's Square 10**
Chaired by: H. BODEN, KTH and W. WATSON, NASA-Langley Research Center						
1400 hrs AIAA-2017-4186 **Experimental Evaluation of Acoustic Engine Liner Models Developed with COMSOL Multiphysics** N. Schiller, M. Jones, NASA Langley Research Center, Hampton, VA; B. Bertolucci, The Boeing Company, Seattle, WA	1430 hrs AIAA-2017-4187 **Aeroacoustics Comparison of Double- and Single-layer Perforated Liners in Presence of Joint Bias-grazing Flow** D. Zhao, C. Ji, N. Han, X. Li, Nanyang Technological University, Singapore, Singapore; L. Ang, National University of Singapore, Singapore, Singapore	1500 hrs AIAA-2017-4188 **Innovative liner concept for enhanced acoustic damping: hybrid Zero Mass Flow Liner (ZML)** F. Bake, A. Bauer, A. Schulz, K. Knobloch, German Aerospace Center (DLR), Berlin, Germany; C. Richter, Rolls-Royce Group plc, Blankenfelde, Germany; L. Enghardt, German Aerospace Center (DLR), Berlin, Germany	1530 hrs AIAA-2017-4189 **Effects of Cavity Diameter on Acoustic Impedance of Perforate-Over-Honeycomb Liners** M. Brown, M. Jones, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2017-4190 **A Conventional Liner Acoustic/Drag Interaction Benchmark Database** B. Howerton, M. Jones, NASA Langley Research Center, Hampton, VA	1630 hrs AIAA-2017-4191 **On the Prediction of the Effect of Interstage Liners in Turbofan Engines: A Parametric Study** A. Maldonado, Arup Acoustics, Winchester, United Kingdom; R. Astley, J. Coupland, University of Southampton, Southampton, United Kingdom	1700 hrs AIAA-2017-4192 **A study of high level tonal and broadband random excitation for acoustic liners** H. Boden, J. Fritzell, Royal Institute of Technology (KTH), Stockholm, Sweden

Thursday, 8 June 2017						
317-AA-54	**Jet Noise XI: Analysis**					**Governor's Square 12**
Chaired by: T. COLONIUS, California Institute of Technology and U. MICHEL						
1400 hrs AIAA-2017-4193 **Spectral analysis of the acoustic near field of a solid propellant rocket** C. Tam, Florida State University, Tallahassee, FL; W. Horne, N. Burnside, J. Panda, NASA Ames Research Center, Moffett Field, CA	1430 hrs AIAA-2017-4194 **Evaluation of PSE as a Model for Supersonic Jet Using Transfer Functions** V. Kleine, K. Sasaki, A. Cavalieri, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; G. Brès, Cascade Technologies, Inc., Palo Alto, CA; T. Colonius, California Institute of Technology, Pasadena, CA	1500 hrs AIAA-2017-4195 **Jet Noise in the Certification Reference Point for Approach** U. Michel, CFD Software E+F GmbH, Berlin, Germany	1530 hrs AIAA-2017-4196 **Validating the Doubling-Diameter Method for Rig-Noise Detection in Jet Noise Measurements** A. Karon, K. Ahuja, Georgia Institute of Technology, Atlanta, GA			

Thursday, 8 June 2017						
318-ADS-12	**Aerodynamic Decelerator Systems: Instrumentation and Materials**					**Majestic Ballroom**
Chaired by: K. DESABRAIS, US Army Natick Solider Research, Development and Engineering Center						
1400 hrs AIAA-2017-4197 **Device for Temporal Measurement of Loads in Parachute Suspension Systems** E. Brandeau, B. Frandeen, J. Sanchez, A. Owens, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1430 hrs AIAA-2017-4198 **Investigation of Tensile Properties of Braided Parachute Suspension Line** B. Olson, J. Sherwood, D. Willis, University of Massachusetts, Lowell, Lowell, MA; K. Bergeron, Army Research, Development and Engineering Command, Natick, MA	1500 hrs AIAA-2017-4199 **Effects of Contamination and Cleaning on Parachute Structural Textile Elements** C. Mollmann, Airborne Systems, Santa Ana, CA	1530 hrs AIAA-2017-4200 **Strength Variation of Parachute Joints** C. Mollmann, Airborne Systems, Santa Ana, CA	1600 hrs AIAA-2017-4201 **Microscopic Mosaic Imaging of Parachute Fabric** J. Luna, G. Barlow, N. Rondeau, University of Massachusetts, Lowell, Lowell, MA; K. Desabrais, Army Research, Development and Engineering Command, Natick, MA; D. Willis, University of Massachusetts, Lowell, Lowell, MA	1630 hrs AIAA-2017-4202 **Parachute Fabric Permeability under Short vs. Long Term Humidity Conditioning Effects in a Controlled Lab Environment** N. Rondeau, Army Research, Development and Engineering Command, Natick, MA; G. Barlow, E. Morrison, J. Luna, University of Massachusetts, Lowell, Lowell, MA; K. Desabrais, Army Research, Development and Engineering Command, Natick, MA; D. Willis, University of Massachusetts, Lowell, Lowell, MA	

Thursday, 8 June 2017						
319-ADS-13	**Aerodynamic Decelerator Systems: Space Systems II**					**Vail**
Chaired by: Y. ALI, NASA Johnson Space Center						
1400 hrs AIAA-2017-4203 **Sub-Scale Orion Parachute Test Results From the National Full-Scale Aerodynamics Complex 80- by 120-ft Wind Tunnel** B. Anderson, J. Greathouse, J. Powell, NASA Johnson Space Center, Houston, TX; J. Ross, B. Porter, NASA Ames Research Center, Moffett Field, CA; P. Goulding, National Aerospace Solutions, Moffett Field, CA; et al.	1430 hrs AIAA-2017-4204 **NASA Capsule Parachute Assembly System Subscale Drop Test Campaign** J. Daum, NASA Johnson Space Center, Houston, TX; C. Mollmann, Airborne Systems, Pennsauken, NJ	1500 hrs AIAA-2017-4205 **Crew Module Deceleration System for Human Spaceflight Programme – Overview of Development** A. Aggarwal, J. Paul, J. A, S. Nalluveettil, P. P, P. M, Vikram Sarabhai Space Centre, Trivandrum, India	1530 hrs AIAA-2017-4206 **Integrated Air Drop Test of Crew Module Deceleration System for Human Spaceflight Project of ISRO** J. Paul, A. Aggarwal, P. Sai, N. Upadhyay , R. Pillai, S. Nalluveettil, Vikram Sarabhai Space Centre, Trivandrum, India; et al.	1600 hrs Oral Presentation **Parachute Related History and Preservation** R. Zuercher, S. Brown, ATI Parachute Museum, Dayton, OH		

Thursday, 8 June 2017						
320-AFM-7	**Launch Vehicle, Entry Vehicle, and Projectile Flight Dynamics**					**Governor's Square 17**
Chaired by: M. GRANT, Purdue University and C. KARLGAARD, Analytical Mechanics Associates Inc						
1400 hrs AIAA-2017-4207 **Adaptive Missile Flight Control for Complex Aerodynamic Phenomena** F. Fresconi, Army Research Laboratory, Aberdeen Proving Ground, MD; B. Greunwald, T. Yucelen, University of South Florida, Tampa, FL	1430 hrs AIAA-2017-4208 **Open Source Toolkit for Reentry Object Modeling** C. Ostrom, K. Abercromby, California Polytechnic State University, San Luis Obispo, San Luis Obispo, CA	1500 hrs AIAA-2017-4209 **Re-entry Trajectory Design using Pigeon Inspired Optimization** G. Sushnigdha, A. Joshi, Indian Institute of Technology Bombay, Mumbai, India	1530 hrs AIAA-2017-4210 **Mid-L/D Lifting Body Entry Demise Analysis** L. Ling, NASA Johnson Space Center, Houston, TX	1600 hrs AIAA-2017-4211 **A Modified Triples Algorithm for Flush Air Data Systems That Allows a Variety of Pressure Port Configurations** D. Millman, Booz Allen Hamilton, McLean, VA		

Thursday, 8 June 2017						
321-AMT-9/GT-6	**The Application of Thermal Anemometer Technologies in Transonic Flows**					**Director's Row E**
Chaired by: G. JONES, NASA-Langley Research Center						
1400 hrs Oral Presentation **Wind Tunnel Characterization – Perspectives on Wind Tunnel Turbulence Measurement (Invited)** E. Arrington, HX5 Sierra, Cleveland, OH	1430 hrs Oral Presentation **Development of a Digital Bridge Thermal Anemometer System (Invited)** J. Bledsoe, E. White, ViGYAN, Inc., Hampton, VA; C. Britcher, K. Joshi, Old Dominion University, Norfolk, VA	1500 hrs Oral Presentation **A Review of constant voltage anemometer (CVA) applications in high-speed flows (Invited)** S. Mangalam, A. Mangalam, Tao Systems, Hampton, VA	1530 hrs Oral Presentation **Flow Quality Survey of the NASA Ames 11-By-11-Foot Transonic Wind Tunnel (Invited)** M. Amaya, NASA Ames Research Center, Moffett Field, CA	1600 hrs Oral Presentation **Turbulence Characteristics for Selected NASA Langley Transonic Wind Tunnels (Invited)** G. Jones, NASA Langley Research Center, Hampton, VA		

Thursday, 8 June 2017						
322-APA-38	**Wind Turbine Aerodynamics II**					**Colorado**
Chaired by: C. TILMANN, AFRL/RQV and M. GHOREYSHI, United States Air Force Academy						
1400 hrs AIAA-2017-4212 **Development of a Computational System to Optimize Wind Farm Layout** R. Rodrigues, C. Lengsfeld, University of Denver, Denver, CO	1430 hrs AIAA-2017-4213 **A Novel Vortex Method to Investigate Wind Turbine Near-Wake Characteristics** P. Premaratne, H. Hu, Iowa State University, Ames, IA	1500 hrs AIAA-2017-4214 **Analysis of Turbine Wake Characteristics by using Dynamic Mode Decomposition Method** P. Premaratne, H. Hu, Iowa State University, Ames, IA	1530 hrs AIAA-2017-4215 **Gravo-Aeroelastically Scaling for Extreme-Scale Wind Turbines** E. Loth, University of Virginia, Charlottesville, Charlottesville, VA; L. Fingersh, National Renewable Energy Laboratory, Golden, CO; D. Griffith, Sandia National Laboratories, Albuquerque, NM; M. Kaminski, C. Qin, University of Virginia, Charlottesville, Charlottesville, VA	1600 hrs AIAA-2017-4216 **Subscale Testing of Horizontal-Axis Wind Turbines** G. Ananda , M. Selig, University of Illinois, Urbana-Champaign, Urbana, IL	1630 hrs AIAA-2017-4217 **Development of Aerodynamic Analysis Methodology for Segmented Ultralight Morphing Rotors** S. Bansal, M. Selig, University of Illinois, Urbana-Champaign, Urbana, IL	

Thursday, 8 June 2017						
323-APA-39	**Aerodynamic-Structural Dynamics Interaction I**					**Century**
Chaired by: N. NGUYEN, NASA-Ames Research Center and K. KARA, Khalifa University of Science, Technology & Research						
1400 hrs AIAA-2017-4218 **Aeroestructural Design Optimization of a Subsonic Wing with Continuous Morphing Trailing Edge** G. Fujiwara, University of Washington, Seattle, Seattle, WA; N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1430 hrs AIAA-2017-4219 **Nonlinear Large Deflection Theory with Modified Aeroelastic Lifting Line Aerodynamics for a High Aspect Ratio Flexible Wing** N. Nguyen, E. Ting, NASA Ames Research Center, Moffett Field, CA; D. Chaparro, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	1500 hrs AIAA-2017-4220 **Aerodynamic Optimization of Variable Camber Continuous Trailing Edge Flap Configurations Using Vortex Lattice Modeling for Conceptual Design** E. Ting, NASA Ames Research Center, Moffett Field, CA; D. Chaparro, MORI Associates, Inc., Moffett Field, CA; N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2017-4221 **Transonic and Viscous Models for Vortex Lattice Method Applied to Transport Aircraft** D. Chaparro, MORI Associates, Inc., Moffett Field, CA; G. Fujiwara, University of Washington, Seattle, Seattle, WA; E. Ting, N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1600 hrs AIAA-2017-4222 **Experimental Results for a Variable Camber Compliant Wing** J. Hodson, D. Hunsaker, Utah State University, Logan, UT; B. Andrews, J. Joo, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2017-4223 **Stability Investigation of a Nonlinear Self-Adaptive Camber Airfoil** H. Felcar, National Civil Aviation Agency (ANAC), São José dos Campos, Brazil; R. Annes da Silva, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1700 hrs AIAA-2017-4224 **Robust Optimization of Variable-Camber Continuous Trailing-Edge Flap System under Multi-Task Profiles** Y. Liu, J. Li, H. Zeng, B. Liu, N. Liu, Aviation Industry Corporation of China (AVIC), Shenyang, China; J. Bai, Northwestern Polytechnical University, Xi'an, China

Thursday, 8 June 2017						
324-APA-40	**Aerodynamic Testing: Wind-Tunnel and Flight Testing II**					**Gold**
Chaired by: G. GATLIN, NASA Langley Research Center and D. CARTER, Air Force Research Laboratory						
1400 hrs AIAA-2017-4225 **Legacy Transport Aircraft Drag Reduction Program** D. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2017-4226 **A Study on the Impact of Drag Reduction Technologies on the Mission Performance of the Boeing C-17 Globemaster III Aircraft** K. Bedwell, G. Brian, Defence Science and Technology Group, Melbourne, Australia; R. Porter, Advanced VTOL Technologies, Ballarat West, Australia	1500 hrs AIAA-2017-4227 **C-17 Globemaster III Vortex Control Finlets Simulation and Wind Tunnel Testing** S. McIlwain, National Research Council Canada, Ottawa, Canada; D. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH; G. Givogue, Royal Canadian Air Force, Ottawa, Canada; T. Lorang, R. Polito, The Boeing Company, Long Beach, CA; J. Pereira, National Research Council Canada, Ottawa, Canada; et al.	1530 hrs AIAA-2017-4228 **Characterization of the flow around the Mars 2020 Rover** R. Bardera-Mora, S. Sor, National Institute of Aerospace Technology (INTA), Torrejón de Ardoz, Spain; A. Garcia-Magariño, Systems Engineering for the Defense of Spain (ISDEFE), Madrid, Spain; J. Javier Gomez-Elvira , M. Marin , J. Torres , National Institute of Aerospace Technology (INTA), Madrid, Spain; et al.	1600 hrs AIAA-2017-4229 **Towards the Investigation of Unsteady Spoiler Aerodynamics** S. Geisbauer, German Aerospace Center (DLR), Braunschweig, Germany; T. Löser, German-Dutch Wind Tunnels, Braunschweig, Germany	1630 hrs AIAA-2017-4230 **Time-Resolved PIV Measurements of Ship Motion and Orientation Effects on Airwake Development** A. Sydney, J. Ramsey, Naval Surface Warfare Center, Bethesda, MD; J. Milluzzo, U.S. Naval Academy, Annapolis, MD	1700 hrs AIAA-2017-4231 **A new criterion for transonic buffeting onset estimation** R. Sousa, Embraer, São José dos Campos, Brazil; R. Girardi, R. Annes da Silva, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil

Thursday, 8 June 2017						
325-APA-41	**Applied CFD and Numerical Correlations with Experimental Data I**					**Silver**
Chaired by: P. MORGAN, Ohio Aerospace Institute and T. CHYCZEWSKI, Northrop Grumman Aerospace Systems						
1400 hrs AIAA-2017-4232 **DLR Results of the Sixth AIAA Computational Fluid Dynamics Drag Prediction Workshop** S. Keye, V. Togiti, O. Brodersen, German Aerospace Center (DLR), Braunschweig, Germany	1430 hrs AIAA-2017-4233 **Drag Prediction of NASA Common Research Models Using Different Turbulence Models** P. Du, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1500 hrs AIAA-2017-4234 **Numerical Study of Fuselage Aerodynamics of DLR-F6 Wing-Body in Ground Effect** N. Deng, Q. Qu, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1530 hrs AIAA-2017-4235 **Turbulent Flow Simulations of the NASA Common Research Model using the Immersed Boundary Method with a Wall Function** Y. Tamaki, T. Imamura, University of Tokyo, Tokyo, Japan	1600 hrs AIAA-2017-4236 **CFD Modeling of B-52 and KC-135 in Air Refueling Formation** A. Lofthouse, B. Nathan, U.S. Air Force Academy, Colorado Springs, CO	1630 hrs AIAA-2017-4237 **CFD-Based Reduced-Order Models of F-16XL Static and Dynamic Loads Using Kestrel** S. Morton, D. McDaniel, CREATE Kestrel Team, Eglin AFB, FL; H. Carlson, R. Verberg, R. Schutt, Clear Science Corporation, Harford, NY	

Thursday, 8 June 2017						
326-ASE-8	**Wake Vortex and Turbulence I**					**Beverly**
Chaired by: E. JOHNSON, NASA-Langley Research Center and V. GOLUBEV, Embry-Riddle Aeronautical University (ERAU)						
1400 hrs AIAA-2017-4238 **Optimization of Single Obstacle Pair for Aircraft Wake Dissipation under Crosswind Condition** C. Wang, D. Zhao, S. Paramasivam, Nanyang Technological University, Singapore, Singapore; J. Schluter, Deakin University, Waurn Ponds, Australia	1430 hrs AIAA-2017-4239 **A Methodology for the Identification and Mapping Of High Altitude Aircraft Wake Vortices** R. Frej Vittale, L. Davenport, CSSI, Inc., Washington, D.C.	1500 hrs AIAA-2017-4240 **Aircraft Vortex Characterization by Estimating the Dominant Modes from the Return Power Spectrum of a Doppler LIDAR** S. Bhaskaran, R. Calhoun, Arizona State University, Tempe, AZ	1530 hrs AIAA-2017-4241 **Tolerable Errors in Mean EDR for Wake Turbulence Applications** E. Johnson, Federal Aviation Administration, Hampton, VA			

Thursday, 8 June 2017						
327-ASE-9	**Fundamentals of Engine Ice Crystal Icing**					**Columbine**
Chaired by: A. FLEGEL, NASA Glenn Research Center and D. DISCHINGER, Honeywell International, Inc.						
1400 hrs AIAA-2017-4242 **An Initial Study of the Fundamentals of Ice Crystal Icing Physics in the NASA Propulsion Systems Laboratory** P. Struk, T. Ratvasky, T. Bencic, J. Van Zante, M. King, NASA Glenn Research Center, Cleveland, OH; J. Tsao, Ohio Aerospace Institute, Cleveland, OH; et al.	1430 hrs AIAA-2017-4243 **Comparisons of Mixed-Phase Icing Cloud Simulations with Experiments Conducted at the NASA Propulsion Systems Laboratory** T. Bartkus, Ohio Aerospace Institute, Cleveland, OH; P. Struk, NASA Glenn Research Center, Cleveland, OH; J. Tsao, Ohio Aerospace Institute, Cleveland, OH	1500 hrs AIAA-2017-4244 **Particle Size Measurements from the first Fundamentals of Ice Crystal Icing Physics Test in the NASA Propulsion Systems Laboratory** M. King, NASA Glenn Research Center, Cleveland, OH; W. Bachalo, A. Kurek, Artium Technologies, Inc., Sunnyvale, CA	1530 hrs AIAA-2017-4245 **Comparison of Two Retrieval Techniques for Ice Particle Mass from in-situ Measurements: Implication for Particle Effective Density and Median Mass Diameter** P. Coutris, D. Leroy, E. Fontaine, A. Schwarzenboeck, National Center for Scientific Research (CNRS), Clermont-Ferrand, France; J. Strapp, Met Analytics, Inc., Toronto, Canada; A. Grandin, Airbus, Toulouse, France	1600 hrs AIAA-2017-4246 **Droplet Evaporation Model for Determining Liquid Water Content in Engine Icing Tunnels and Examination of the Factors Affecting Liquid Water Content** C. Davison, J. MaCleod, National Research Council Canada, Ottawa, Canada	1630 hrs AIAA-2017-4247 **Development of a Non-Intrusive Ultrasound Ice Accretion Sensor to Detect and Quantify Ice Accretion Severity** D. Fuleki, National Research Council Canada, Ottawa, Canada; Z. Sun, J. Wu, National Research Council Canada, Boucherville, Canada; G. Miller, National Research Council Canada, Ottawa, Canada	1700 hrs AIAA-2017-4248 **Electromagnetic Sensor for Detection of Ice Accretion inside Turbofan Jet Engines** T. Trapp, T. Shannon, B. Herrera, B. Jean, S. McClain, Baylor University, Waco, TX

