51st AIAA Aerospace Sciences Meeting
Including the New Horizons Forum and Aerospace Exposition

7–10 January 2013
Gaylord Texan Hotel and Convention Center
Grapevine, Texas
(Dallas/Fort Worth Region)

www.aiaa.org/ASM2013EP
#aiaaASM

A Multidisciplinary Aerospace Research and Development Conference

Event Preview

The World’s Forum for Aerospace Leadership
Benefits of Attendance

Aerospace Science – leading the way in innovative technologies, entrepreneurial endeavors, and business opportunities.

The interdisciplinary nature of aerospace engineering has contributed to tremendous research advances that have inspired new and novel industrial applications. Some of the innovative developments of aerospace technologies in recent times include new shock wave assisted applications in the area of medicine, drug delivery systems, biotechnology, and manufacturing, space solar power systems, energy storage systems, fuels cells, use of supercomputers, development of transdisciplinary computational techniques, and cryogenic applications. The carbon fiber based composites used as heat shield material during reentry are today used to manufacture cost-effective artificial limbs for people with physical disabilities. The manufacturing techniques specially developed for machining components for aerospace applications have been instrumental in the development of innovative heat exchanger systems for ground-based applications.

The AIAA Aerospace Sciences Meeting (ASM) is the first major multidisciplinary event of the year for aerospace scientists and engineers from around the world to share and disseminate the latest scientific knowledge and research. At ASM, you’ll discover new research that can be applied to your industry, and you’ll meet the individuals who lead prime and subprime aerospace corporations, lead and manage government programs, and create business and job opportunities.

Why Attend?
- Find out how the latest aerospace research can be applied to your industry or project.
- Discover how aerospace technologies influenced product development for companies like IBM, Dell, Microsoft, Intel, Hewlett-Packard, and Autodesk.
- Meet new customers, partners, and develop new business contacts when you exhibit at or attend the Aerospace Exposition.
- Network, discuss challenges, and share ideas during panel sessions, luncheons, receptions, coffee breaks, and off-site events.

Who Should Attend?
- Business Development Managers
- Chief Information Officers
- Engineering Managers and Executives
- Engineers, Researchers, and Scientists
- Engineering Business Entrepreneurs
- Young Aerospace Professionals
- Educators and Students
- Media Representatives

Register Today: www.aiaa.org/ASM2013EP

What to Expect?

Technical Program
- More than 1,300 papers presented in over 30 technical tracks
- AIAA Foundation International Student Conference
- Lectureships

Management Program
- New Horizons Forum addressing Information Technology research, development, and applications
- NSTC National Aeronautics RDT&E Infrastructure Plan

Continuing Education and Workshops
- Six Degrees of Freedom Modeling of Missile and Aircraft Simulations
- Specialist’s Course on Flow Control
- Systems Engineering Verification and Validation
- Career and Workforce Development Workshop
- GET YOUR GREEN CARD – Immigration Options for Scientists and R&D Engineers
- Intellectual Property Law Workshop

Networking
- Rising Leaders in Aerospace Forum
- First Timers’ Social
- Continental breakfasts, coffee breaks, lunches, receptions
- Themed Happy Hours
- Dallas Cowboys Stadium Reception

Systems of Systems Engineering and Integration Focus
- How to Bring it all Together

Grapevine, Texas

Historic Grapevine, Texas, located between Dallas and Fort Worth, is a go-to destination when planning a trip to North Texas! Step back in time in Historic Downtown Grapevine with its collection of shops, restaurants, and art galleries. Enjoy fantastic hotels and resorts, great attractions for the entire family, fabulous shopping opportunities, outstanding dining at over 200 restaurants, winery tasting rooms, a wide variety of outdoor recreational activities, award-winning festivals and events, and much more. Grapevine has something for everyone.

New Horizons Forum
Aerospace Science – We Push the Envelope, We Solve Hard Problems, We Build the Future

Monday, 7 January, 1330–1430 hrs
Intelligence, Reconnaissance, and Surveillance

Keynote: Lt General Larry D. James, Deputy Chief of Staff for Intelligence, Surveillance and Reconnaissance, Headquarters, U.S. Air Force

Panel Discussion: 1500–1700 hrs
Spîn-on Technologies for Aeronautics and Space

Panelists:
- Paul Giangarra, IBM Distinguished Engineer
- Rich Friedrich, Director, Cognition Based Analytics, HP Laboratories
- Kent Cunningham, Chief Technology Officer, Microsoft
- Moderator: Rupak Biswas, NASA Advanced Supercomputing Division Chief, NASA Ames Research Center

Tuesday, 8 January, 0800–0900 hrs
Aerospace Research and Development


Panel Discussion: 0930–1130 hrs
Spin-on Technologies for Aeronautics and Space

Panelists:
- Rich Friedrich, Director, Cognition Based Analytics, HP Laboratories
- Kent Cunningham, Chief Technology Officer, Microsoft
- Moderator: Rupak Biswas, NASA Advanced Supercomputing Division Chief, NASA Ames Research Center