Thursday, 8 June 2017						
328-ATIO.ACD-9	**Requirements Definition in Aircraft Design**					**Governor's Square 16**
Chaired by: D. WELLS, NASA Langley Research Center and M. ORR, Boeing Commercial Airplanes						
1400 hrs AIAA-2017-4249 **Effect of Passenger Preferences on the Integrated Design and Optimization of Aircraft Families and Air Transport Network** R. Perez, P. Jansen, Royal Military College of Canada, Kingston, Canada	1430 hrs AIAA-2017-4250 **Cost-Capability Analysis of UAS Family and Flexible Factory Design** S. Libby, D. Siedlak, H. Solano, O. Pinon-Fischer, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2017-4251 **Designing an Value Operations Methodology data driven predictive maintenance strategy** R. Curran, D. Bos, W. Verhagen, Delft University of Technology, Delft, The Netherlands; T. Omondi, Kenya Airways, Nairobi, Kenya	1530 hrs AIAA-2017-4252 **Impact of Vehicle Technologies and Operational Improvements on Air Transportation System Performance** M. Hassan, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2017-4253 **A Value Operations Methodology (VOM) Approach to Multi-Criteria Assessment of Similar-Class Air Vehicles: An Airbus A350 Versus the Boeing 787 Case Study** R. Curran, A. Gkirgkis, C. Kassapoglou, Delft University of Technology, Delft, The Netherlands	1630 hrs AIAA-2017-4254 **Development of a Value Driven Design Framework for Aviation** A. Desai, L. Vengadasalam, P. Hollingsworth, University of Manchester, Manchester, United Kingdom; P. Chinchapatnam, Rolls-Royce Group plc, Derby, United Kingdom	

Thursday, 8 June 2017						
329-ATIO.ATM-16	**Terminal and Surface Operations I**					**Plaza Court 3**
Chaired by: A. SARAF, ATAC Corporation						
1400 hrs AIAA-2017-4255 **Integrating Arrival Management with Airspace Design and Analysis** R. Sgorcea, M. Bush, R. Huleatt, MITRE Corporation, McLean, VA	1430 hrs AIAA-2017-4256 **Trajectory Specification for Terminal Air Traffic: Conflict Detection and Resolution** R. Paielli, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2017-4257 **Flexible Arrival & Departure Runway Allocation Using Mixed-Integer Linear Programming** P. Roling, J. Delsen, R. Curran, Delft University of Technology, Delft, The Netherlands	1530 hrs AIAA-2017-4258 **Optimization of Airport Surface Traffic: A Case-study of Incheon International Airport** Y. Eun, D. Jeon, Korea Aerospace Research Institute, Daejeon, South Korea; H. Lee, Y. Jung, NASA Ames Research Center, Moffett Field, CA; Z. Zhu, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; M. Jeong, Korea Aerospace Research Institute, Daejeon, South Korea; et al.	1600 hrs AIAA-2017-4259 **Airport Surface Movement Scheduling with Route Assignment Using First-Come First-Served Approach** B. Park, H. Lee, S. Kang, H. Lee, Inha University, Incheon, South Korea	1630 hrs AIAA-2017-4260 **Combining the assignment of pre-defined routes and RTAs to sequence and merge arrival traffic** R. Dalmau, J. Alenka, X. Prats, Technical University of Catalonia, Castelldefels, Spain	1700 hrs AIAA-2017-4261 **Impacts of Guidance function on Air Traffic Controller situation awareness** M. Ellejmi, EUROCONTROL, Brussels, Belgium

Thursday, 8 June 2017						
330-ATIO.ATM-17	**ATM Systems II**					**Plaza Court 2**
Chaired by: M. UNDERWOOD, NASA Langley Research Center						
1400 hrs AIAA-2017-4262 **The Networked Generalized Brownian Motion Model for Predictive ATM System Impact Assessment and Decision Support** B. Capozzi, C. Brinton, J. Rebollo, Mosaic ATM, Inc., Leesburg, VA	1430 hrs AIAA-2017-4263 **Evaluation of the Efficiency of Traffic Management Initiatives Wind Delays** O. Alsalous, CSSI, Inc., Washington, D.C.; R. Galaviz, J. Gulding, Federal Aviation Administration, Washington, D.C.	1500 hrs AIAA-2017-4264 **A Gaussian process based decision support tool for air traffic management** W. Eerland, S. Box, H. Fangohr, A. Sobester, University of Southampton, Southampton, United Kingdom	1530 hrs AIAA-2017-4265 **Integrity Monitoring of BDS/INS Loosely Integrated System Using Multiple Kalman Filters** S. Sun, S. Kuang, R. Liu, Civil Aviation University of China, Tianjin, China			

Thursday, 8 June 2017						
331-ATIO.ATM-18	**UAS Operations II**					**Plaza Court 1**
Chaired by: A. EVANS, Crown Consulting, Inc.						
1400 hrs AIAA-2017-4266 **Capacity Estimation for Low Altitude Airspace** V. Bulusu, University of California, Berkeley, Berkeley, CA; V. Polishchuk, Linköping University, Norrkoping, Sweden; R. Sengupta, University of California, Berkeley, Berkeley, CA; L. Sedov, Linköping University, Norrkoping, Sweden	1430 hrs AIAA-2017-4267 **Predicting Trajectories for Small Electric UASs for Safety Analyses** A. Tyagi, S. Ayyalasomayajula, N. Nigam, Intelligent Automation, Inc., Rockville, MD; C. Zhang, I. Hwang, Purdue University, West Lafayette, IN	1500 hrs AIAA-2017-4268 **Small Unmanned Aircraft System (sUAS) Trajectory Modeling in Support of UAS Traffic Management (UTM)** L. Ren, M. Castillo-Effen, H. Yu, General Electric Company, Niskayuna, NY; Y. Yoon, T. Nakamura, E. Johnson, Georgia Institute of Technology, Atlanta, GA; et al.	1530 hrs AIAA-2017-4269 **A Simplified Methodology for the Categorization of Unmanned Aerial Vehicles** L. Davenport, R. Frej Vittale, CSSI, Inc., Washington, D.C.	1600 hrs AIAA-2017-4270 **An innovative algorithm for 2D Collision Avoidance manoeuvers elaboration based on spiral trajectories** M. Orefice, V. Di Vito, Italian Aerospace Research Center (CIRA), Capua, Italy	1630 hrs AIAA-2017-4271 **A Wrapper Paradigm for Trusted Implementation of Autonomy Applications** S. Johnson, J. Couch, Adaptive Aerospace Group, Inc., Hampton, VA	

Thursday, 8 June 2017						
332-ATIO.TFPC-9/ATIO.GEPC-1	**Overview of NASA Convergent Aeronautic Solutions (CAS) Project Activities**					**Governor's Square 15**
Chaired by: P. CORNELL, NASA Glenn Research Center and M. WASZAK, NASA Langley Research Center						
1400 hrs Oral Presentation **Convergent Aeronautics Project Overiew** I. Lopez, NASA Glenn Research Center, Cleveland, OH	1430 hrs Oral Presentation **Digital Twin: Reducing Uncertainity in Useful Life** W. Leser, J. Hochhalter, P. Leser, J. Warner, J. Newman, G. Bomarito, NASA Langley Research Center, Hampton, VA; et al.	1500 hrs Oral Presentation **Learn to Fly Project Overview** M. Croom, J. Brandon, J. Foster, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2017-4272 **Autonomy Operatng System for UAVs: Pilot-in-a-Box** M. Lowry, NASA Ames Research Center, Moffett Field, CA	1600 hrs Oral Presentation **Description, Status, and Progress for the Convergent Aeronautics Solutions (CAS) High Voltage Hybrid Electric Propulsion Activity** R. Beach, NASA Glenn Research Center, Cleveland, OH	1630 hrs Oral Presentation **Development of Structural Energy Storage for Aeronautics Applications** D. Santiago-dejesus, B. Bednarcyk, B. DeMattia, NASA Glenn Research Center, Cleveland, OH; D. Hare, R. Smith, E. Olson, NASA Langley Research Center, Hampton, VA; et al.	1700 hrs AIAA-2017-4273 **Development of Mission Adaptive Digital Composite Aerostructure Technologies (MADCAT)** K. Cheung, D. Cellucci, NASA Ames Research Center, Moffett Field, CA; G. Copplestone, Massachusetts Institute of Technology, Cambridge, MA; N. Cramer, J. Fusco, NASA Ames Research Center, Moffett Field, CA; B. Jenett, Massachusetts Institute of Technology, Cambridge, MA; et al.

Thursday, 8 June 2017						
333-CFD-27	**High-Order Finite Element Methods**					**Tower Court D**
Chaired by: M. GALBRAITH and D. MAVRIPLIS, University of Wyoming						
1400 hrs AIAA-2017-4274 **On the Convergence of Higher-Order Finite Element Methods to Weak Solutions** B. Couchman, D. Darmofal, S. Allmaras, M. Galbraith, Massachusetts Institute of Technology, Cambridge, MA	1430 hrs AIAA-2017-4275 **Scalable Solution Strategies for Stabilized Finite-Element Flow Solvers on Unstructured Meshes, Part II** B. Reza Ahrabi, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY	1500 hrs AIAA-2017-4276 **Equivalence Conditions between Continuous Linear Finite Element and Finite Volume Discretizations of Non-Simplicial Elements** D. Isola, ANSYS, Inc., Montréal, Canada	1530 hrs AIAA-2017-4277 **Least squares overset finite element method for scalar hyperbolic problems in 2D** D. French, University of Cincinnati, Cincinnati, OH; C. Schrock, J. Benek, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2017-4278 **A Non-parametric Discontinuous Galerkin Formulation of the Integral Boundary Layer Equations with Strong Viscous/Inviscid Coupling** S. Zhang, M. Galbraith, S. Allmaras, M. Drela, D. Darmofal, Massachusetts Institute of Technology, Cambridge, MA		

Thursday, 8 June 2017						
334-CFD-28	**Turbulence Modeling II: Rans and Hybrid Approaches**					**Tower Court C**
Chaired by: N. ASHTON, University of Oxford and S. PENG, FOI - Swedish Defence Research Agency						
1400 hrs AIAA-2017-4279 **Zonal Detached Eddy Simulation extension to k-ω models** C. Uribe, J. Marty, ONERA, Meudon, France; G. Gerolymos, Pierre-and-Marie-Curie University, Paris, France	1430 hrs AIAA-2017-4280 **Simulation of a supersonic coaxial He/Air jet experiment with a hybrid RANS/LES variable turbulent Schmidt number model** L. Charrier, Paris Institute of Technology, Paris, France; G. Pont, Airbus, Les Mureaux, France; S. Marie, Paris Institute of Technology, Paris, France; P. Brenner, Airbus, Les Mureaux, France; F. Grasso, Paris Institute of Technology, Paris, France	1500 hrs AIAA-2017-4281 **Recalibrating Delayed Detached-Eddy Simulation to eliminate modelled-stress depletion** N. Ashton, University of Oxford, Oxford, United Kingdom	1530 hrs AIAA-2017-4282 **Assessment of shielding parameters in conventional DDES method under the presence of alternative turbulence length scales** N. Jain, J. Baeder, University of Maryland, College Park, College Park, MD	1600 hrs AIAA-2017-4283 **Adaptation of LES Subgrid Scale to Grey-Area Mitigation in Hybrid RANS-LES Modelling** S. Peng, Swedish Defense Research Agency (FOI), Stockholm, Sweden	1630 hrs AIAA-2017-4284 **Hybrid RANS/LES Calculations in SU2** E. Molina, C. Spode, R. Annes da Silva, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; D. Manosalvas-Kjono, S. Nimmagadda, T. Economon, Stanford University, Stanford, CA; et al.	1700 hrs AIAA-2017-4285 **Comparison of DES Turbulence Models with the Flow around Circular Cylinder at Re_D=3900** H. Tang, Aircraft Strength Research Institute of China, Xi'an, China; S. Chang, Beihang University, Beijing, China; Z. Cheng, Aircraft Strength Research Institute of China, Xi'an, China

Thursday, 8 June 2017						
335-CFD-29/TP-7	**Multiphase Flows and Heat Transfer Simulations I**					**Denver**
Chaired by: J. MCFARLAND, University of Missouri and J. CAPECELATRO, University of Michigan, Ann Arbor						
1400 hrs AIAA-2017-4286 **Compressible Turbulence Effects on Premixed Autoignition** C. Towery, R. Darragh, University of Colorado, Boulder, Boulder, CO; A. Poludnenko, Texas A&M University, College Station, TX; P. Hamlington, University of Colorado, Boulder, Boulder, CO	1430 hrs AIAA-2017-4287 **Computational Study of Shock Driven Multiphase Mixing in Scramjet Conditions** J. McFarland, University of Missouri, Columbia, Columbia, MO; M. Hagenmaier, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-4288 **Methods for Accurate Computations of Homogeneous Multi-phase Real Fluid Flows at All Speeds** H. Kim, H. Kim, Y. Choe, C. Kim, Seoul National University, Seoul, South Korea	1530 hrs AIAA-2017-4289 **Numerical Investigation of the Flow Structure of Underexpanded Jets in Quiescent Air using Real-Gas Thermodynamics** M. Banholzer, H. Müller, M. Pfitzner, University of the German Federal Armed Forces, Munich, Germany	1600 hrs AIAA-2017-4290 **Accurate and Efficient Prediction on Suction erformance of Thermal Vapor Compressor using Multi-phase Flow Computations** D. Min, H. Lee, H. Kim, Seoul National University, Seoul, South Korea; H. Lee, C. Lee, Doosan Heavy Industries, Yongin, South Korea; C. Kim, Seoul National University, Seoul, South Korea	1630 hrs AIAA-2017-4291 **A numerical study of Supercooled Large Droplets' impingement on airfoils** J. Shu, D. Zhu, Aviation Industry Corporation of China (AVIC), Shenyang, China	

Thursday, 8 June 2017						
336-CFD-30	**Methodologies for Simulations on Complex Meshes**					**Tower Court B**
Chaired by: T. EYMANN, CREATE-AV/Kestrel and C. CHANG, NASA-Langley Research Center						
1400 hrs AIAA-2017-4292 **CREATE™-AV Kestrel Dual-Mesh Simulations of the NASA Common Research Model** T. Eymann, CREATE Kestrel Team, Eglin AFB, FL; R. Nichols, University of Alabama, Birmingham, Arnold AFB, TN	1430 hrs AIAA-2017-4293 **Cause and Cure – Deterioration in Accuracy of CFD Simulations with Use of High-Aspect-Ratio Triangular/Tetrahedral Grids** S. Chang, NASA Glenn Research Center, Cleveland, OH; C. Chang, NASA Langley Research Center, Hampton, VA; B. Venkatachari, National Institute of Aerospace, Hampton, VA	1500 hrs AIAA-2017-4294 **High-Order Meshes for Flow Simulations with a Spectral Difference Method** A. Aguiar, C. Breviglieri, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; T. Martini dos Santos, J. Azevedo, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil; Z. Wang, University of Kansas, Lawrence, Lawrence, KS	1530 hrs AIAA-2017-4295 **Uses of Zero and Negative Volume Elements for Node-Centered Edge-Based Discretization** H. Nishikawa, National Institute of Aerospace, Hampton, VA	1600 hrs AIAA-2017-4296 **Quantifying Uncertainty in CFD Drag Computations on Unstructured Meshes** M. Souza, M. Ferrari, Embraer, São José dos Campos, Brazil; D. Ferrari, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; J. Azevedo, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil	1630 hrs AIAA-2017-4297 **A new high-order conservative patched grid strategy and its application in the inviscid flow simulation** Y. Dong, X. Deng, Y. Chen, D. Xu, National University of Defense Technology, Changsha, China; G. Wang, H. Zhang, Sun Yat-sen University, Guangzhou, China	1700 hrs AIAA-2017-4298 **A NURBS-Enhanced Treatment of Curved Boundary Integrating for the Time-Accurate Upwind Scheme with Unstructured Grids** Y. Xia, G. Wang, Zhejiang University, Hangzhou, China; C. Loh, Beijing Computational Science Research Center, Beijing, China; T. Ji, Y. Zheng, Zhejiang University, Hangzhou, China; H. Wu, University of Sherbrooke, Sherbrooke, Canada

Thursday, 8 June 2017		
337-F360-8 **1400 - 1600 hrs**	**Realization of a Digital Twin & Thread**	**Grand Ballroom I**

Moderators: Mat French, Systems Engineer & Architect, Senior Specialist, Rolls-Royce North American Technologies, Inc., and Melanie Lorang, Associate Technical Fellow, The Boeing Company

Panelists:

Dave Kasik
Retired Senior Technical Fellow
The Boeing Company

Don A. Kinard
Senior Fellow (Manufacturing)
Lockheed Martin Aeronautics

Edward M. Kraft
Associate Executive Director, Research
University of Tennessee Space Institute

Steve Wellborn
Senior Technical Fellow
Rolls-Royce

Academic Scholar: Col Tim West
Senior Materiel Leader
Test Operations Division
Arnold Engineering Development Complex

Thursday, 8 June 2017						
338-FD-32	**Three-Dimensional Boundary-Layer Instability**					**Terrace**
Chaired by: T. KOCIAN, Texas A&M University and P. PAREDES, NASA Langley Research Center						
1400 hrs AIAA-2017-4299 **Crossflow Transition on a Pitched Cone at Mach 8** J. Edelman, K. Casper, J. Henfling, R. Spillers, Sandia National Laboratories, Albuquerque, NM; S. Schneider, Purdue University, West Lafayette, IN	1430 hrs AIAA-2017-4300 **Computations of Crossflow Instability in Hypersonic Boundary Layers** M. Choudhari, F. Li, P. Paredes, NASA Langley Research Center, Hampton, VA; L. Duan, Missouri University of Science and Technology, Rolla, MO	1500 hrs AIAA-2017-4301 **Boundary Layer Stability Analysis of HIFiRE-5b Flight Geometry** A. Moyes, T. Kocian, D. Mullen, H. Reed, Texas A&M University, College Station, TX	1530 hrs AIAA-2017-4302 **Stationary Crossflow Breakdown due to Interaction Between Secondary Instabilities** F. Li, M. Choudhari, NASA Langley Research Center, Hampton, VA; L. Duan, Missouri University of Science and Technology, Rolla, MO	1600 hrs AIAA-2017-4303 **A DMD-Based Automatic Transition Prediction Method for Flows over Airfoils** M. Wu, Z. Han, S. Wang, W. Song, Northwestern Polytechnical University, Xi'an, China; E. Ferrer, Technical University of Madrid, Madrid, Spain		

Thursday, 8 June 2017						
339-FD-33	**Modal Analysis: Applications and New Approaches (Invited)**					**Windows**
Chaired by: K. TAIRA, Florida State University and M. HEMATI, University of Minnesota						
1400 hrs Oral Presentation **Proper orthogonal decomposition and resolvent analysis** A. Towne, Stanford University, Stanford, CA; T. Colonius, O. Schmidt, California Institute of Technology, Pasadena, CA	1430 hrs Oral Presentation **Reduced order models of complex flows using resolvent analysis** S. Symon, California Institute of Technology, Pasadena, CA; D. Sipp, ONERA, Meudon, France; B. McKeon, California Institute of Technology, Pasadena, CA	1500 hrs Oral Presentation **Practical Extensions and Applications of Dynamic Mode Decomposition** S. Dawson, California Institute of Technology, Pasadena, CA; M. Hemati, University of Minnesota, Twin Cities, Minneapolis, MN; C. Rowley, Princeton University, Princeton, NJ	1530 hrs Oral Presentation **Use of global stability analysis for active control of high-speed cavity flows** Y. Sun, K. Taira, L. Cattafesta, Florida State University, Tallahassee, FL; L. Ukeiley, University of Florida, Gainesville, Gainesville, FL	1600 hrs Oral Presentation **Data-driven modeling, control and sensor placement using cluster analysis** E. Kaiser, S. Brunton, B. Brunton, N. Kutz, University of Washington, Seattle, Seattle, WA; B. Noack, National Center for Scientific Research (CNRS), Orsay, France; L. Cattafesta, Florida State University, Tallahassee, FL; et al.	1630 hrs Oral Presentation **Use of Empirical Mode Decomposition for Separation of Spatiotemporal Scales in Unsteady Flows** P. Ansell, University of Illinois, Urbana-Champaign, Urbana, IL	1700 hrs Oral Presentation **Model Order Reduction of Flows Using POD and Sparse Coding Approaches** R. Deshmukh, J. McNamara, Ohio State University, Columbus, OH; J. Kolter, Carnegie Mellon University, Pittsburgh, PA

Thursday, 8 June 2017						
340-FD-34	**High Speed Flow Control**					**Capitol**
Chaired by: J. SOLOMON, Tuskegee University and B. VUKASINOVIC, Georgia Institute of Technology						
1400 hrs AIAA-2017-4304 **Fluidic Control of an Aggressive Offset Diffuser for a Supersonic Inlet** T. Burrows, B. Vukasinovic, A. Glezer, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2017-4305 **Impacts of Energy Deposition on Flow Characteristics over an Inlet** H. Pham, M. Myokan, T. Tamba, A. Iwakawa, A. Sasoh, Nagoya University, Nagoya, Japan	1500 hrs AIAA-2017-4306 **Research on the Flow Characteristics of DBD Plasma Actuation Based on High Speed Schlieren** L. Feng, C. Gao, Z. Lv, B. Wu, Y. Zhang, Northwestern Polytechnical University, Xi'an, China	1530 hrs AIAA-2017-4307 **Effect of Thermal Actuator on Vortex Characteristics in Supersonic Shear Layer** J. Shi, H. Yan, G. Bai, K. Lin, Northwestern Polytechnical University, Xi'an, China	1600 hrs AIAA-2017-4308 **Resonance Enhanced Microactuator (REM) Nozzles for Supersonic Flow Mixing** J. Solomon, C. Nayak, Tuskegee University, Tuskegee, AL	1630 hrs AIAA-2017-4309 **Switching Dynamics of a Fluid Diverter Valve Using Ultrasonic Excitation for Active Flow Control** M. Mair, J. Turner, M. Bacic, P. Ireland, University of Oxford, Oxford, United Kingdom	1700 hrs AIAA-2017-4310 **Numerical Simulations of Plasma Discharges in Supersonic Flows** A. Nekris, French-German Research Institute of Saint-Louis (ISL), Saint-Louis, France

Thursday, 8 June 2017						
341-FD-35	**Shock Boundary Interactions II**					**Tower Court A**
Chaired by: J. SCHMISSEUR						
1400 hrs AIAA-2017-4311 **Limiting Cases for Cylinder-Induced Shock Wave/Boundary Layer Interactions** S. Lindörfer, P. Kreth, C. Combs, J. Schmisseur, University of Tennessee, Tullahoma, Tullahoma, TN	1430 hrs AIAA-2017-4312 **Sensitivity analysis for the control of oblique shock wave/laminar boundary layer interactions at Mach 5.92** N. Hildebrand, A. Dwivedi, J. Nichols, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN; M. Jovanovic, University of Southern California, Los Angeles, CA	1500 hrs AIAA-2017-4313 **Investigation of the Effects of Ablation-Induced Roughness on Supersonic Flows** B. Kocher, C. Combs, P. Kreth, J. Schmisseur, University of Tennessee, Tullahoma, Tullahoma, TN	1530 hrs AIAA-2017-4314 **Sharp-Fin Induced Shock Wave/ Turbulent Boundary Layer Interactions in an Axisymmetric Configuration** J. Pickles, B. Mettu, P. Subbareddy, V. Narayanaswamy, North Carolina State University, Raleigh, NC	1600 hrs AIAA-2017-4315 **Simulation of Transitional Shockwave/Boundary-Layer Interaction Using Advanced RANS-based Modeling** B. Tester, J. Coder, University of Tennessee, Knoxville, Knoxville, TN; C. Combs, J. Schmisseur, University of Tennessee, Tullahoma, Tullahoma, TN	1630 hrs AIAA-2017-4316 **Performance and Efficiency Analysis of Hypersonic Airframe/ Engine Integration Vehicle based on Multiple Fragment Computation** L. Chen, Z. Guo, Z. Hou, W. Wenkai, National University of Defense Technology, Changsha, China	

Thursday, 8 June 2017						
342-GT-7	**Transonic/Supersonic Ground Testing**					**Director's Row J**
Chaired by: J. MICOL, NASA Langley Research Center and C. JORGENS, The Boeing Company						
1400 hrs AIAA-2017-4317 **Scaling Effects on Flow Quality for a Cold Adjustable Supersonic Wind Tunnel** J. Maxwell, Naval Research Laboratory, Washington, D.C.	1430 hrs AIAA-2017-4318 **Flow Quality Numerical Characterization for Cold Adjustable Supersonic Wind Tunnel** J. Maxwell, G. Goodwin, Naval Research Laboratory, Washington, D.C.	1500 hrs AIAA-2017-4319 **Study on The Method of High Blockage Free-Jet Test in Negative Pressure Condition** J. Wang, F. Wu, Aero Engine Corporation of China (AECC), Mianyang, China; Q. Xu, Tsinghua University, Beijing, China; Q. Xu, Q. Yang, Aero Engine Corporation of China (AECC), Mianyang, China				

Thursday, 8 June 2017						
343-ITAR-2	**Aerodynamic Database Modeling and Topics in CFD ITAR**					**Savoy**
Chaired by: J. SMITH, Sandia National Laboratories and J. DOYLE, US Army AMRDEC						
1400 hrs AIAA-2017-4539 **A Comparison of Single Panel and Single Plane Aerodynamic Math Modeling Approaches for a Tail-Controlled Missile** C. Rosema, Army Aviation and Missile Research Development and Engineering Center, Redstone Arsenal, AL	1430 hrs AIAA-2017-4540 **Aerodynamic Database Modeling of a Tail-Controlled Guided Multiple Launch Rocket System (TCG)** J. Doyle, Army Aviation and Missile Research Development and Engineering Center, Redstone Arsenal, AL	1500 hrs AIAA-2017-4541 **Computational Modeling of Molecular Contamination Due to Upper Stage Engine Operation using RANS and DSMC** M. Conway, S. Maghsoudy-Louyeh, P. Zittel, P. Sheaffer, The Aerospace Corporation, El Segundo, CA				

Thursday, 8 June 2017						
344-MDO-16	**Aeroelastic and Aero-Structures Optimization II**					**Director's Row I**
Chaired by: G. KENNEDY, Georgia Institute of Technology and F. ENGELSEN, The Boeing Company						
1400 hrs AIAA-2017-4320 **Static Aeroelastic Optimization of Aircraft Wing with Multiple Surfaces** W. Zhao, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1430 hrs AIAA-2017-4321 **Global-local Aeroelastic Optimization of Internal Structure of Transport Aircraft wing** M. Jrad, S. De, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2017-4322 **Framework for Multifidelity Aeroelastic Vehicle Design Optimization** D. Bryson, M. Rumpfkeil, University of Dayton, Dayton, OH; R. Durscher, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2017-4323 **MDO/MSO of Slender Thin Walled Box Beam Model** F. Danzi, G. Frulla, E. Cestino, Technical University of Turin, Turin, Italy; J. Gibert, Purdue University, West Lafayette, IN	1600 hrs AIAA-2017-4324 **Aeroelastic Modelling and Testing of a Thin Laminated Composite Missile Fin/Wing** G. Aslan, D. Kurtulus, Middle East Technical University, Ankara, Turkey; S. Kirimlioglu, Z. Kulunk, ROKETSAN Missile Industries, Inc., Ankara, Turkey		

Thursday, 8 June 2017						
345-MDO-17	**Aircraft Design Optimization III**					**Director's Row H**
Chaired by: P. PIPERNI, Clarkson University						
1400 hrs AIAA-2017-4325 **LEAPS: An Initial Assessment Towards a Multi-Order Approach to Air Vehicle Mission Analysis** F. Capristan, J. Welstead, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2017-4326 **Multi-Level MDO of a Long-Range Transport Aircraft Using a Distributed Analysis Framework** S. Goertz, C. Ilic, German Aerospace Center (DLR), Braunschweig, Germany; J. Jepsen, German Aerospace Center (DLR), Hamburg, Germany; M. Leitner, German Aerospace Center (DLR), Oberpfaffenhofen, Germany; M. Schulze, German Aerospace Center (DLR), Göttingen, Germany; A. Schuster, German Aerospace Center (DLR), Braunschweig, Germany; et al.	1500 hrs AIAA-2017-4327 **Aircraft Topology Generation via Recursive Component Fitting Operators** P. Chambers, A. Sobester, University of Southampton, Southampton, United Kingdom	1530 hrs AIAA-2017-4328 **Modeling Operational Variability for Robust Multidisciplinay Design Optimization** N. Peteilh, M. Mongeau, French Civil Aviation University, Toulouse, France; C. Bes, Paul Sabatier University III, Toulouse, France; T. Druot, M. Conderolle-Lestremau, Airbus, Toulouse, France	1600 hrs AIAA-2017-4329 **A Surrogate-Based Multi-Disciplinary Design Optimization Framework Exploiting Wing-Propeller Interaction** C. Alba, A. Elham, Delft University of Technology, Delft, The Netherlands; B. German, Georgia Institute of Technology, Atlanta, GA; L. Veldhuis, Delft University of Technology, Delft, The Netherlands	1630 hrs AIAA-2017-4330 **Game theory and evolutionary algorithms applied to MDO in the AGILE European project** P. Della Vecchia, L. Stingo, S. Corcione, D. Ciliberti, F. Nicolosi, A. De Marco, University of Naples "Federico II", Naples, Italy; et al.	

Thursday, 8 June 2017						
346-MST-8	**Multidisciplinary Modeling and Simulation Applications**					**Plaza Court 6**
Chaired by: C. REYNERSON and B. APONSO, NASA Ames Research Center						
1400 hrs AIAA-2017-4331 **The use of Simulation Tools to Estimate Ship-Helicopter Operating Limitations** J. Pereira Figueira, A. Taghizad, ONERA, Salon de Provence, France; M. Abid, Aix-Marseille University, Salon de Provence, France	1430 hrs AIAA-2017-4332 **Flight Mechanical Modelling considering Flexibility and Flight Control Functions in Preliminary Aircraft Design** V. Krishnamurthy, R. Luckner, Technical University of Berlin, Berlin, Germany	1500 hrs AIAA-2017-4333 **Continuing the Development of a Physics-Based Weight (PBWeight) Prediction Tool for Conceptual Design: Build 2** T. Winter, B. Scheneman, D. Fung, P. Chung, M4 Engineering, Inc., Long Beach, CA	1530 hrs AIAA-2017-4334 **A Spatial Model for Misleading Intelligent Air based Threats** A. Ramezani, Malek-Ashtar University of Technology, Tehran, Iran; M. Malek, Khajeh Nasir Toosi University of Technology, Tehran, Iran; H. Sahami, R. Hosnavi, Malek-Ashtar University of Technology, Tehran, Iran	1600 hrs AIAA-2017-4335 **Optimizing Intermodal Traffic Management Involving Airports and Railway using Forecast and What-if Capability** O. Milbredt, F. Rudolph, E. Grunewald, German Aerospace Center (DLR), Braunschweig, Germany	1630 hrs AIAA-2017-4336 **A Multi-disciplinary Optimization Design Method for Airborne Radome** J. Deng, G. Zhou, Nanjing University of Aeronautics and Astronautics, Nanjing, China	

Thursday, 8 June 2017						
347-TFM-11	**Theoretical Aerodynamics**					**Spruce**
Chaired by: Z. RUSAK, Rensselaer Polytechnic Institute						
1400 hrs AIAA-2017-4337 **The Stall of Airfoils with Blunt Noses at Low to Moderately High Reynolds Numbers** M. Kraljic, Z. Rusak, Rensselaer Polytechnic Institute, Troy, NY	1430 hrs AIAA-2017-4338 **Approximate Hessian for Accelerated Convergence of Aerodynamic Shape Optimization Problems** D. Shi-Dong, S. Nadarajah, McGill University, Montréal, Canada	1500 hrs AIAA-2017-4339 **Non-circulatory fluid forces on panels and airfoils with porosity gradients** R. Hajian, J. Jaworski, Lehigh University, Bethlehem, PA	1530 hrs AIAA-2017-4340 **Towards a Low-Order Model for Transonic Flutter Prediction** M. Opgenoord, M. Drela, K. Willcox, Massachusetts Institute of Technology, Cambridge, MA			

Thursday, 8 June 2017						
348-TP-8	**Hypersonics and Thermal Management**					**Plaza Court 5**
Chaired by: W. TSAI, California State University, Maritime Academy and C. SMITH, Orbital ATK						
1400 hrs AIAA-2017-4341 **Effect of transport coefficients modeling on hypersonic non-equilibrium flow simulations** X. Wang, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1430 hrs AIAA-2017-4342 **Post-Shock Temperature and CO Number Density Measurements in CO and CO_2** M. MacDonald, Jacobs, Moffett Field, CA; A. Brandis, B. Cruden, Analytical Mechanics Associates, Inc., Moffett Field, CA	1500 hrs AIAA-2017-4343 **Influence of Surface Chemistry on Continuum Breakdown in High-Speed Chemically Reacting Flows** S. Subramaniam, K. Stephani, University of Illinois, Urbana-Champaign, Urbana, IL	1530 hrs AIAA-2017-4344 **Venus Lander Electronics Payload Thermal Management Using a Multi-stage Refrigeration System** K. Anderson, C. McNamara, California State Polytechnic University, Pomona, Pomona, CA; A. Gatti, Ingenium Technical Services, Inc., San Gabriel, CA	1600 hrs AIAA-2017-4345 **Prediction of Cool-Down Time of a Solid Rocket Motor by a Surrogate Model** C. Tola, M. Nikbay, Istanbul Technical University, Istanbul, Turkey	1630 hrs AIAA-2017-4346 **Electro-thermal analysis of an Al-Ti multilayer thin film microheater for MEMS thruster application** X. Li, Y. Huang, X. Xu, D. Xiao, W. Yao, National University of Defense Technology, Changsha, China	

Thursday, 8 June 2017						
349-TP-9	**Advanced and Multiphase Modeling**					**Plaza Court 4**
Chaired by: E. SHORT, Raytheon Company and S. SHERIF, University of Florida and P. CROSS, NAVAIR WD						
1400 hrs AIAA-2017-4347 **Construction of Finite Rate Surface Chemistry Models From Molecular Beam Experimental Data** K. Swaminathan Gopalan, K. Stephani, University of Illinois, Urbana-Champaign, Urbana, IL	1430 hrs AIAA-2017-4348 **Comprehensive Studies on Rarefied Jet and Jet Impingement Flows with Gaskinetic Methods** C. Cai, X. He, Michigan Technological University, Houghton, MI	1500 hrs AIAA-2017-4349 **Analysis of Smoke-Aerosol Formation in Pressurized Turbulent Kerosene/Air Flames Using Different Soot Models** M. Darbandi, M. Ghafourizadeh, M. Saidi, Sharif University of Technology, Tehran, Iran; G. Schneider, University of Waterloo, Waterloo, Canada	1530 hrs AIAA-2017-4350 **Comparison of Image Preprocessing Methods for Fuel Droplet Characterization.** C. Jourdain, J. Weiss, P. Seers, University of Québec, Montréal, Canada	1600 hrs AIAA-2017-4351 **Studies on Radiation Effects on Pre-ignition Heat Flux Distribution in SRMs with Non-Uniform Port Geometry** A. Sekar, V. Natarajan, P. T R, N. Murugan, V. Saravanan, V. S, Kumaraguru College of Technology, Coimbatore, India; et al.	1630 hrs AIAA-2017-4352 **Evaluation of an Eulerian-Lagrangian Spray Atomization (ELSA) Model for Nozzle Flow: Modeling of Coupling Between Dense and Disperse Regions** T. Leung, C. Groth, University of Toronto, Toronto, Canada; J. Hu, Pratt & Whitney, Toronto, Canada	1700 hrs Oral Presentation **A Novel Energy-Based Aerthermoviscoelastic Modeling Frame for Multiple-field System Dynamic Investigations, Bond Graph Approach** A. Zanj, F. He, Flinders University, Adelaide, Australia; P. Breedveld, University of Twente, Enschede, The Netherlands

Thursday, 8 June 2017		
350-CASE-5 **1600 - 1730 hrs**	**Complexity in Aviation Roundtable**	**Governor's Square 14**
This fast-paced session is open to all AVIATION/CASE 2017 attendees. The purpose of this facilitated session is to provide a high-level overview in rapid-fire format of what the best minds in system complexity are thinking about and/or working on. The session is a discussion-based roundtable format with 10-minute time slots for CASE Scholars and any others who wish to explain new ideas, philosophies, breakthroughs, studies to an interactive audience on the topic of complexity in aviation. The time slots are assigned just before the roundtable begins. After a brief overview, the presenter will ask for discussion points or questions from the audience. Once time is called, the next presenter will take the stage, and so on. This is a great capstone activity to CASE 2017. Chair: Javier Calvo-Amodio, Assistant Professor, Industrial and Manufacturing Engineering, Oregon State University		

Thursday, 8 June 2017		
351-NW-15 **1600 - 1630 hrs**	**Networking Coffee Break**	**Meeting Room Foyers**

Thursday, 8 June 2017		
352-LECT-10 **1730 - 1830 hrs**	**Chanute Flight Test Award Lecture**	**Grand Ballroom I**
Flight Test and Automation **Lt. Col. William R. Gray III** U.S. Air Force (retired), Chief Test Pilot, U.S. Air Force Test Pilot School, Edwards AFB		

Thursday, 8 June 2017		
353-CASE-6 **1800 - 1930 hrs**	**Complex Aerospace Systems Exchange (CASE) Networking Social**	**Tower Court D**

Friday

Friday, 9 June 2017		
354-NW-16 **0730 - 0800 hrs**	**Networking Coffee Break**	**Plaza Foyer**

Friday, 9 June 2017		
355-SB-5 **0730 - 0800 hrs**	**Speakers' Briefing**	**Session Rooms**

Friday, 9 June 2017		
356-PLNRY-5 **0800 - 0900 hrs**	**Plenary**	**Plaza Ballroom**
Urban On-Demand Aerial Ridesharing - The Next Commercial Aviation Market **Mark D. Moore** Director of Aviation Uber Engineering		

Friday, 9 June 2017						
357-NW-17 0900 - 0930 hrs	Networking Coffee Break					Meeting Room Foyers