Wednesday, 9 January, 0800–0900 hrs
Information Technology

Keynote: Linda Cureton, Chief Information Officer, NASA

Panel Discussion: 0930–1130 hrs
Spin-on Technologies for Aeronautics and Space

Panelists:
- Rich Friedrich, Director, Cognition Based Analytics, HP Laboratories
- Kent Cunningham, Chief Technology Officer, Microsoft
- Moderator: Rupak Biswas, NASA Advanced Supercomputing Division Chief, NASA Ames Research Center

Thursday, 10 January, 0800–0900 hrs
Systems of Systems Engineering and Integration Focus

Keynote: Joy L. Bryant, Vice President & Program Manager, International Space Station, Space Exploration, Boeing Integrated Defense Systems
For over 50 years, the AIAA Aerospace Sciences Meeting has been where it all comes together for 2,000 aerospace researchers, engineers, managers, and students. The Aerospace Exposition features exhibits from aerospace companies, suppliers, government agencies, and universities. Exclusive VIP tours, an exhibit presentation stage, a static display showcase, and extended coffee breaks and evening receptions are designed to give exhibitors and attendees more time for networking and business development.

**Exposition Hall Hours**

**Tuesday, 8 January**
0700–1200 hrs
1345–1600 hrs
1830–2000 hrs

**Wednesday, 9 January**
0700–1600 hrs

**Exposition Hall Events**

**Tuesday, 8 January**
0700–0800 hrs, Continental Breakfast
0900–0945 hrs, Coffee Break
1345–1600 hrs, Dessert and Coffee
1830–2000 hrs, Waypoint Reception

**Wednesday, 9 January**
0700–0800 hrs, Continental Breakfast
0900–0945 hrs, Coffee Break
1200–1330 hrs, Luncheon Reception
1430–1515 hrs, Coffee Break

**Exhibitor Contact**

Raise the profile of your organization – to exhibit at ASM this year, please contact:

Christopher Grady
chrisg@aiaa.org
703.264.7509

**Presentation Stage**

Announcements and presentations by exhibitors on their latest products and services, as well as special announcements by other conference participants, will be made on the presentation stage, located in the exposition hall, during the networking coffee breaks. The full schedule will be available on the conference website. Exhibitors who are interested in taking advantage of this opportunity should contact Carmela Brittingham at carmelab@aiaa.org.

**Sponsorship Opportunities**

Available Sponsorships:
- Premier Event Sponsors (Limit 4)
- Off-Site Event at Dallas Cowboys Stadium Sponsor (Limit 1)
- General Event Sponsors (Limit 4)
- Awards Luncheon Sponsor (Limit 1)
- Mobile App Sponsor (Limit 1)
- Cyber Café Sponsor (Limit 1)
- Charging Kiosk Sponsor (Limit 1)
- Young Professional Program: Rising Leaders in Aerospace Sponsor (Limit 4)
- Advertisements in the Final Program (Limit 5)

**Sponsorship Contact**

For more information on sponsorship opportunities, please contact:

Merrie Scott
Manager of Industry Partnerships
merries@aiaa.org
703.264.7530

**About AIAA**

AIAA is the world's largest technical society dedicated to the global aerospace profession. With more than 35,000 individual members worldwide, and nearly 100 corporate members, AIAA brings together industry, academia, and government to advance engineering and science in aviation, space, and defense.

Register Today: www.aiaa.org/ASM2013EP
Networking Activities

We have planned a series of activities during the Aerospace Sciences Meeting to help you connect with current colleagues and new acquaintances.

Sunday, 6 January, 1900–2030 hrs
First Timers’ Social
Join us for a special session aimed at achieving the most value from your attendance at the Aerospace Sciences Meeting. Especially useful for first-time attendees, the social will offer the opportunity to meet with other professionals and young members who are experts at navigating the many sessions, speakers, paper presentations, and receptions. Enjoy an informal short program, followed by networking time! Please RSVP to joannez@aiaa.org.

Monday–Thursday, 7–10 January 2013
Rising Leaders in Aerospace Forum
AIAA’s Rising Leaders in Aerospace Forum is a special initiative that provides a forum for young aerospace leaders, age 35 and under, to learn and engage with others. The multidimensional program features a speed mentoring leadership exchange, panel or keynote sessions, Q&A with top industry leaders, and multiple opportunities for networking. This exciting and energetic forum will provide access to top aerospace leaders and their perspectives, as well as to subject matter relevant to your career stage.

Separate registration is required. To register for this program, please select the Rising Leaders in Aerospace track when registering for the conference.

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Monday–Thursday, 7–10 January, 0700–0800 hrs
Continental Breakfasts
A great way to start the day and interact with exhibitors and other attendees, breakfast is available in the registration foyer on Monday and Thursday, and in the Exposition Hall on Tuesday and Wednesday. These events are open to all attendees and no tickets are required.

Monday, 7 January, 1900–2030 hrs
Themed Happy Hour Events
Step by to grab a drink and network with other attendees during Aerospace Happy Hours. You’ll find friends, fun, and happy-house prices at several themed stations. These events are open to all attendees and no tickets are required.