Friday, 9 June 2017						
358-AFM-8	Aeroservoelastic (ASE) Methods					Governor's Square 17
Chaired by: B. DANOWSKY, Systems Technology, Inc.						
0930 hrs AIAA-2017-4353 **Flutter Suppression of a Small Flexible Aircraft using MIDAAS** B. Danowsky, Systems Technology, Inc., Hawthorne, CA	1000 hrs AIAA-2017-4354 **Flutter Suppression of an Aeroelastic Wing Using Aerodynamic Observables, Leading-Edge, and Trailing-Edge Control Surfaces** J. Oremland, V. Suryakumar, T. Strganac, Texas A&M University, College Station, TX; A. Mangalam, Tao Systems, Hampton, VA	1030 hrs AIAA-2017-4355 **A Time-Domain Substructure Synthesis for Finite Rotations of Flexible Mechanical Systems** C. Shulin, L. Li, C. Zhaoyue, Beijing Institute of Technology, Beijing, China	1100 hrs AIAA-2017-4356 **Unsteady Fluid-Structure-Jet Interaction Modeling Methods for Agile High-Speed Vehicles** R. Kitson, C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI	1130 hrs AIAA-2017-4357 **Design and Implementation of a Flutter Suppression Experiment** H. Briggs, ATA Engineering, Inc., San Diego, CA		

Friday, 9 June 2017						
359-APA-42	Aerodynamic-Structural Dynamics Interaction II					Century
Chaired by: J. AZEVEDO and S. MORRIS, Engineering Systems, Inc.						
0930 hrs AIAA-2017-4358 **Economical Unsteady High Fidelity Aerodynamics in a Structural Optimization with a Flutter Constraint** R. Bartels, B. Stanford, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2017-4359 **Driven versus "Free Flutter" Motion of a NACA 0018 Finite Span Rigid Wing** E. Culler, J. Farnsworth, University of Colorado, Boulder, Boulder, CO; C. Fagley, J. Seidel, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1030 hrs AIAA-2017-4360 **A cyber-physical fluid dynamics investigation of the impact of fluid structure interaction on low-Reynolds number wings and leading edge vortex evolution** R. Gowda, M. Anwar, University of Massachusetts, Lowell, Lowell, MA; F. Manar, University of Maryland, College Park, College Park, MD; B. Olson, K. Tite, University of Massachusetts, Lowell, Lowell, MA; A. Jones, University of Maryland, College Park, College Park, MD; et al.	1100 hrs AIAA-2017-4361 **Reduced Order Transonic Aeroelastic Gust Response Simulation of Large Aircraft** P. Bekemeyer, S. Timme, University of Liverpool, Liverpool, United Kingdom	1130 hrs AIAA-2017-4362 **Bifurcation behavior and unsteady flow mechanism of limit cycle oscillation of transonic wing** N. Liu, X. Yang, C. Guo, Y. Liu, Aviation Industry Corporation of China (AVIC), Shenyang, China; J. Bai, Northwestern Polytechnical University, Xi'an, China		

Friday, 9 June 2017						
360-APA-43	Special Session: Aerodynamic Design Optimization III					Silver
Chaired by: J. HICKEN, Rensselaer Polytechnic Institute and T. RENDALL, University of Bristol						
0930 hrs AIAA-2017-4363 **Adjoint Formulation Investigations of Benchmark Aerodynamic Design Cases in SU2** T. Economon, J. Alonso, Stanford University, Stanford, CA; T. Albring, N. Gauger, Technical University of Kaiserslautern, Kaiserslautern, Germany	1000 hrs AIAA-2017-4364 **High-Fidelity Aerodynamic Shape Optimization using Immersed Boundary Method** K. Gobal, R. Grandhi, Wright State University, Dayton, OH	1030 hrs AIAA-2017-4365 **Global Optimization of Multimodal Aerodynamic Optimization Benchmark Case** D. Poole, C. Allen, T. Rendall, University of Bristol, Bristol, United Kingdom	1100 hrs AIAA-2017-4366 **Aerodynamic Design of a Rectangular Wing in Subsonic Inviscid Flow by Direct and Surrogate-based Optimization** X. Du, A. Amrit, A. Thelen, L. Leifsson, Iowa State University, Ames, IA; Y. Zhang, Z. Han, Northwestern Polytechnical University, Xi'an, China; et al.	1130 hrs AIAA-2017-4367 **Surrogate-Based Optimization Applied to Benchmark Aerodynamic Design Problems** Y. Zhang, Z. Han, Northwestern Polytechnical University, Xi'an, China; L. Leifsson, Iowa State University, Ames, IA		

Friday, 9 June 2017						
361-ASE-10	**Wake Vortex and Turbulence II**					**Beverly**
Chaired by: N. AHMAD, NASA Langley Research Center and T. MISAKA, Tohoku University						
0930 hrs AIAA-2017-4368 **Effects of Ground Surface Conditions on Aircraft Wake Vortex Evolution** P. Kazarin, V. Golubev, Embry-Riddle Aeronautical University, Daytona Beach, FL	1000 hrs AIAA-2017-4369 **Comparison of Probabilistic Approaches for Predicting the Cone of Uncertainty in Aircraft Wake Vortex Evolution** P. Kazarin, Embry-Riddle Aeronautical University, Daytona Beach, FL; A. Provalov, ISA Software, Bethesda, MD; V. Golubev, Embry-Riddle Aeronautical University, Daytona Beach, FL	1030 hrs AIAA-2017-4370 **High Ice Water Concentrations in the 19 August 2015 Coastal Mesoconvective System** F. Proctor, S. Harrah, NASA Langley Research Center, Hampton, VA; G. Switzer, J. Strickland, P. Hunt, Analytical Mechanics Associates, Inc., Hampton, VA	1100 hrs AIAA-2017-4371 **Large Eddy Simulation of Wake Vortices in Ground Effect with Realistic Terrain around Airport** T. Misaka, S. Obayashi, Tohoku University, Sendai, Japan			

Friday, 9 June 2017						
362-ASE-11	**Icing Aerodynamics**					**Columbine**
Chaired by: S. MCCLAIN, Baylor University and R. KREEGER, NASA Glenn Research Center						
0930 hrs AIAA-2017-4372 **Low-Reynolds Number Aerodynamics of an 8.9% Scale Semispan Swept Wing for Assessment of Icing Effects** A. Broeren, NASA Glenn Research Center, Cleveland, OH; B. Woodard, J. Diebold, University of Illinois, Urbana-Champaign, Urbana, IL; F. Moens, ONERA, Meudon, France	1000 hrs AIAA-2017-4373 **Effect of Ice Shape Fidelity on Swept Wing Aerodynamic Performance** S. Camello, M. Bragg, University of Washington, Seattle, Seattle, WA; A. Broeren, NASA Glenn Research Center, Cleveland, OH; C. Lum, University of Washington, Seattle, Seattle, WA; B. Woodard, University of Illinois, Urbana-Champaign, Urbana, IL; S. Lee, Vantage Partners, LLC, Cleveland, OH	1030 hrs AIAA-2017-4374 **The Application of a Five-Hole Probe Wake-Survey Technique to the Study of Swept Wing Icing Aerodynamics** C. Lum, N. Sandhu, University of Washington, Seattle, Seattle, WA; J. Diebold, B. Woodard, University of Illinois, Urbana-Champaign, Urbana, IL; M. Bragg, University of Washington, Seattle, Seattle, WA	1100 hrs AIAA-2017-4375 **3D Computational Icing Method for Aircraft Conceptual Design** G. Fujiwara, M. Bragg, University of Washington, Seattle, Seattle, WA	1130 hrs AIAA-2017-4376 **Numerical Study of Droplet Trajectory and Collection Efficiency in IRT with Large Blockage Effects** C. Qin, E. Loth, University of Virginia, Charlottesville, Charlottesville, VA		

Friday, 9 June 2017						
363-ATIO.ACD-10	**Unconventional Missions and Structures**					**Governor's Square 16**
Chaired by: C. BIL, RMIT University and D. WELLS, NASA Langley Research Center						
0930 hrs AIAA-2017-4377 **Experimental Testing of a New Fast Curing Adhesive for Structural Repair** T. Lapid, C. Bil, RMIT University, Melbourne, Australia; G. Hanlon, Five Rings Aerospace Pty. Ltd., East Keilor, Australia	1000 hrs AIAA-2017-4378 **Design and Experimental Validation of a Propulsion Duct for a Jet Propelled Low Observable Scaled UAV Demonstrator** L. Bougas, M. Hornung, C. Rößler, Technical University of Munich, Garching, Germany	1030 hrs AIAA-2017-4379 **Extension of HCDstruct for Transonic Aeroservoelastic Analysis of Unconventional Aircraft Concepts** J. Quinlan, F. Gern, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2017-4380 **A Design Survey of Unmanned Tactical Rotorcraft for Efficient Hover and Cruise** R. Scott, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA	1130 hrs AIAA-2017-4381 **Analysis of the Strength and Stiffness of the Underwater Autorotating Rotor** N. Ding, M. Chen, M. Wu, Z. Wu, Beihang University, Beijing, China; H. Zhang, D. Zhang, Tianjin University, Tianjin, China		

Friday, 9 June 2017						
364-ATIO.ATM-19	**UAS Sense and Avoid I**					**Plaza Court 1**
Chaired by: V. SCHULTZ, NASA Langley Research Center						
0930 hrs AIAA-2017-4382 **UAS Well Clear Recovery against Non-Cooperative Intruders using Vertical Maneuvers** A. Cone, D. Thipphavong, NASA Ames Research Center, Moffett Field, CA; S. Lee, Crown Consulting, Inc., Arlington, VA; C. Santiago, NASA Ames Research Center, Moffett Field, CA	1000 hrs AIAA-2017-4383 **An Alternative Time Metric to Modified Tau for Unmanned Aircraft System Detect And Avoid** M. Wu, NASA Ames Research Center, Moffett Field, CA; V. Bageshwar, E. Euteneuer, Honeywell International, Inc., Golden Valley, MN	1030 hrs AIAA-2017-4384 **Unmanned Aircraft Systems Detect and Avoid Sensor Hybrid Estimation Error Analysis** A. Canolla, M. Jamoom, B. Pervan, Illinois Institute of Technology, Chicago, IL	1100 hrs AIAA-2017-4385 **Determining Required Surveillance Performance for Unmanned Aircraft Sense and Avoid** M. Edwards, J. Mackay, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA	1130 hrs AIAA-2017-4386 **Evaluation of a Radar Based Three-Dimensional Detect and Avoid System for Small Unmanned Aerial Systems** C. Ben, M. Keller, N. Voget, D. Moormann, RWTH Aachen University, Aachen, Germany	1200 hrs AIAA-2017-4387 **Characterising See and Avoid** R. Clothier, B. Williams, K. Cox, S. Hegarty-Cremer, The Boeing Company, Brisbane, Australia	

Friday, 9 June 2017						
365-ATIO.ATM-20	**Operational Safety I**					**Plaza Court 2**
Chaired by: L. REN, GE Global Research						
0930 hrs AIAA-2017-4388 **Real-Time Prediction of Safety Margins in the National Airspace** M. Daigle, NASA Ames Research Center, Moffett Field, CA; I. Roychoudhury, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; L. Spirkovska, K. Goebel, NASA Ames Research Center, Moffett Field, CA; S. Sankararaman, J. Ossenfort, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; et al.	1000 hrs AIAA-2017-4389 **Aircraft Laser Strike Geolocation System** T. Reynolds, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA	1030 hrs AIAA-2017-4390 **A Discussion of Dynamic Configuration Technology in Complex Avionics System** Z. Jiang, T. Zhao, S. Wang, Beihang University, Beijing, China				

Friday, 9 June 2017						
366-ATIO.ATM-21	**Terminal and Surface Operations II**					**Plaza Court 3**
Chaired by: J. JONES, MIT Lincoln Laboratory						
0930 hrs AIAA-2017-4391 **Impact of Electric Taxi Systems on Airport Apron Operations and Gate Congestion** S. Soepnel, Schiphol Group, Delft, The Netherlands; P. Roling, Delft University of Technology, Delft, The Netherlands	1000 hrs AIAA-2017-4392 **Archetypal Models of Runway Incursions** D. Bhargava, K. Marais, Purdue University, West Lafayette, IN	1030 hrs AIAA-2017-4393 **Effect of Uncertainty on Dynamic Scheduling of Runway Operations** Y. Matsuno, A. Andreeva-Mori, N. Matayoshi, Japan Aerospace Exploration Agency (JAXA), Mitaka, Japan	1100 hrs AIAA-2017-4394 **Analysis of runway capacity influencing factors to derive a runway capacity model for expansion planning** S. Kern, German Aerospace Center (DLR), Braunschweig, Germany			

Friday, 9 June 2017						
367-ATIO.DE-2	**Design Processes and Education**					**Governor's Square 11**
Chaired by: G. CREARY, NASA-Langley Research Center						
0930 hrs AIAA-2017-4396 **Teaching Airplane Flight Performance and Design from a Pilots Perspective** L. Uitenham, F. Ferguson, J. Kizito, North Carolina A&T State University, Greensboro, NC	1000 hrs AIAA-2017-4398 **"The paper is patient": project-based education of rotorcraft design involving ground- and flight-tests** D. Feszty, Carleton University, Ottawa, Canada	1030 hrs AIAA-2017-4399 **Complex Aerospace Systems Engineering Education - Lessons Learned from Hands-On Drone Projects** A. Chaput, University of Texas, Austin, Austin, TX	1100 hrs AIAA-2017-4400 **Design of a Low Variability Model Launcher for Teaching Principles of Flight to Students** S. Kerimani, V. B C, D. Ghate, Indian Institute of Space Science and Technology, Thiruvananthapuram, India; R. Pant, Indian Institute of Technology Bombay, Mumbai, India			

Friday, 9 June 2017						
368-CFD-31	**Special Session: Recent Advances in Model Reduction Approaches for CFD**					**Windows**
Chaired by: E. JOHNSEN, University of Michigan						
0930 hrs Oral Presentation **Modeling error, solution error, model conditioning, and chaos** Q. Wang, Massachusetts Institute of Technology, Cambridge, MA; H. Xiao, Virginia Polytechnic Institute and State University, Blacksburg, VA	1000 hrs Oral Presentation **Data-driven Reduced Order Modeling of Rocket Combustor Dynamics** K. Duraisamy, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs Oral Presentation **Low-order inviscid vortex models as a dynamical template for flow estimation** J. Eldredge, D. Darakananda, University of California, Los Angeles, Los Angeles, CA; D. Williams, Illinois Institute of Technology, Chicago, IL; T. Colonius, California Institute of Technology, Pasadena, CA	1100 hrs Oral Presentation **Network-theoretic approaches for characterizing, modeling, and controlling fluid flows** A. Nair, K. Taira, Florida State University, Tallahassee, FL; S. Brunton, University of Washington, Seattle, Seattle, WA	1130 hrs Oral Presentation **Lagrangian Dimensionality Reduction of Convection Dominated Nonlinear Flows** M. Balajewicz, University of Illinois, Urbana-Champaign, Urbana, IL	1200 hrs Oral Presentation **An adaptive discontinuous Galerkin reduced-basis element method: application to aerodynamic flows** M. Yano, University of Toronto, Toronto, Canada	

Friday, 9 June 2017						
369-CFD-32	**Shock Capturing II**					**Tower Court D**
Chaired by: P. GNOFFO, NASA-Langley Research Center and D. CARAENI, CD-Adapco						
0930 hrs AIAA-2017-4401 **Feature Detection and Curve Fitting Using Fast Walsh Transforms for Shock Tracking: Applications** P. Gnoffo, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2017-4402 **Unsteady Low-Mach Preconditioning for Roe Flux-Differencing Scheme** D. Caraeni, J. Wiess, CD-adapco, Lebanon, NH	1030 hrs AIAA-2017-4403 **Multidimensional Extension and Application of Entropy-Consistent Scheme for Navier-Stokes Equations on Unstructured Grids** J. Ren, G. Wang, B. Ma, Northwestern Polytechnical University, Xi'an, China				

Friday, 9 June 2017						
370-CFD-34	**Lagrangian and Particle Methods**					**Denver**
Chaired by: M. BARAD, NASA Ames Research Center						
0930 hrs AIAA-2017-4404 **Lattice Boltzmann and Navier-Stokes Cartesian CFD Approaches for Airframe Noise Predictions** M. Barad, J. Kocheemoolayil, C. Kiris, NASA Ames Research Center, Moffett Field, CA	1000 hrs AIAA-2017-4405 **Wingtip Vortex Preservation Using a Coupled Vortex Particle Method and Computational Fluid Dynamics Solver** S. Huntley, D. Jones, A. Gaitonde, University of Bristol, Bristol, United Kingdom	1030 hrs AIAA-2017-4406 **A Subgrid Model with Multiple Relaxation Time for Lattice Boltzmann Method and Its Application** Y. Jia, W. Sang, Y. Cai, Northwestern Polytechnical University, Xi'an, China				

Friday, 9 June 2017						
371-CFD-35	**Parallel Computing Methodologies I**					**Tower Court B**
Chaired by: M. HOWARD, Sandia National Laboratories and C. STONE, Computational Science and Engineering						
0930 hrs AIAA-2017-4407 **Towards Performance Portability in a Compressible CFD Code** M. Howard, A. Bradley, S. Bova, J. Overfelt, R. Wagnild, D. Dinzl, Sandia National Laboratories, Albuquerque, NM; et al.	1000 hrs AIAA-2017-4408 **Performance Optimization of a Multiblock Turbomachinery Multidisciplinary Code on Heterogeneous Computing Systems** C. Stone, Computational Science and Engineering, LLC, Athens, GA; R. Davis, D. Lee, University of California, Davis, Davis, CA	1030 hrs AIAA-2017-4409 **Acceleration of Real Gas Physics Routines on Parallel Architectures using Kokkos** M. Carilli, N. Mundis, ERC, Inc., Edwards AFB, CA; V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA	1100 hrs AIAA-2017-4410 **Optimizing performance of combustion chemistry solvers on Intel's Many Integrated Core (MIC) architectures.** H. Sitaraman, R. Grout, National Renewable Energy Laboratory, Golden, CO	1130 hrs AIAA-2017-4411 **Computational Performance of a LES Solver for Supersonic Jet Flow Applications** C. Junqueira-Junior, J. Azevedo, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil; S. Yamouni, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; W. Wolf, University of Campinas, Campinas, Brazil		

Friday, 9 June 2017						
372-CFD-36	**Optimization Techniques for CFD**					**Gold**
Chaired by: X. GAO, Colorado State Univ						
0930 hrs AIAA-2017-4412 **Energetically Optimal Flapping Flight via a Fully Discrete Adjoint Method with Explicit Treatment of Flapping Frequency** J. Wang, University of California, Berkeley, Berkeley, CA; M. Zahr, Lawrence Berkeley National Laboratory, Berkeley, CA; P. Persson, University of California, Berkeley, Berkeley, CA	1000 hrs AIAA-2017-4413 **Aerodynamic Topology Optimization: Some Observations on Hysteresis** C. Othmer, Volkswagen, Belmont, CA; D. Manosalvas-Kjono, A. Jameson, J. Alonso, Stanford University, Stanford, CA	1030 hrs AIAA-2017-4414 **A Hybrid GMRES Solver with Deflation for Ill-conditioned Adjoint Systems for Aerodynamic Shape Optimization** C. Chen, S. Nadarajah, McGill University, Montréal, Canada				

Friday, 9 June 2017		
373-F360-9 0930 - 1130 hrs	NASA Aeronautics New Aviation	Grand Ballroom I

Moderator: Rich Wahls, Strategic Technical Advisor, Advanced Air Vehicles Program Aeronautics Research Mission Directorate, NASA Langley Research Center

Panelists:

Brent Cobleigh
Project Manager
Flight Demonstrations and Capabilities Project
Integrated Aviation Systems Program
NASA Armstrong Flight Research Center

Peter Coen
Project Manager
Commercial Supersonic Technology
NASA Langley Research Center

Fay Collier
Project Manager
Environmentally Responsible Aviation
NASA Langley Research Center

Jaiwon Shin
Associate Administrator
Aeronautics Research Mission Directorate
NASA

Ed Waggoner
Director
Integrated Aviation Systems Program
NASA

Friday, 9 June 2017						
374-FD-37	Subsonic Boundary-Layer Receptivity and Instability					Terrace
Chaired by: E. WHITE, Texas A&M University and J. EPPINK, NASA Langley Research Center						
0930 hrs AIAA-2017-4415 **Time Resolved Stereo Particle Image Velocimetry Measurements of the Instabilities Downstream of a Backward-Facing Step in a Swept-Wing Boundary Lyaer** J. Eppink, C. Yao, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2017-4416 **Measurements of Distributed Roughness Receptivity** M. McMillan, A. Berger, E. White, Texas A&M University, College Station, TX	1030 hrs AIAA-2017-4417 **Mechanics of Distributed Roughness Shielding** S. Suryanarayanan, D. Goldstein, University of Texas, Austin, Austin, TX; A. Berger, E. White, Texas A&M University, College Station, TX; G. Brown, Princeton University, Princeton, NJ	1100 hrs AIAA-2017-4418 **Streaky Turbulence Growth Before Tollmien-Schlichting Waves in Transition** J. Moore, Self, Blacksburg, VA	1130 hrs AIAA-2017-4419 **Numerical Investigation of the Interaction of Active Flow Control and Klebanoff Modes** S. Hosseinverdi, H. Fasel, University of Arizona, Tucson, Tucson, AZ		

Friday, 9 June 2017						
375-FD-38	Experimental Studies or Numerical Simulations V					Tower Court A
Chaired by: D. RIZZETTA, USAF/RQVA and M. ALI, Syracuse University						
0930 hrs AIAA-2017-4420 **Three-Dimensional Finite-Time Lyapunov Exponent Field in the Wake of an Oscillating Trapezoidal Pitching Panel** R. Kumar, J. King, M. Green, Syracuse University, Syracuse, NY	1000 hrs AIAA-2017-4421 **Experimental study on the effects of trailing edge geometry on the wake structure of a trapezoidal pitching panel** J. King, R. Kumar, M. Green, Syracuse University, Syracuse, NY	1030 hrs AIAA-2017-4422 **Air Side Heat Transfer Enhancement with Self Agitators** Z. Li, C. Chen, University of Missouri, Columbia, Columbia, MO	1100 hrs AIAA-2017-4423 **Near- and Far-Field Properties of High-Temperature Turbulent Buoyant Jets** N. Wimer, C. Lapointe, T. Hayden, J. Christopher, University of Colorado, Boulder, Boulder, CO; A. Poludnenko, Texas A&M University, College Station, TX; G. Rieker, University of Colorado, Boulder, Boulder, CO; et al.	1130 hrs AIAA-2017-4424 **Characterization of the Output from a Catalytic Combustor Using Wavelength Modulation Spectroscopy** T. Hayden, N. Wimer, C. Lapointe, J. Christopher, A. Makowiecki, P. Hamlington, University of Colorado, Boulder, Boulder, CO; et al.	1200 hrs AIAA-2017-4425 **An Overset-Mesh Approach for Large-Eddy Simulation of High-Reynolds Number Airfoil Flow** D. Rizzetta, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	

Friday, 9 June 2017						
376-GT-8	Balances and Mass Properties Measurement					Director's Row J
Chaired by: D. CHAN, NASA-Langley Research Center and B. WILLIAMS, The Aerospace Corporation						
0930 hrs AIAA-2017-4426 **Wind Tunnel Strain-Gage Balance Calibration Data Analysis using a Weighted Least Squares Approach** N. Ulbrich, T. Volden, Jacobs, Moffett Field, CA	1000 hrs AIAA-2017-4427 **Rigorous Design and Analysis of Wind Tunnel Balance Calibration Load Schedules** R. Rhew, P. Parker, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-4428 **Detection and Use of Load and Gage Output Repeats of Wind Tunnel Strain-Gage Balance Data** N. Ulbrich, Jacobs, Moffett Field, CA	1100 hrs AIAA-2017-4429 **Impact and Estimation of Balance Coordinate System Rotations and Translations in Wind-Tunnel Testing** K. Toro, P. Parker, NASA Langley Research Center, Hampton, VA			

Friday, 9 June 2017						
377-ITAR-3	**Flow Control, Flight Testing and Other Topics ITAR**					**Savoy**
Chaired by: B. MARPLES and E. WHALEN, Boeing						
0930 hrs AIAA-2017-4542 **CFD Analysis of Various Compression Surfaces in Supersonic Flow with Application to Shock/ Boundary Layer Interaction Control** M. Frede, University of Dayton, Dayton, OH; S. Sherer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2017-4543 **Flow Control Concepts for Aero-Optics using Numerical Simulations** J. Tam, T. Madden, Air Force Research Laboratory, Kirtland AFB, NM	1030 hrs AIAA-2017-4544 **Detatched Eddy Simulation of Discrete Bleed Holes for Control of Shock/Boundary Layer Interactions** D. Weston, Ohio Aerospace Institute, Dayton, OH; M. Frede, University of Dayton, Dayton, OH; S. Sherer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2017-4545 **Aircrew Labor In-Cockpit Automation Flight Testing** A. Dropkin, Aurora Flight Sciences, Manassas, VA; J. Torgerson, MORSE Corp, Cambridge, MA; J. Duda, J. Wissler, Aurora Flight Sciences, Manassas, VA	1130 hrs AIAA-2017-4546 **Measurements and Models of LOX/ kerosene Rocket Engine/Plume Chemistry and Design** P. Sheaffer, S. Maghsoudy-Louyeh, P. Zittel, M. Conway, The Aerospace Corporation, El Segundo, CA		

Friday, 9 June 2017						
378-MDO-18	**Metamodeling and Approximation Methods**					**Director's Row I**
Chaired by: P. PIPERNI, Clarkson University and V. KALIVARAPU, Iowa State University						
0930 hrs AIAA-2017-4430 **Adaptive Sampling with Adaptive Surrogate Model Selection for Computer Experiment Applications** A. Garbo, B. German, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2017-4431 **Status of Multifidelity Model Management Strategies in Aircraft Design** D. Clark, A. Makas, R. Grandhi, Wright State University, Dayton, OH	1030 hrs AIAA-2017-4432 **A Maximum Expected Utility Method for Efficient Reliability Analysis of Complex Engineered Systems** M. Sadoughi, C. Hu, C. MacKenzie, Iowa State University, Ames, IA	1100 hrs AIAA-2017-4433 **An adaptive optimization strategy based on mixture of experts for wing aerodynamic design optimization** N. Bartoli, T. Lefebvre, ONERA, Toulouse, France; N. Bons, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI; J. Morlier, Higher Institute of Aeronautics and Space, Toulouse, France	1130 hrs AIAA-2017-4434 **Coping with Data Scarcity in Aircraft Engine Design** A. Tan, R. Sagarna, A. Gupta, R. Chandra, Y. Ong, Nanyang Technological University, Singapore, Singapore		

Friday, 9 June 2017						
379-MDO-19	**Aircraft Design Optimization IV**					**Director's Row H**
Chaired by: J. GRAY, NASA Glenn Research Center						
0930 hrs AIAA-2017-4435 **Simultaneous Propulsion System and Trajectory Optimization** E. Hendricks, R. Falck, J. Gray, NASA Glenn Research Center, Cleveland, OH	1000 hrs AIAA-2017-4436 **Aerostructural Optimization of the D8 Wing with Varying Cruise Mach Numbers** C. Mader, G. Kenway, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI; A. Uranga, University of Southern California, Los Angeles, CA	1030 hrs AIAA-2017-4437 **SUAVE: An Open-Source Environment Enabling Multi-fidelity Optimization** T. MacDonald, E. Botero, J. Vegh, W. Maier, J. Alonso, Stanford University, Stanford, CA	1100 hrs AIAA-2017-4438 **Engine Airframe Integration and Optimization for Civil Aircraft using Response Surface Approach** X. Gu, P. Prakasha, P. Ciampa, German Aerospace Center (DLR), Hamburg, Germany	1130 hrs AIAA-2017-4439 **A Case for Procedural Geometry Generation in Aircraft Design** A. Sobester, University of Southampton, Southampton, United Kingdom		

Friday, 9 June 2017						
380-MST-9	**Simulator Hardware and Predictions**					**Plaza Court 6**
Chaired by: J. KRUEP, TASC, Inc. and S. BEARD, NASA/ARC-AFS Aerospace Simulation R&D						
0930 hrs AIAA-2017-4440 **Application of Prognostics Methodology to Virtual Laboratory for Future Aviation and Airspace Research** C. Kulkarni, G. Gorospe, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; C. Teubert, NASA Ames Research Center, Moffett Field, CA; C. Quach, K. Darafsheh, E. Hogge, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2017-4441 **An Innovative All-Active Hybrid Actuation System Demonstrator** T. Röben, E. Stumpf, RWTH Aachen University, Aachen, Germany; G. Weber, T. Grom, Liebherr, Lindenberg, Germany	1030 hrs AIAA-2017-4442 **Advanced Modeling and Simulation of Electromechanical Actuator for Flight Control System Based on Two Degrees of Freedom (2-DoF) Bond-Graph Method** J. Fu, Beihang University, Beijing, China; J. Mare, National Institute of Applied Sciences (INSA), Toulouse, France; Y. Fu, L. Yu, Beihang University, Beijing, China	1100 hrs AIAA-2017-4443 **The Reliability Predict Method for Integrated Modular Avionics Considering the System Reconfiguration Process** D. Ling, S. Wang, B. Liu, Beihang University, Beijing, China			

Friday, 9 June 2017						
381-NIA-1	**Graduate Student Research Papers - Hosted by the National Institute of Aerospace**					**Director's Row E**
Chaired by: C. BRITCHER, Old Dominon University						
0930 hrs AIAA-2017-4444 **A Methodology for Projection-Based Model Reduction with Black-Box High-Fidelity Models** A. Renganathan, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2017-4445 **Multi-Element Blade Design for MW-Scale Wind Turbines** I. Sood, University of Illinois, Urbana-Champaign, Urbana, IL	1030 hrs AIAA-2017-4446 **Aerodynamic Evaluation and Design Improvements of an Airfoil with Continuous Trailing-Edge Flap** L. Ding, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1100 hrs AIAA-2017-4447 **Design, Fabrication, and Testing of the Fixed-Wing Air and Underwater Drone** D. Caruccio, Catholic University of America, Washington, D.C.	1130 hrs AIAA-2017-4448 **Dielectric Barrier Discharge Plasma Actuators for Aircraft Maneuvering Control** J. Laten, Parks College, St. Louis, MO	1200 hrs AIAA-2017-4449 **Sensitivity Analysis for Noise and Emissions Based on Parametric Tracks"** P. Zanella, M. LeVine, Georgia Institute of Technology, Atlanta, GA	

Friday, 9 June 2017						
382-TP-10	**Arc Jet/Plasma Flows**					**Plaza Court 4**
Chaired by: H. WENG, University of Kentucky and X. WANG, The University of Alabama						
0930 hrs AIAA-2017-4450 **Rarefaction Effects in NASA arc jet testing at SCIROCCO facility** D. Cinquegrana, R. Votta, E. Trifoni, Italian Aerospace Research Center (CIRA), Capua, Italy	1000 hrs AIAA-2017-4451 **CFD Simulations of the IHF Arc-Jet Flow: Compression-Pad/Separation Bolt Wedge Tests** T. Gokcen, K. Skokova, Analytical Mechanics Associates, Inc., Moffett Field, CA	1030 hrs AIAA-2017-4452 **Evidence of Standing Waves in Arc Jet Nozzle Flow** D. Driver, NASA Ames Research Center, Moffett Field, CA; G. Hartman, Sierra Lobo, Inc., Moffett Field, CA; D. Philippidis, Aerospace Computing, Inc., Moffett Field, CA; E. Noyes, Jacobs, Moffett Field, CA; F. Hui, I. Terrazas-Salinas, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2017-4453 **Aerothermal Testing of Meteorite Fragments** S. Loehle, F. Zander, T. Hermann, M. Eberhart, A. Meindl, R. Oefele, University of Stuttgart, Stuttgart, Germany; et al.			

Friday, 9 June 2017

383-TEFW-3 0800 - 1530 hrs	Transformational Electric Flight Workshop and Expo	

*This workshop and expo requires a separate registration fee. It is included in the registration fees as indicated.

0800–0900 hrs
Plaza Ballroom

Urban On-Demand Aerial Ridesharing - The Next Commercial Aviation Market
Mark D. Moore
Director of Aviation
Uber Engineering

0930–1200 hrs
Grand Ballroom II

Energy Storage Technologies

Speakers:

Nick Borer
Advanced Air Vehicle Configurator Technical Lead
Aeronautics Systems Analysis Branch
NASA Langley Research Center

Randy Dunn
Vice President
Engineering and Co-founder
Electric Power Systems

Jun Liu
Director of the Energy Processes and Materials Division
Energy and Environment Directorate
Pacific Northwest National Laboratory

1200–1300 hrs
Grand Ballroom II

Transformative Vertical Flight Workshop Luncheon
Paul Brooks
Managing Director
Prismatic Ltd.

1300–1530 hrs
Grand Ballroom II

Certification Panel Discussion

Speakers:

Gregory J. Bowles
Vice President
Global Innovation & Policy
General Aviation Manufacturers Association

Tom Gunnarson
Lead of Regulatory Affairs
Zee.Aero

Matt Knapp
Founder and Aero CTO
Zunum Aero

Wes Ryan
Manager
Programs and Procedures (Advanced Technology)
Small Airplane Directorate
Federal Aviation Administration

*Reception For program updates, please visit: www.aviation.aiaa.org/ElectricFlight/

Friday, 9 June 2017						
384-APA-44	**Aerodynamic-Structural Dynamics Interaction III**					**Century**
Chaired by: R. RAMAMURTI, Naval Research Laboratory and N. HALL						
1400 hrs AIAA-2017-4454 **CFD/CSD Study of the Aerodynamic Interactions of a Coaxial Rotor in High-Speed Forward Flight** V. Klimchenko, A. Sridharan, J. Baeder, University of Maryland, College Park, College Park, MD	1430 hrs AIAA-2017-4455 **Development of Flutter Constraints for High-fidelity Aerostructural Optimization** E. Jonsson, G. Kenway, University of Michigan, Ann Arbor, Ann Arbor, MI; G. Kennedy, Georgia Institute of Technology, Atlanta, GA; J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1500 hrs AIAA-2017-4456 **Undeflected Common Research Model (uCRM): An Aerostructural Model for the Study of High Aspect Ratio Transport Aircraft Wings** T. Brooks, G. Kenway, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2017-4458 **Recent Developments on Fluid Structure Interaction Using the Navier Stokes Multi Block (NSMB) CFD Solver** J. Vos, D. Charbonnier, CFS Engineering, Lausanne, Switzerland; T. Ludwig, S. Merazzi, SMR Engineering and Development, Bienne, Switzerland; A. Gehri, P. Stephani, RUAG Group, Emmen, Switzerland	1600 hrs AIAA-2017-4459 **Stabilisation of Linear Reduced Order Model of Aerofoil Gust Response via Restarting** A. Bagheri, D. Jones, A. Gaitonde, University of Bristol, Bristol, United Kingdom		

Friday, 9 June 2017						
385-APA-45	**Applied CFD and Numerical Correlations with Experimental Data II**					**Silver**
Chaired by: D. O'BRIEN, US Army RDECOM and J. FREEMAN, Air Force Institute of Technology						
1400 hrs AIAA-2017-4460 **A Supersonic Lattice-Boltzmann Method: Validation and Applications.** G. Trapani, D. Holman, R. Brionnaud, O. Sosa, Next Limit Dynamics, Madrid, Spain	1430 hrs AIAA-2017-4461 **Lattice Boltzmann Simulations of a Supersonic Cavity** D. Singh, A. Ribeiro, B. Konig, E. Fares, Exa GmbH, Stuttgart, Germany	1500 hrs AIAA-2017-4462 **Free-Flight Trajectory Simulation of the ADEPT Sounding Rocket Test Using US3D** J. Hergert, Stanford University, Stanford, CA; J. Brock, E. Stern, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2017-4463 **Comparison of numerical and experimental data in the wake of combat aircraft airbrakes** A. Winkler, Airbus, Manching, Germany; S. Scharnowski, University of the German Federal Armed Forces, Munich, Germany	1600 hrs AIAA-2017-4464 **Undercarriage drag prediction for a fixed undercarriage light aircraft** C. Bennett, N. Lawson, J. Gautrey, Cranfield University, Cranfield, United Kingdom		

Friday, 9 June 2017						
386-APA-46	**Airfoil/Wing/Configuration Aerodynamics**					**Gold**
Chaired by: B. DETERT, Boeing Commercial Airplanes and R. DOWGWILLO, Boeing						
1400 hrs AIAA-2017-4465 **Computational Simulation of a Generic UCAV Configuration with Moveable Control Surfaces** A. Lofthouse, K. Cotton, U.S. Air Force Academy, Colorado Springs, CO	1430 hrs AIAA-2017-4466 **Computation of Flow Field of an Airfoil with Gurney Flap in Ground Effect** X. Zhang, Q. Qu, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1500 hrs AIAA-2017-4467 **The Wing Three-Dimensional Effects on Wavy Leading Edge Performance** T. Abrantes, A. Rios Cruz, A. de Paula, V. Kleine, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; F. Büttner, Technical University of Hamburg, Hamburg, Germany	1530 hrs AIAA-2017-4468 **Planform Dependency of Optimum Supersonic Airfoil for Wing-Body-Nacelle Configuration Using Multi-Fidelity Design Optimization** Y. Kishi, S. Kitazaki, A. Ariyarit, Tokyo Metropolitan University, Hino, Japan; Y. Makino, Japan Aerospace Exploration Agency (JAXA), Mitaka, Japan; M. Kanazaki, Tokyo Metropolitan University, Hino, Japan	1600 hrs AIAA-2017-4469 **Numerical simulation of the low speed aerodynamic characteristics for BWB type UCAV configuration with -5 degree twisted angle** S. Park, K. Chang, A. Ko, University of Ulsan, Ulsan, South Korea	1630 hrs AIAA-2017-4470 **Effect of trailing edge serration on the lift and drag characteristics of NACA0012 airfoil wing** U. Hussain, S. Malook, B. Shabir, O. Ali, Ghulam Ishaq Khan Institute, Topi, Pakistan	1700 hrs AIAA-2017-4471 **Aerodynamic Analysis of A Low-speed Unmanned Aerial Vehicle in full Configuration based on γ-$Re_{\theta t}$ Transition Model** L. Chen, Z. Guo, Z. Hou, W. Wenkai, B. Zhu, National University of Defense Technology, Changsha, China

Friday, 9 June 2017						
387-ASE-12	**Weather Impacts To National Airspace, Unmanned Aerial System**					**Beverly**
Chaired by: J. HAGGERTY and D. THOMPSON, Mississippi State University						
1400 hrs AIAA-2017-4472 **High Ice Water Content Conditions around Darwin: Frequency of Occurrence and Duration as Estimated by a Nowcasting Model** A. Rugg, J. Haggerty, National Center for Atmospheric Research, Boulder, CO; R. Palikondra, Science Systems and Applications, Inc., Hampton, VA; R. Potts, Bureau of Meteorology, Melbourne, Australia	1430 hrs AIAA-2017-4473 **Developing Improved Products to Forecast and Diagnose Aircraft Icing Conditions Based upon Drop Size** S. Tessendorf, D. Adriaansen, A. Rugg, D. Serke, C. Williams, J. Haggerty, National Center for Atmospheric Research, Boulder, CO; et al.	1500 hrs AIAA-2017-4474 **An Experimental Study on the Transient Heat Transfer and Dynamic Ice Accretion Process over a Rotating UAS Propeller** Y. Liu, L. Li, H. Hu, Iowa State University, Ames, IA	1530 hrs AIAA-2017-4475 **Multi-MASS: A Fleet of Unmanned Aerial Vehicles for Atmospheric Characterization** L. Schibelius , C. Montalvo, University of South Alabama, Mobile, AL	1600 hrs AIAA-2017-4476 **Flight Results from a Small UAS Distributed Flush Airdata System** R. Laurence, B. Argrow, University of Colorado, Boulder, Boulder, CO		

Friday, 9 June 2017						
388-ASE-13	**SLD Icing and Droplet Dynamics**					**Columbine**
Chaired by: K. AL-KHALIL, Cox & Company, Inc. and Y. HAN, Clemson University						
1400 hrs AIAA-2017-4477 **Creating a Bimodal Drop-Size Distribution in the NASA Glenn Icing Research Tunnel** L. King-Steen, R. Ide, HX5, LLC, Cleveland, OH	1430 hrs AIAA-2017-4478 **Bimodal SLD Ice Accretion on a NACA 0012 Airfoil Model** M. Potapczuk, NASA Glenn Research Center, Cleveland, OH; J. Tsao, Ohio Aerospace Institute, Cleveland, OH; L. King-Steen, HX5, LLC, Cleveland, OH	1500 hrs AIAA-2017-4479 **Breakup criterion for droplets in the vicinity of a leading edge of an airfoil** A. García-Magariño, Systems Engineering for the Defense of Spain (ISDEFE), Madrid, Spain; S. Sor , National Institute of Aerospace Technology (INTA) , Madrid, Spain; A. Velazquez, Technical University of Madrid, Madrid, Spain	1530 hrs AIAA-2017-4480 **Mechanism of Supercooled Water Droplet Breakup near the Leading Edge of an Airfoil** B. Veras-Alba, J. Palacios, Pennsylvania State University, University Park, PA; M. Vargas, C. Ruggeri, NASA Glenn Research Center, Cleveland, OH; T. Bartkus, Ohio Aerospace Institute, Cleveland, OH	1600 hrs AIAA-2017-4481 **Experimental and Numerical Investigation of Icing Process of a Liquid Droplet** Y. Lian, University of Louisville, Louisville, KY; D. Liao, H. Qiu, Hong Kong University of Science and Technology, Hong Kong, Hong Kong; M. Sussman, M. Vahab, Y. Hussaini, Florida State University, Tallahassee, FL	1630 hrs AIAA-2017-4482 **Time-Resolved Thermal Study of Accelerated Supercooled Droplet Impact** W. Patterson, University of Notre Dame, Notre Dame, IN; K. Morita, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; H. Sakaue, University of Notre Dame, Notre Dame, IN	

Friday, 9 June 2017						
389-ATIO.ATM-22	**UAS Sense and Avoid II**					**Plaza Court 1**
Chaired by: D. MARONEY, The MITRE Corporation						
1400 hrs AIAA-2017-4483 **Validation of Minimum Display Requirements for a UAS Detect and Avoid System** R. Rorie, L. Fern, San Jose State University, San Jose, CA; K. Monk, C. Santiago, R. Shively, NASA Ames Research Center, Moffett Field, CA; Z. Roberts, San Jose State University, San Jose, CA	1430 hrs AIAA-2017-4484 **Implicitly Coordinated Detect and Avoid Capability for Safe Autonomous Operation of Small UAS** S. Balachandran, National Institute of Aerospace, Hampton, VA; C. Munoz, M. Consiglio, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2017-4485 **The Generic Resolution Advisor and Conflict Evaluator (GRACE) for Detect-And-Avoid (DAA) Systems** M. Abramson, M. Refai, Crown Consulting, Inc., Moffett Field, CA; C. Santiago, NASA Ames Research Center, Moffett Field, CA				

Friday, 9 June 2017						
390-ATIO.ATM-23	**Trajectory Management**					**Plaza Court 3**
Chaired by: G. ENEA, The MITRE Corporation						
1400 hrs AIAA-2017-4486 **Identification of the Ideal Trade-Off between Optimal Profile Descents and Runway Throughput** G. Enea, MITRE Corporation, McLean, VA; J. Bronsvoort, G. McDonald, Airservices Australia, Melbourne, Australia	1430 hrs AIAA-2017-4487 **Towards Designing Graceful Degradation into Trajectory Based Operations: A Human-Machine System Integration Approach** T. Edwards, San Jose State University, Moffett Field, CA; P. Lee, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2017-4488 **Preliminary Investigation of Degradation of Trajectory-Based Operations Due to Impairment of Technology** S. Sankararaman, I. Roychoudhury, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; X. Zhang, Vanderbilt University, Nashville, TN; L. Spirkovska, K. Goebel, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2017-4489 **Cost Sensitive Trajectory Generation for Time Constrained Aircraft Route Planning** S. Sprengart, J. Schulze, Technical University of Darmstadt, Darmstadt, Germany; J. Westphal, Jeppesen GmbH, Neu-Isenburg, Germany	1600 hrs AIAA-2017-4490 **Proposal of a Future Flight Management System Architecture Based on Reallocation of Functionality** J. Schulze, Technical University of Darmstadt, Darmstadt, Germany; J. Westphal, J. Schiefele, Jeppesen GmbH, Neu-Isenburg, Germany		

Friday, 9 June 2017						
391-ATIO.ATM-24	**Operational Safety II**					**Plaza Court 2**
Chaired by: R. CURRAN, Delft Technical University of Technology						
1400 hrs AIAA-2017-4491 **DANTi: Detect and Avoid iN The Cockpit** J. Chamberlain, Sunrise Aviation, Inc., Newport News, VA; M. Consiglio, C. Munoz, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2017-4492 **Quantifying Safety Risk to Aircraft from Small Unmanned Free Balloons and Other Airspace Vehicles** B. Hogan, D. Moch-Mooney, E. Morin, M. Welch, L. Wojcik, MITRE Corporation, McLean, VA	1500 hrs AIAA-2017-4493 **Environmental Particulate Foreign Object Damage: A NATO S&T Task Group** G. Loy-Kraft, Air Force Research Laboratory, Wright-Patterson AFB, OH; D. Erbschloe, Universal Technology Corporation, Dayton, OH	1530 hrs AIAA-2017-4494 **Real Time Safety Monitoring: Concept for Supporting Safe Flight Operations** L. Spirkovska, NASA Ames Research Center, Moffett Field, CA; I. Roychoudhury, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; M. Daigle, K. Goebel, NASA Ames Research Center, Moffett Field, CA			

Friday, 9 June 2017						
392-CFD-37	**High-Order Finite Difference Schemes**					**Tower Court D**
Chaired by: J. HICKEN, Rensselaer Polytechnic Institute						
1400 hrs AIAA-2017-4495 **Interior Penalties for Summation-by-Parts Discretizations of Linear Second-Order Differential Equations** J. Yan, J. Crean, J. Hicken, Rensselaer Polytechnic Institute, Troy, NY	1430 hrs AIAA-2017-4496 **High-Order, Entropy-Conservative Discretizations of the Euler Equations for Complex Geometries** J. Crean, J. Hicken, Rensselaer Polytechnic Institute, Troy, NY; D. Del Rey Fernández, D. Zingg, University of Toronto, Toronto, Canada; M. Carpenter, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2017-4497 **A Novel Boundary Treatment Method for Global Seventh-Order Dissipative Compact Finite-Difference Scheme** X. Deng, Y. Chen, D. Xu, National University of Defense Technology, Changsha, China; G. Wang, Sun Yat-sen University, Guangzhou, China				

Friday, 9 June 2017						
393-CFD-38/TP-11	**Chemically Reacting Flow Simulations and Methods**					**Tower Court C**
Chaired by: N. MUNDIS, ERC. Inc.						
1400 hrs AIAA-2017-4498 **A Fourth-Order Finite-Volume Algorithm for Compressible Flow with Chemical Reactions on Mapped Grids** L. Owen, S. Guzik, X. Gao, Colorado State University, Fort Collins, CO	1430 hrs AIAA-2017-4499 **Development of catalytic and ablative gas-surface interaction models for the simulation of reacting gas mixtures** G. Bellas Chatzigeorgis, A. Viladegut, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium; P. Barbante, Technical University of Milan, Milan, Italy; O. Chazot, T. Magin, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1500 hrs AIAA-2017-4500 **Numerical Study of Soot Nano-Aerosol Formation in a JP Combustor Embedded with a Mini-Scale Air-Distributor** M. Darbandi, M. Ghafourizadeh, M. Saidi, Sharif University of Technology, Tehran, Iran; G. Schneider, University of Waterloo, Waterloo, Canada	1530 hrs AIAA-2017-4501 **Numerical Investigations on the Combustion Characteristics of Single Magnesium Particle in the Forced-Convective Flow** M. Zhu, X. Chen, C. Zhou, Nanjing University of Science and Technology, Nanjing, China			

Friday, 9 June 2017						
394-CFD-39/TP-12	**Multiphase Flows and Heat Transfer Simulations II**					**Denver**
Chaired by: D. HASH, NASA - ARC and M. GALE						
1400 hrs AIAA-2017-4502 **Coupled conjugate heat transfer simulation for a scramjet inlet at Mach 8** J. Reinert, I. Nompelis, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN	1430 hrs AIAA-2017-4503 **Gas-Granular Flow Solver for Plume Surface Interaction and Cratering Simulations** M. Gale, CFD Research Corporation, Huntsville, AL; K. Buettner, University of Florida, Gainesville, Gainesville, FL; R. Mehta, P. Liever, CFD Research Corporation, Huntsville, AL; J. Curtis, University of Florida, Gainesville, Gainesville, FL	1500 hrs AIAA-2017-4504 **Numerical Study of Momentum and Heat Transfer in Propylene Glycol Jets used for Aircraft Ground Deicing** S. Yakhya, F. Morency, University of Québec, Montréal, Canada	1530 hrs AIAA-2017-4505 **Fixed-grid Numerical Modeling of Frost Formation** E. Bartrons, Technical University of Catalonia, Terrassa, Spain; P. Galione, University of the Republic, Montevideo, Uruguay; G. Papakokkinos, C. Pérez-Segarra, Technical University of Catalonia, Terrassa, Spain	1600 hrs AIAA-2017-4506 **Numerical Simulations of Aeroheating and Massive Separation past Orion Capsule by DES Based on a Transition Model** G. Wang, M. Yang, Z. Duan, Z. Xiao, Tsinghua University, Beijing, China		

Friday, 9 June 2017						
395-CFD-40	**Parallel Computing Methodologies II**					**Tower Court B**
Chaired by: S. GUZIK and I. SENOCAK, Boise State University						
1400 hrs AIAA-2017-4507 **Multi-level Parallel Algorithm to Solve the Eikonal Equation with the Fast Sweeping Method** A. Shrestha, I. Senocak, Boise State University, Boise, ID	1430 hrs AIAA-2017-4508 **Unsteady Navier-Stokes Computations on GPU Architectures** B. Mostafazadeh Davani, F. Marti, B. Pourghassemi, F. Liu, A. Chandramowlishwaran, University of California, Irvine, Irvine, CA	1500 hrs AIAA-2017-4509 **An Order NlogN Parallel Newton_ Krylov Solver for Time Spectral Problems** D. Ramezanian, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY	1530 hrs AIAA-2017-4510 **Distributed Solution of Global Eigenvalue Problems on Large Clusters** H. Quintanilha, R. Santos, L. Alves, Fluminense Federal University (UFF), Niteroi, Brazil; V. Theofilis, University of Liverpool, Liverpool, United Kingdom			

Friday, 9 June 2017						
396-FD-39	**Surface Features in High-Speed Transition**					**Terrace**
Chaired by: M. TUFTS, AFRL/RQHF and A. CHOU, NASA Langley Research Center						
1400 hrs AIAA-2017-4511 **Study of the Effect of Two-dimensional Wall Non-uniformities on High-speed Boundary Layers** A. Sescu, J. Sawaya, V. Sassanis, Mississippi State University, Starkville, MS; M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2017-4512 **Tomographic PIV Measurement of Hypersonic Boundary Layer Transition Past a Micro-ramp** Q. Ye, F. Schrijer, F. Scarano, Delft University of Technology, Delft, The Netherlands	1500 hrs AIAA-2017-4513 **Dynamic Mode Decomposition of Trip-Induced Hypersonic Boundary Layer Transition** P. Shrestha, J. Nichols, M. Jovanovic, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN	1530 hrs AIAA-2017-4514 **Direct Numerical Simulation of Hypersonic Flow over a Blunt Cone with Axisymmetric Isolated Roughness** C. Haley, X. Zhong, University of California, Los Angeles, Los Angeles, CA	1600 hrs AIAA-2017-4515 **Transition Induced by a Streamwise Array of Roughnesses on a Supersonic Flat Plate** A. Chou, M. Kegerise, NASA Langley Research Center, Hampton, VA		

Friday, 9 June 2017						
397-FD-40	**High Speed Laminar-Turbulent Transition II**					**Tower Court A**
Chaired by: H. FASEL and X. ZHONG, University of California Los Angeles						
1400 hrs AIAA-2017-4516 **An Investigation of Sound Radiation by Supersonic Unstable Modes in Hypersonic Boundary Layers** C. Knisely, X. Zhong, University of California, Los Angeles, Los Angeles, CA	1430 hrs AIAA-2017-4517 **Transition Induced by a Wave Train in a Supersonic Boundary Layer over a Compression Ramp** A. Novikov, Moscow Institute of Physics and Technology, Zhukovsky, Russia	1500 hrs AIAA-2017-4518 **Linear Stability Analysis of a Hypersonic Boundary Layer in Equilibrium and Non-Equilibrium** F. Miró Miró, F. Pinna, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1530 hrs AIAA-2017-4519 **Passive control of hypersonic non-equilibrium boundary layers using regular porous coating** X. Wang, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1600 hrs AIAA-2017-4520 **A Numerical Jacobian Stability Solver Based on the Linearized Compressible Navier-Stokes Equations** A. Haas, University of Arizona, Tucson, Tucson, AZ; O. Browne, University of Kentucky, Lexington, Lexington, KY; H. Fasel, University of Arizona, Tucson, Tucson, AZ; C. Brehm, University of Kentucky, Lexington, Lexington, KY	1630 hrs AIAA-2017-4521 **Steady and Quasi-Steady Laminar-Turbulent transition prediction for airfoils at subsonic and transonic conditions** F. Marti, F. Liu, University of California, Irvine, Irvine, CA	

Friday, 9 June 2017						
398-GT-9	**High Enthalpy Ground Testing**					**Director's Row J**
Chaired by: T. WADHAMS, CUBRC and K. CHRISTEIN, NASA Glenn Research Center						
1400 hrs AIAA-2017-4522 **Air Plasma Flow Analysis for Parameterised Magnetoplasmadynamic Arcjet Operation** F. Zander, S. Loehle, T. Hermann, University of Stuttgart, Stuttgart, Germany	1430 hrs AIAA-2017-4523 **Detail Design of a Pulsed Plasma Thrust Stand** A. Verbin, T. Takahashi, D. White, Arizona State University, Tempe, AZ	1500 hrs AIAA-2017-4524 **Concept of a Solid Electrolyte Sensor Based Probe for Atomic Oxygen Detection in High-Enthalpy Flows** R. Oefele, M. Eberhart, S. Loehle, S. Fasoulas, University of Stuttgart, Stuttgart, Germany	1530 hrs AIAA-2017-4525 **Comparison of Free Jet Data between a Contoured and Conical Nozzle in the AEDC H1 Facility** G. Hammock, Arnold Engineering Development Complex, Arnold AFB, TN	1600 hrs AIAA-2017-4526 **Uncertainty Assessment on the Characterization of Testing Conditions in Arc-jet Facilities** A. del Val, T. Magin, O. Chazot, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1630 hrs AIAA-2017-4527 **Expansion of the AEDC H2 Arc Heater Facility Test Envelope Using Cold-Air Mixing** G. Hammock, Arnold Engineering Development Complex, Arnold AFB, TN	

Friday, 9 June 2017						
399-MST-10	**Simulator Architecture, Delays, and Qualification**					**Plaza Court 6**
Chaired by: C. REYNERSON and D. CARTMELL, Boeing Engineering Operations & Technology						
1400 hrs AIAA-2017-4528 **Continued Development of a Multi-Purpose Engineering Flight Simulator** J. Kruep, Self, Fairfax, VA	1430 hrs AIAA-2017-4529 **Transport Delay Measurement and Reduction in Desktop Simulations** J. Pinheiro, C. Atkinson, Lockheed Martin Corporation, Palmdale, CA	1500 hrs AIAA-2017-4530 **A Simulation Based Investigation of High Latency Space Systems Operations** Z. Li, NASA Johnson Space Center, Houston, TX; M. Moore, CACI International, Inc., Houston, TX; E. Crues, P. Bielski, NASA Johnson Space Center, Houston, TX				

Friday, 9 June 2017						
400-TP-13	Radiation					Plaza Court 5
Chaired by: C. JOHNSTON, NASA-Langley Research Center and A. BRANDIS, AMA Inc at NASA Ames						
1400 hrs AIAA-2017-4531 **Experimental and Numerical Investigation of Air Radiation in Superorbital Expanding Flow** H. Wei, R. Morgan, T. Mcintyre, University of Queensland, St. Lucia, Australia; A. Brandis, Analytical Mechanics Associates, Inc., Mountain View, CA; C. Johnston, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2017-4532 **Backshell Radiative Heating on Human-Scale Mars Entry Vehicles** T. West, J. Theisinger, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2017-4533 **Influence of Coupled Radiation and Ablation on Meteor Entries** C. Johnston, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2017-4534 **Titan Atmospheric Entry Radiative Heating** A. Brandis, B. Cruden, Analytical Mechanics Associates, Inc., Moffett Field, CA	1600 hrs AIAA-2017-4535 **Measurement of Radiative Non-equilibrium for Air Shocks Between 7-9 km/s** B. Cruden, A. Brandis, Analytical Mechanics Associates, Inc., Moffett Field, CA	1630 hrs AIAA-2017-4536 **3D Radiative Heat Transfer Calculations using Monte Carlo Ray Tracing and the Hybrid Statistical Narrow Band Model for Hypersonic Vehicles** J. Scoggins, A. Lani, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium; P. Riviere, A. Soufiani, École Centrale Paris, Châtenay-Malabry, France; T. Magin, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1700 hrs AIAA-2017-4537 **Comparison of Wide Band, Narrow Band, and SLW Models with HITRAN and HITEMP for Predicting Radiative Heat Transfer** A. Fisher, S. Rani, University of Alabama, Huntsville, Huntsville, AL

Friday, 9 June 2017		
401-NW-18 1600 - 1630 hrs	Networking Coffee Break	Meeting Room Foyers

Special Sessions and Events

Tuesday, 6 June

1400–1600 hrs **Plaza Exhibit/Foyer**

CFD Flow Visualization Showcase

The presenters of the CFD visualizations will describe their work and the significance of their animation as it plays on a large-screen monitor. Multiple visualizations will be shown during each of the four 30-minute time slots during the event.

At the conclusion, awards will be presented for Most Artistic Flow Visualization Animation, Most Quantitatively Descriptive Flow Visualization Animation, and Most Comprehensive Flow Visualization Animation. The visualizations of the three winners will be displayed on a monitor in the Exposition Hall for the remainder of the exposition.

Wednesday, 7 June

1400–1600 hrs **Biltmore**

AIAA Standards Program Open Forum

Please join the Standards Open Forum on 7 June, 1400–1600 hrs. The purpose of this open forum is to engage the AIAA standards community and other interested individuals to review the new organizational structure for the standards area, which calls for the establishment of a Standards Steering Committee supported by subcommittees that will oversee and manage the various standards domains, the standards development process, member recruitment and member recognition. At the Open Forum, we will discuss opportunities for engagement in the new committees and domains. There will also be discussions of current and upcoming standards, review of what new standards are needed and what standards may need to be revised or withdrawn.

1600–1730 hrs **Grand Ballroom I**

Certification Using Analysis and Simulation

Moderator: **Robert Gregg,** Chief Aerodynamicist, Boeing Commercial Airplanes

Panelist:

Ben Linder, Director of Flight Sciences, Boeing Commercial Airplanes

Rich Wahls, Strategic Technical Advisor, Advanced Air Vehicles Program, Aeronautics Research Mission Directorate, NASA Langley Research Center

Cord Rossow, Head of the Institute of Aerodynamics and Flow Technology, DLR

John Fisher, Senior Technical Specialist, Aircraft Icing, FAA

Uwe Kerlin, EG-TEC Leader, Airbus

Stay Fit at AVIATION

Stay fit with your fellow attendees! Join AIAA staff on Tuesday, 6 June, and Thursday, 8 June, at 0600 hrs at the Sheraton Hotel Lobby by the main entrance and observation desk. Explore three miles of downtown Denver. All levels are welcome!

Rising Leaders in Aerospace

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

Monday, 5 June

1600–1830 hrs **South Convention Lobby**

Speed Mentoring and Reception

Senior members of corporations and AIAA will be taking time to meet with the Rising Leaders participants and share their experiences. This event is a great way to get insight from top-level officials and make some great new contacts. And, maybe, they will end up being a mentor for more than just the 15 minutes at this event.

Immediately following the speed mentoring there will be a follow-on reception. This will allow for conversations to continue, or if a conversation was cut short, an opportunity to have a follow-up discussion. It will also allow for a casual opportunity to meet the other young professionals who are attending the conference. Having just participated in the speed mentoring, you'll definitely have at least one thing in common.

Don't miss a terrific opportunity!

Sponsored by:

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Tuesday, 6 June

1200-1330 hrs **Grand Ballroom I**

Lunch and Learn: Your Next Move: How to Build a Strong Foundation for Long-Term Career Success

Successfully navigating the waters of the real world to reach your career goals is challenging. It's filled with risk, uncertainty, excitement, and opportunity. How do you know which way to go when confronted with a fork in the road? How do you know when it's time for your next big career move? What can you do in the near term to best prepare yourself for long-term career success? Join us to hear personal perspectives and advice on how to tackle these tough questions from key executives in the aerospace industry. And don't forget to bring your own career questions and dilemmas as well!

Box lunches will be available for the first 70 young professionals who attend.

Presenter: **Ron Bessire,** Vice President, Engineering and Technology, Lockheed Martin Corporation

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Wednesday, 7 June

0930-1100 hrs **Grand Ballroom II**

Boom Technology: Inside the Startup Developing the Next Gen Supersonic Commercial Airliner

Supersonic flight has existed for over half a century, but it hasn't been affordable for routine travel—until now. Nearly six decades after the dawn of the jet age, we finally have the technology for efficient, economical, and safe supersonic flight. Key technologies, such as composite fuselages and high-temperature material systems, have only recently been accepted by the FAA for commercial aircraft. A breakthrough aerodynamic design, state-of-the-art engine technology, and advanced composite materials enable an ultra-fast airliner as efficient and affordable as business class in today's subsonic widebody airliners. Hangar 14 at Centennial Airport in Denver looks nondescript, but something historic is happening inside. Dozens of the best and brightest minds have gathered here to design, build, and fly XB-1, the first independently developed supersonic jet.

Join us for a panel discussion with some of Boom Technology's engineering team to discuss the future of commercial supersonic flight.

Moderator: **Ben Marchionna,** Skyspecs

Panelists:

Erin Fischer, Engineer, Flight Control Systems (XB-1 supersonic demonstrator), Boom Technology

Greg Krauland, Technical Program Manager, XB-1 Program, Boom Technology

Charlie Hoffert, Structures Design Engineer, Boom Technology

Recognition and Lectures

Join us as we recognize 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.

Monday, 5 June

1630–1730 hrs **Grand Ballroom 1**

Aerodynamics Award Lecture

Chimera: A Journey

John A. Benek, Director, Computational Sciences Center, Air Force Research Laboratory

1730–1830 hrs **Grand Ballroom 1**

Fluid Dynamics Award Lecture

Prediction, Understanding and Control of Complex Unsteady Flows: Progress and Challenges

Miguel R. Visbal, CFD Technical Advisor, Aerospace Systems Directorate, Air Force Research Laboratory

1730–1830 hrs **Governor's Square 14**

Aeroacoustics Lecture

Noise: The Most Important Thing

Alan H. Epstein, Vice President, Technology and Environment, Pratt & Whitney

1830–1930 hrs **Plaza Ballroom**

Wright Brothers Lecture in Aeronautics

Around the World with Solar Power: An Overview About The Solar Impulse Program

Hannes Ross, Consultant, Solar Impulse

Tuesday, 6 June

1230–1400 hrs **Plaza Ballroom**

Awards Luncheon—Celebrating Achievements in Aerospace Sciences

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

The following awards will be presented:

Aeroacoustics Award

Dimitri Papamoschou
Professor, Mechanical and Aerospace Engineering
The Henry Samueli School of Engineering
University of California, Irvine
For seminal contributions to understanding noise generations in multi-stream supersonic jets leading to one of the most promising noise reduction methods in current development.

Aerodynamics Award

John A. Benek
Director, Computational Sciences Center
Air Force Research Laboratory
Wright-Patterson AFB
For distinguished contributions to the development of the Chimera scheme making simulations over complex aerodynamic configurations feasible and for advancements in integrated CFD/ experimental studies.

Aerodynamic Measurement Technology Award

Joseph Schetz
Fred D. Durham Endowed Chair
Crofton Department of Aerospace & Ocean Engineering
Virginia Polytechnic Institute and State University
For more than 40 years of seminal contributions in shear stress sensors for complex flows.

Fluid Dynamics Award

Miguel R. Visbal
CFD Technical Advisor
Aerospace Systems Directorate
Air Force Research Laboratory
Wright-Patterson AFB
For pioneering contributions to understanding complex unsteady flows and multidisciplinary interactions using high fidelity methods.

(continued)

Recognition and Lectures

Ground Testing Award

Dan E. Marren
Director, AEDC White Oak Site
Arnold Engineering Development Complex (AEDC)
For impactful and sustained contributions to every aspect of test sciences. His efforts enabled new capabilities, advanced diagnostics and revitalized the next generation testing workforce.

Plasmadynamics and Lasers Award

Valentin A. Bityurin
Head, Division for Plasmadynamics and MHD Energy Conversion (Ret.)
Joint Institute for High Temperatures
Russian Academy of Sciences
In recognition of a distinguished professional career with seminal scientific contributions to the theoretical and experimental understanding of plasma physics, magnetohydrodynamic energy conversion, and plasma-magneto-aerodynamics.

Thermophysics Award

Bruce L. Drolen
Senior Technical Fellow (Ret.)
Chief Engineer, Thermal Technology
Space Platforms and Payloads
Boeing Defense, Space and Security
For outstanding contributions to thermal engineering particularly relating to heat pipes, pumped fluid loops, aircraft thermal management and other heat transport devices.

Certificates of Merit:

Aerodynamic Measurement Technology Best Paper

AIAA 2017-1408, "Quantitative 2D Temperature Imaging in Turbulent Nonpremixed Jet Flames Using Filtered Rayleigh Scattering," Thomas McManus and Jeffrey Sutton, Ohio State University.

Applied Aerodynamics Best Paper

AIAA 2016-4166, "Dynamic Stall Simulations on a Pitching Finite Wing," Kurt Kaufmann, Christoph Merz, and Anthony Gardner, DLR.

Atmospheric Flight Mechanics Best Paper

AIAA 2016-3852, "Aerodynamic Modeling, System Identification and Analysis of Iced Aircraft Configurations," Christoph Deiler, DLR—German Aerospace Center.

AIAA 2017-1398, "Handling Qualities Flight Test Assessment of a Business Jet NzU P-β Fly-By-Wire Control System," Tom Berger and Mark Tischler, U. S. Army Aviation Development Directorate; Steven Hagerott, Textron Aviation; M. Christopher Cotting, James Cresham, Justin George, Kyle Krogh, Alessandro D'Argenio and Justin Howland, USAF Test Pilot School.

David Weaver Best Student Paper

Flow Control Best Student Paper

AIAA 2016-3931, "The Influence of the Spatial Frequency Content of Discrete Roughness Distributions on the Development of the Crossflow Instability," Evelien van Bokhorst, Marco Placidi, and Christopher J. Atkin, University of London.

Fluid Dynamics Best Paper

Ground Testing Best Paper

Modeling and Simulation Best Paper

AIAA 2016-4299, "Objective ARX Model Order Selection for Multi-Channel Human Operator Identification," Nicole Roggenkämper, Daan Pool, Frank M. Drop, Marinus M. van Paassen, and Max Mulder, Delft Technical University.

Plasmadynamics and Lasers Best Paper

AIAA 2016-3531, "LES/RANS Modeling of Aero-Optical Effects in a Supersonic Cavity Flow," Ilya A Zilberter and Jack R. Edwards, North Carolina State University.

Plasmadynamics and Lasers Best Student Paper

AIAA 2017-1584, "OH Radical Measurements in Hydrogen-Air Mixtures at the Conditions of Strong Vibrational Nonequilibrium," Caroline Winters, Yi-Chen Hung, Elijah Jans, Kraig Frederickson, and Igor Adamovich, Ohio State University.

Thermophysics Best Paper

Atmospheric Flight Mechanics Student Paper Competition

AIAA 2017-1186, "Cyclic Blade Pitch Control for Small UAV Without a Swashplate," James Paulos and Mark Yim, University of Pennsylvania.

Walter Lempert Student Paper Award in Diagnostics for Fluid Mechanics, Plasma Physics and Energy Transfer

AIAA 2017-0152, "Simultaneous High Speed (5 kHz) Fuel-PLIF, OH-PLIF and Stereo PIV Imaging of Pressurized Swirl-Stabilized Flames using Liquid Fuels," Ianko Chterev, Georgia Institute of Technology.

1730–1830 hrs **Grand Ballroom 1**

Aeroacoustics Lecture

The Long Road to Quiet Supersonic Propulsion

Dimitri Papamoschou, Professor, Mechanical and Aerospace Engineering, The Henry Samueli School of Engineering, University of California, Irvine

(continued)

Recognition and Lectures

Tuesday, 6 June

1730–1830 hrs **Majestic Ballroom**

Plasmadynamics and Lasers Award Lecture

Comparative Analysis of the Heat and Dynamics Effects in Magneto-Plasma Aerodynamics

Valentin A Bityurin, Head, Division for Plasmadynamics and MHD Energy Conversion (Ret.), Joint Institute for High Temperatures, Russian Academy of Sciences

1730–1830 hrs **Director's Row E**

Aerodynamic Measurement Technology Award Lecture

Direct Measurement of Skin Friction in Complex Flows

Joseph Schetz, Fred D. Durham Endowed Chair, Crofton Department of Aerospace & Ocean Engineering, Virginia Polytechnic Institute and State University

Wednesday, 7 June

1230–1400 hrs **Plaza Ballroom**

Award Luncheon—Celebrating Achievements in Aircraft and Atmospheric Systems

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

The following awards will be presented:

Aircraft Design Award

Solar Impulse Aircraft Design Team
Lausanne, Switzerland

Award To Be Accepted by Sebastien Demont, Robert Fraefel, Peter Frei, Ralph Paul, Hannes Ross, and Thomas Seiler

For the innovative design of a piloted all-electric aircraft with multiple day-night capability, proven by global circumnavigation on solar power, including transoceanic legs.

Chanute Flight Test Award

Lt. Col. William R. Gray III
U.S. Air Force (retired), Chief Test Pilot
U.S. Air Force Test Pilot School
Edwards Air Force Base
For significant lifetime achievement in the advancement of the art, science and technology of flight testing engineering.

Hap Arnold Award For Excellence in Aeronautical Program Management

Robert A. Arbach
Program Manager, Defense Advanced Research Projects Agency
President, Arbach Consulting, LLC
For outstanding vision, development, leadership and execution of technology programs for the advancement of U.S. military aerospace systems."

Otto C. Winzen Lifetime Achievement Award

Erich Klein
Balloon Engineer Specialist (Ret.)
Columbia Scientific Balloon Facility
In recognition of a career dedicated toward advancing scientific balloon launch support equipment including the padded spool vehicle, LDSD launch tower, and Antarctic Launch Vehicle.

Theodor W. Knacke Aerodynamic Decelerator Systems Award

Elsa J. Hennings
Senior Systems Engineer, Escape, Parachute and Crashworthy Division
Naval Air Warfare Center Weapons Division
For expertise in overcoming challenges in decelerator design, including regulated drag area, innovations on Space Shuttle, Mars and Orion landing systems and creative genius.

Sustained Service Award

Richard A. Wahls
Strategic Technical Advisor, Advanced Air Vehicles Program
NASA Langley Research Center
For sustained, significant service at the national level through Technical and Program Committees with emphasis on conference/forum leadership and content development.

Certificates of Merit:

Aircraft Design Best Paper

AIAA 2016–3765, "Design Studies of Thin-Haul Commuter Aircraft with Distributed Electric Propulsion," Alex Stoll and Gregor Veble Mikic, Joby Aviation.

Multidisciplinary Design Optimization Best Paper

Announcement of Student Competition Winners

Multidisciplinary Design Optimization

1730–1830 hrs **Governor's Square 17**

Thermophysics Award Lecture

Satellite Thermal Management: Decades of Challenges, Solutions and Lessons Learned

Bruce L. Drolen, Senior Technical Fellow, Chief Engineer, Thermal Technology, Space Platforms and Payloads, Boeing Defense, Space and Security

Recognition and Lectures

1730–1830 hrs **Windows**

Multidisciplinary Design Optimization Award Lecture

The Role of Flexibility in Multidisciplinary Design Optimization

Rakesh Kapania, Norris and Laura Mitchell Professor, Crofton Department of Aerospace and Ocean Engineering, Virginia Polytechnic Institute and State University

Wednesday, 7 June

1800 hrs **Plaza Ballroom A–B**

ADS and Balloons Banquet

The Aerodynamic Decelerator Systems (ADS) and Balloon Systems Reception and Banquet will begin with a cash bar social period at 1800 hrs, followed by the awards ceremony and banquet where the Theodor W. Knacke Aerodynamic Decelerator Systems Award and the Otto C. Winzen Lifetime Achievement Award winners will be recognized. Also recognized will be the overall winner of the Aerodynamic Decelerator Systems Technology Best Student Paper Competition. Please join us and celebrate the achievements of your peers. Tickets for the reception and banquet are included in the conference registration fee where indicated. Additional tickets will be available on site, as space is available

1800 hrs **Plaza Ballroom D–E**

Aeroacoustics Banquet

The Aeroacoustics Reception and Banquet will begin with a cash bar social period at 1800 hrs, followed by the awards ceremony and banquet where the AIAA and CEAS Aeroacoustics Awards will be presented. The winner of the Aeroacoustics Student Paper Competition also will be recognized. Please join us and celebrate the achievements of your peers. Tickets for the reception and banquet are included in the conference registration fee where indicated.

Thursday, 8 June

1730–1830 hrs **Grand Ballroom 1**

Chanute Flight Test Award Lecture

Flight Test and Automation

Lt. Col. William R. Gray III, U.S. Air Force (retired), Chief Test Pilot, U.S. Air Force Test Pilot School

Networking Events

Student Welcome Reception

Sunday, 7 June **Windows**

1800–1930 hrs

Be sure to kick off the eve of your 2017 AVIATION Forum right at the student welcome reception. This reception will provide you with some great networking and mingling opportunities, and many helpful tips and pointers to get the most from participating in the forum and with AIAA. This is an excellent way to meet fellow students who you are sure to see again throughout the week, as well as to meet seasoned AIAA leaders who will be there to welcome you.

Sponsored by: BOEING

Coffee Breaks

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

Monday, 5 June	**0730–0800 hrs, Plaza Foyer**
	0900–0930 hrs and 1600–1630 hrs; Meeting Room Foyers
Tuesday, 6 June	**0730–0800 hrs, Plaza Foyer**
	0900–0930 hrs, Meeting Room Foyers
	1600–1630 hrs, Exposition Hall
Wednesday, 7 June	**0730–0800 hrs, Plaza Foyer**
	0845–0930 hrs, Exposition Hall;
	1600–1630 hrs Meeting Room Foyers
Thursday, 8 June	**0730–0800 hrs, Plaza Foyer**
	0845–0930 hrs, Exposition Hall
	1600–1630 hrs, Meeting Room Foyers
Friday, 9 June	**0730–0800 hrs, Plaza Foyer**
	0900–0930 hrs and 1600–1630 hrs; Meeting Room Foyers

Welcome Reception

Tuesday, 6 June **Exposition Hall, Plaza Exhibit/Foyer**
1830–2000 hrs

Continue your discussions from Monday's sessions and connect with those who may become your future colleagues and collaborators at the reception in the Exposition Hall. This is a great and informal way to exchange ideas with the companies you want to partner with and interact with the leaders who are shaping the future of aerospace. Your ticket to this reception is included in the registration fee where indicated and you can purchase additional tickets for your guests at the forum registration desk.

Luncheon in the Exposition Hall

Thursday, 8 June **Exposition Hall, Plaza Exhibit/Foyer**
1230–1400 hrs

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

Exposition

Exposition Hall Hours

Tuesday, 6 June	**1300–1630 hrs**
Reception*	**1830–2000 hrs**
Wednesday, 7 June	**0845–1600 hrs**
Thursday, 8 June	**0845–1400 hrs**

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

Video Drone Prize Drawing

Enter to win a video drone! Complete the prize drawing ticket (behind your registration badge) and drop it in the boxes in the Exposition Hall by noon on Thursday, 8 June. Winner will be notified by email and does not need to be present to win.

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 During 2017 AIAA AVIATION Forum

AIAA Publications is offering a special show discount on all titles featured during 2017 AIAA AVIATION 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 show special will only be available during the forum! Take advantage of these super savings and visit the AIAA Bookstore.

AIAA Foundation

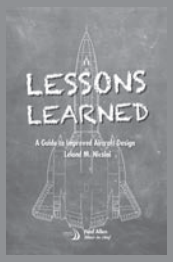
With our Match a Million program, AIAA will match gifts to the Foundation up to $1 million, doubling the impact of every donation.

When you donate to the AIAA Foundation you are investing in the next generation of aerospace professionals through innovative, educational programs and recognition.

Be sure and stop by the booth and check out the silent auction as there are some really cool aerospace items up for bid, including a signed replica of the F-15 that Chuck Yeager flew supersonically 20 years ago during the 50 anniversary of his first X-1 flight.

Tuesday, 6 June

1830–2000 hrs — **AIAA Pavilion, Exposition Hall, Welcome Reception**



Meet the Author

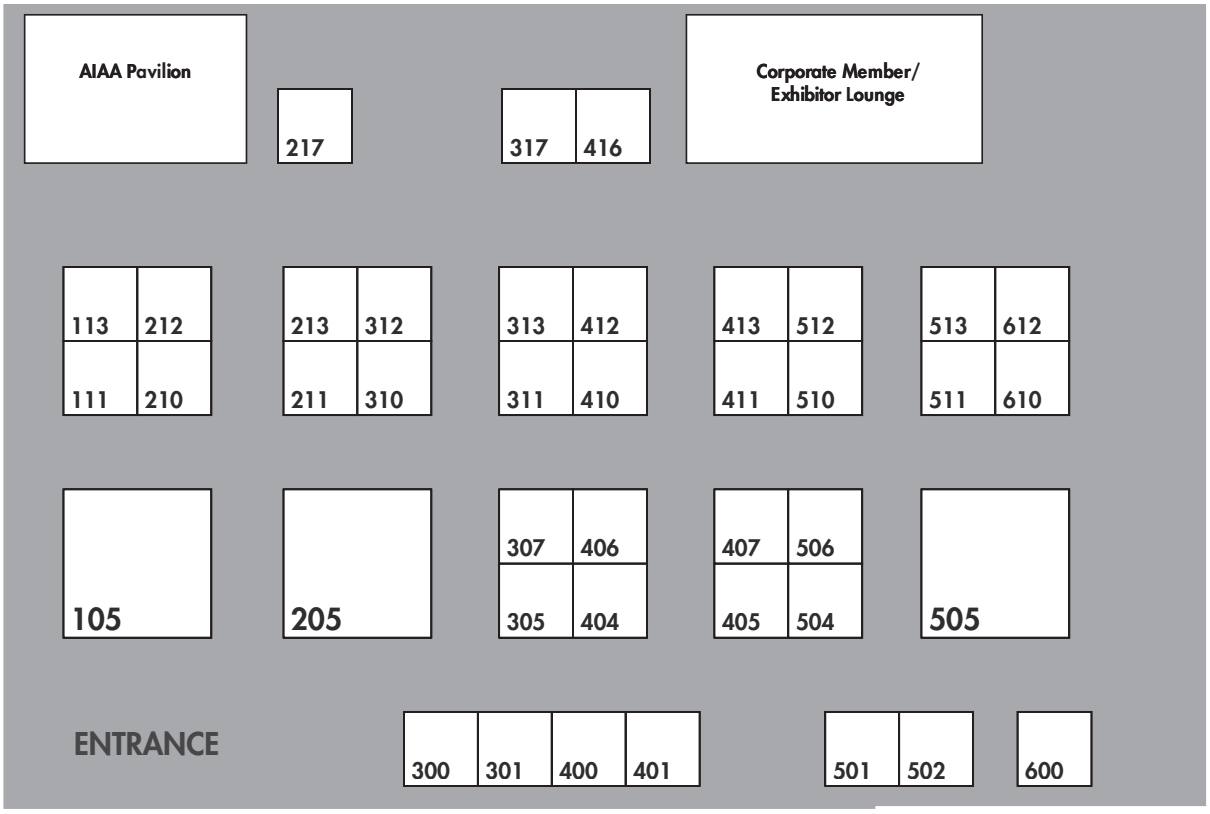
Leland Nicolai

Lessons Learned: A Guide to Improved Aircraft Design

and

Fundamentals of Aircraft and Airship Design

Exposition



List of Exhibitors (★ Indicates Corporate Members)

405 Aerion Technologies ★
612 AIAA Rocky Mountain Section
411 Airborne Systems
512 Airwolf 3D
213 ANSYS Inc.
513 Association of Airworthiness Professionals
300 Aurora Flight Sciences ★
113 BETA CAE Systems USA, Inc.
205 Boeing Technology Services ★
217 Boom Technology
211 Cambridge University Press
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305 Cradle North America, Inc.
111 Ennova Technologies
310 ESTECO
511 Exa Corporation
307 Gamma Technologies
501 G.R.A.S. Sound & Vibration
312 ITI
311 Kamatics/RWG
506 Kulite Semiconductor Products, Inc.
210 LaVision, Inc.
610 Lawrence Livermore National Laboratory
502 Le Mans Acoustique
105 Lockheed Martin ★
313 MathWorks
407 Metacomp Technologies
505 National Aeronautics and Space Administration
212 National Research Council of Canada
600 PCB Piezotronics, Inc.
504 Photron
301 Pointwise, Inc. ★
406 RAPID
317 SandI Solutions Global
413 SG—Space & Ground Engineering Solutions ★
400 SmartUQ
404 Tecplot ★
401 United Electronic Industries, Inc.
510 University of Kansas Short Course Program

Exhibitors

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Exhibitors

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Le Mans Acoustique brings together the acoustics players of Le Mans, France to spread around the world its unique concentration of expertise in acoustics. The institute aims to create synergies between research, education and innovation (industrial companies) and to foster collaborative projects in the field of acoustics. With over 300 players working in the field of acoustics, Le Mans is the European Capital of Acoustics. The main topics are Aeroacoustics, Acoustic materials, Vibroacoustics, Ultrasonic NDT, Thermoacoustics, Optoacoustics and Electroacoustics. Contact us to get in touch with LAUM (University acoustic research lab), CTTM (Acoustics technology transfer and R&D center), ENSIM (Acoustics & Vibrations Engineering school) or ESBAM (Sound Design school).

Exhibitors

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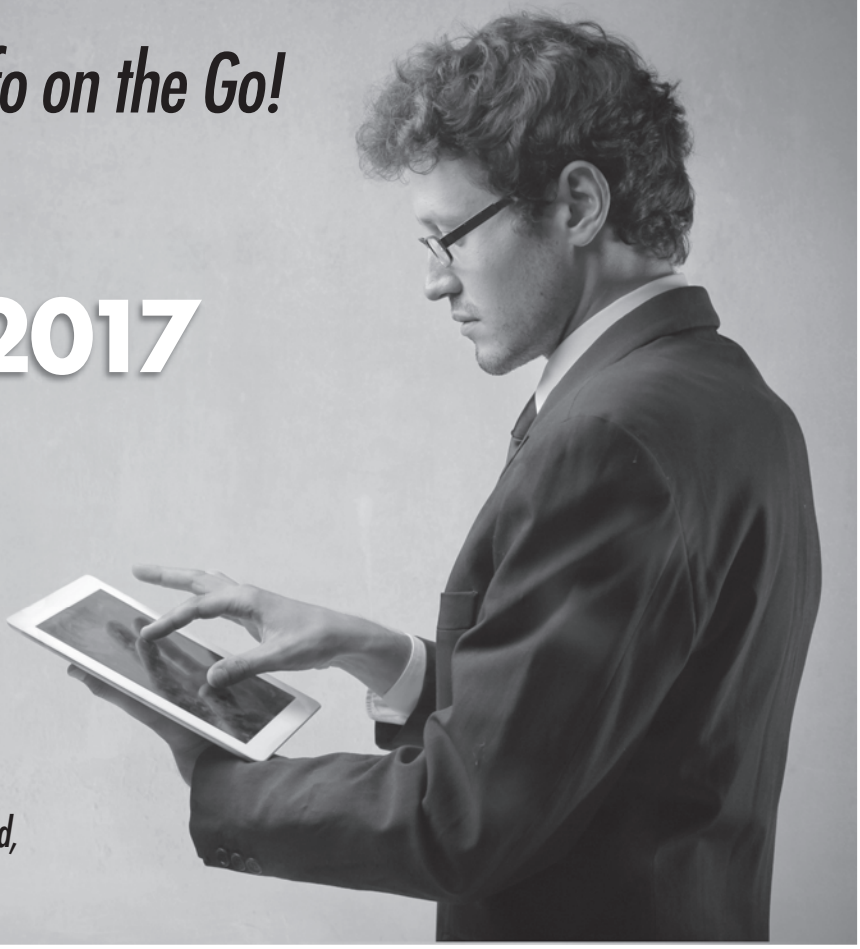

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General Information

AIAA Registration and Information Center Hours

The AIAA Registration and Information Center will be located on the Plaza Foyer at the Sheraton, Denver. Hours are as follows:

Sunday, 4 June	**1500–1900 hrs**
Monday, 5 June – Friday, 9 June	**0700–1730 hrs**

ITAR Registration Hours:

Tuesday, 6 June	**0700–1730 hrs**	**Plaza Foyer**
Wednesday, 7 June	**0700–1730 hrs**	**Plaza Foyer**
Thursday, 8 June	**0700–1730 hrs**	**Savoy Foyer**
Friday, 9 June	**0700–1200 hrs**	**Savoy Foyer**

Wi-Fi Internet Access On Site

AIAA is providing 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.

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AIAA Livestream Channel

Did you miss a plenary session or a Forum 360 session? Visit **livestream.com/aiaavideo/aviation2017** to view selected plenaries and Forum 360 sessions. Share the link with colleagues who couldn't attend the forum, so they can watch live or view later

Social Media at #AiaaAviation

Watch the social media kiosks located throughout the forum for announcements and content shared by attendees using the hashtag **#AiaaAviation**.

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Conference Proceedings

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Proceedings for the forum will be available online. The cost is included in the registration fee where indicated. Online proceedings will be available on 5 June 2017. 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.
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2. All manuscript files submitted by four days prior to the conference are currently in the proceedings. Files submitted after that date, both original and revised manuscripts, will not be available until the final proceedings update, which may take up to 15 business days after the last day of the conference.
3. Direct any questions concerning access to proceedings and/or ARC to **arcsupport@aiaa.org.**

Manuscript Revisions:

1. Manuscript revision is open for all presenting authors from 0900 hrs Eastern Time, Monday, 5 June, through 2000 hrs Eastern Time, Tuesday, 20 June.
2. Revisions submitted for manuscripts already online will not refresh until after the proceedings have been updated, which may take up to 15 business days after the last day of the conference.

Certificate of Attendance

Certificates of Attendance are available for attendees who request documentation at the forum itself. The Certificates of Attendance will be available for attendees to print at a self-service station at the registration desk starting Wednesday, 7 June. AIAA offers this service to better serve the needs of the professional community. Claims of hours or applicability toward professional education requirements are the responsibility of the participant.

General Information

Employment Opportunities

AIAA members can post and browse resumes, browse job listings, and access other online employment resources by visiting the AIAA Career Center at http://careercenter.aiaa.org. Additionally, a message board will be available for postings in the Exposition Hall.

Membership

AIAA is your vital lifelong link to the collective creativity and brainpower of the aerospace profession and a champion for its achievements. Students who are not yet members may apply their registration fee toward their first year's student member dues.

Young Professional Guide for Gaining Management Support

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

Badge Policy

AIAA forum badges are provided to those individuals who have paid for a registration to the event. Badges must be worn at all times to participate in all forum activities. Badges are not provided at the registration desk for committee meeting attendance. In order to obtain an AIAA AVIATION Forum badge, one must register for the forum.

Nondiscriminatory Practices

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

General Information

Author and Session Chair Information

Speakers' Briefings in Session Rooms

Individuals 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' Briefings will be held, Monday, 5 June – Friday, 9 June: 0730 hrs.

Speakers' Practice Room

Speakers who wish to practice their presentations may do so in the Client Office 1 room. A sign-up sheet will be posted on the door. In consideration of others, please limit practice time to 30-minute increments.

Session Chair Reports

All session chairs are asked to complete a session chair report to evaluate their session for future planning. AIAA has partnered with Canvas Solutions to provide an electronic Session Chair Report form. You can download the FREE mobile app in your App Store, AppWorld, or Marketplace by searching for "Canvas Solutions, Inc." The mobile app is free, so please be sure to download it. Detailed instructions will be provided in the session rooms. If you do not have a tablet or a smartphone, simply use the report form as a guide and enter your session chair report information at the session chair reporting computer station located on site near the AIAA registration area. Report data will be collected and used for future planning purposes, including session topics and room allocations. Please submit your session chair report electronically by Friday, 9 June 2017.

Audiovisual

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

Specs for the laptops provided in each session room:
Operating System: Windows 10
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"No Paper, No Podium" and "No Podium, No Paper" Policy

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

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 Aerospace Information Systems; Journal of Air Transportation; Journal of Aircraft; Journal of Guidance, Control, and Dynamics; Journal of Propulsion and Power; Journal of Spacecraft and Rockets;* or *Journal of Thermophysics and Heat Transfer*. You may now submit your paper online at **http://mc.manuscriptcentral.com/aiaa.**

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Committee Meetings

Start Time	Title	Location
	Sunday, 4 June	
1400-1500	**GTTC Steering Subcommittee**	Columbine
1400-1500	**APATC New Member Orientation**	Plaza Court 5
1430-1500	**APATC Liaisons Subcommittee**	Plaza Court 2
1500-1600	**GTTC New Member and Mentors Meeting**	Columbine
1500-1600	**APATC Education Subcommittee**	Plaza Court 1
1500-1600	**APATC Membership and Nominations Subcommittee**	Plaza Court 3
1500-1600	**APATC Planning Subcommittee**	Plaza Court 4
1500-1600	**APATC Honors and Awards Subcommittee**	Plaza Court 5
1500-1600	**APATC Publicity and Publications Subcommittee**	Plaza Court 6
1600-1630	**GTTC Introduction/Overview**	Columbine
1600-1700	**APATC Technical Activities Meeting**	Plaza Court 5
1630-1700	**GTTC Program Subcommittee**	Columbine
1700-1800	**APATC Steering Committee Meeting**	Plaza Court 5
1700-1800	**GTTC Conferences Subcommittee**	Columbine
1800-1900	**GTTC Awards Subcommittee**	Columbine
1800-1900	**FDTC High-Order Methods/Algorithms DG**	Vail
1800-2100	**Applied Aerodynamics TC**	Plaza A
1900-2000	**GTTC Publications Subcommittee**	Columbine
1900-2000	**FDTC LES DG**	Plaza Court 6
1900-2200	**FDTC Transition DG**	Silver
1900-2200	**TAC Aircraft and Atmospheric Systems Group**	Plaza Court 1
2000-2030	**GTTC Education and Student Activities Subcommittee**	Columbine
2000-2200	**AMTTC Conferences Subcommittee**	Plaza Court 4
2030-2100	**GTTC Standards Subcommittee**	Columbine
	Monday, 5 June	
0900-1700	**GTTC Internal Balance WG**	Governor's Square 9
1200-1500	**Balloon Systems TC**	Director's Row F
1200-1500	**General Aviation TC**	Aspen
1300-1400	**FDTC New Member Orientation**	Biltmore
1400-1600	**GTTC Future of Ground Testing WG**	Plaza A
1630-1730	**Aerodynamics Lecture**	Grand Ballroom 1
1730-1830	**APATC Low Boom DG**	Windows
1730-1900	**APATC Aeropropulsive Interactions DG**	Century
1730-1930	**AMTTC Awards and Nominations Subcommittee**	Aspen
1830-2200	**Agile EU Project - Collaborative MDO**	Silver
1830-2200	**CFD Vision 2030 Integration Committee**	Governor's Square 9
1900-2000	**APATC Collaborative Experiments and Computations DG**	Denver
1900-2000	**FDTC High Speed Flow Control DG**	Director's Row J
1900-2100	**TAC Aerospace Sciences Group**	Director's Row I
1900-2100	**Air Transportation Systems TC**	Biltmore
1900-2130	**FDTC CFD Methods Subcommittee**	Plaza Court 1
1900-2130	**FDTC Fundamentals of Flow Phenomena Subcommittee**	Director's Row F
1900-2200	**Atmospheric Flight Mechanics TC**	Terrace

Committee Meetings

Start Time	Title	Location
	Tuesday, 6 June	
0900-1700	**GTTC Dual Flow Reference Nozzle WG**	Biltmore
1300-1600	**DETC Subcommittee Meetings**	Director's Row G
1500-1600	**TPTC Best Paper Subcommittee**	Director's Row F
1600-1700	**TPTC Awards Subcommittee**	Aspen
1600-1700	**TPTC Education Subcommittee**	Hotel Suite 693
1600-1800	**ETC Meeting**	Governor's Square 9
1700-1800	**FDTC Low Re DG**	Gold
1700-1800	**FDTC Turbulence Model Benchmarking DG**	Director's Row F
1700-1800	**TPTC Publicity Subcommittee**	Director's Row G
1700-1800	**TPTC Conference Subcommittee**	Aspen
1700-1900	**AIAA Journal Editors Meeting**	Windows
1730-1900	**APATC/FDTC Flow Control DG**	Plaza A
1730-2200	**NPAT Mini-Facility User's Meeting**	Governor's Square 12
1800-1900	**FDTC Non-Equilibrium Flows DG**	Colorado
1800-1900	**TPTC Nominations Subcommittee**	Denver
1800-1900	**TPTC Publications Subcommittee**	Plaza Court 1
1800-2100	**Flight Testing TC**	Plaza Court 2
1800-2100	**Design Engineering TC**	Director's Row G
1830-2030	**Computational Fluid Dynamics**	Plaza Court 6
1900-2030	**FDTC Flow Control and Fluid Applications Subcommittee**	Director's Row F
1900-2100	**FDTC FSI DG**	Governor's Square 10
1900-2100	**APATC Rotorcraft Simulations & Performance Predictions DG**	Governor's Square 16
1900-2200	**Aircraft Operations TC**	Aspen
1900-2200	**Thermophysics TC**	Columbine
1900-2200	**Plasmadynamics and Lasers TC**	Director's Row I
1900-2200	**Aeroacoustics TC**	Governor's Square 14
1900-2200	**Meshing, Visualization and Computational Environments TC**	Director's Row J
1930-2030	**FDTC Modal Decomposition DG**	Director's Row H
1930-2200	**Aerodynamic Measurement Technology TC**	Governor's Square 11

Committee Meetings

Start Time	Title	Location
	Wednesday, 7 June	
0900-1200	**GTTC Wind Tunnel Flow Quality WG**	Director's Row F
1400-1600	**AIAA Standards Open Forum**	Biltmore
1400-1600	**RDT&E Workforce Devmt Construct**	Aspen
1400-1700	**GTTC WT Model Attitude and Deformation Measurement WG**	Director's Row F
1500-1630	**2018 AIAA AVIATION Forum Technical Program Committee**	Governor's Square 9
1600-1700	**AVIATION Executive Steering Committee**	Director's Row G
1700-1800	**FDTC Free Shear Layer (Mixing Layer) Flow Control DG**	Biltmore
1730-1830	**Thermophysics Lecture**	Governor's Square 17
1730-1900	**APATC CFD Transition Modeling DG**	Director's Row I
1800-1900	**FDTC Solver Technology for Turbulent Flows**	Plaza Court 1
1800-1900	**FDTC Future of Fluids**	Governor's Square 9
1800-2100	**V/STOL Aircraft Systems TC**	Denver
1830-2130	**Multidisciplinary Design Optimization TC**	Terrace
1830-2130	**Atmospheric and Space Environments TC**	Director's Row F
1830-2130	**Lighter-than-Air Systems TC**	Plaza Court 6
1830-2200	**Aircraft Design TC**	Governor's Square 14
1900-2200	**Fluid Dynamics TC**	Governor's Square 12
	Thursday, 8 June	
0800-1200	**GTTC Future of Ground Testing WG**	Governor's Square 9
0900-1200	**GTTC Uncertainty Analysis WG**	Biltmore
1000-1200	**Corporate Member Working Group Meeting**	Director's Row F
1200-1500	**Aerodynamic Decelerator Systems TC**	Governor's Square 9
1400-1600	**Corporate Member Working Group Meeting**	Director's Row F
1400-1600	**GTTC Statistically Defensible Test Methods Focus Group**	Biltmore
1730-1930	**APATC Aerodynamic Design Optimization DG**	Vail
1730-1930	**APATC Missile & Projectile Aeroprediction DG**	Governor's Square 17
1730-1930	**FDTC Flow Control Review Article**	Governor's Square 11
1730-2030	**APATC Stability & Control Prediction**	Biltmore
1800-2100	**Ground Testing TC**	Silver
1830-2200	**Can We Establish A Collaborative MDO? Agile - EU Project**	Governor's Square 9
1900-2200	**Modeling and Simulation TC**	Aspen
1900-2200	**Transformational Flight PC**	Governor's Square 12
	Friday, 9 June	
0900-1200	**GTTC High Speed Wind Tunnel Calibration WG**	Governor's Square 9

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- 49th Plasmadynamics and Lasers Conference
- Transformational Electric Flight Workshop and Expo
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