▶ New Members Social
▶ AIAA Grassroots Advocacy – Making Your Voice Count
▶ Engineers as Educators Program
▶ TED Talks Videos
▶ Meet and Greet with Technical Session Chairs
▶ Meet and Greet with Technical Activities Committee
▶ Meet and Greet with Emerging Technologies Committee
▶ Meet and Greet with AIAA Authors and Editors
▶ AIAA Propulsion and Energy 2014 and AIAA DEFENSE 2014 Forums
▶ AIAA AVATION 2014 Forum
▶ AIAA SPACE 2014 Forum
▶ AIAA Scitech 2014 Forum

Tuesday, 8 January, 0930–1200 hrs and 1330–1630 hrs
Tactical Maneuvering – Charting Your Own Career: A Career and Workforce Development Workshop
Are you just beginning your career, in your early career and preparing for a career transition, or mid-career and looking for a new direction? Get a jump start and attend the Career and Workforce Development Workshop. This event features a series of presentations to guide and position you to get the most out of your career, including topics on what to expect in the first two years of an aerospace career, how to develop your career by knowing yourself, and what managers want from their engineers for promotion.

Wednesday, 9 January, 0900–1200 hrs
Intellectual Property Law Workshop
The United States has recently implemented sweeping changes to its patent laws. These changes will have a profound impact on the rights of inventors and researchers. Intellectual Property Law Attorney Richard Jaworski, with over 20 years of experience, will present a workshop to provide insight into the various options that are available for protecting Intellectual Property. The workshop will discuss the process for obtaining patents, copyrights, and trademarks, and the advantages and disadvantages of each type of protection. It will include a detailed discussion of the recent changes to patent laws and how they will impact those who are currently navigating or considering navigating the patent process. A Q&A session will follow the presentation.

Continuing Education and Workshops

Technical, career, and public policy courses and workshops give you the knowledge and skills to advance your career.

Saturday–Sunday, 5–6 January, 0815–1700 hrs
Six Degrees of Freedom Modeling of Missile and Aircraft Simulations
Peter Zipfel
As modeling and simulation (M&S) is penetrating the aerospace sciences at all levels, this two-day course will introduce you to the difficult subject of modeling aerospace vehicles in six degrees of freedom (6-DoF). Starting with the modern approach of tensors, the equations of motion are derived and, after introducing coordinate systems, they are expressed in matrices for compact computer programming. Aircraft and missile prototypes will exemplify 6-DoF aerodynamic modeling, rocket and turbojet propulsion, actuating systems, autopilots, guidance, and sensors. These subsystems will be integrated step by step into full-up simulations. For demonstrations, typical fly-out trajectories will be run and projected on the screen. The provided source code and plotting programs lets you duplicate the trajectories on your PC (requires FORTRAN or C++ compiler). With the provided prototype simulations you can build your own 6 DoF aerospace simulations.

Specialist’s Course on Flow Control
David Williams, Daniel Miller, and Kamihiko Tate
The techniques of Active Flow Control are becoming more sophisticated as Fluid Dynamics, Control and Dynamical Systems Theory merge to design control architectures capable of solving challenging flow control applications. The two-day course will examine advanced topics in active flow control, placing particular emphasis on “how to do flow control.” This new course will complement the more fundamental AIAA Short Course on “Modern Flow Control.” Modern dynamical systems and control theory related to closed-loop flow control and performance limitations will be discussed. State-of-the-art sensors and sensor design techniques will be covered. Two case studies will be presented that describe recent success stories about the implementation of active flow control on advanced aircraft. The course lecturers have extensive backgrounds in flow control, coming from industry and academia.

Systems Engineering Verification and Validation
John C. Hou
This course will focus on the verification and validation aspect that is the beginning, from the validation point of view, and the final part of the systems engineering task for a program/ project. It will clarify the confusing use of verification and validation. Familiarize yourself with validating requirements and generating verification requirements. Start with the verification and validation plan. "Then learn how to choose the best verification method and approach. Test and Evaluation Master Plan leads to test planning and analysis. Conducting test involves activities, facilities, equipments, and personnel. Evaluation is the process of analyzing and interpreting data. Acceptance test assures that the end user or operator meet what intended to purchase. There are functional and physical audits. Simulation and Modeling provides virtual duplication of products and processes in operational valid environments. Verification management organizes verification task and provides total traceability from verification report elements.
Recognizing the best in our profession for their outstanding achievement is one of the primary goals of AIAA. The Aerospace Sciences Meeting features a number of activities that help us honor achievements and contributions to the profession.

Monday, 7 January, 1930–2130 hrs

AIAA Associate Fellows Dinner
One hundred seventy-eight Institute members will be inducted as AIAA Associate Fellows during the AIAA Associate Fellows Dinner. Each year, the Institute recognizes exemplary professionals for their accomplishments in engineering or scientific work, outstanding merit, and contributions to the arts, sciences, or technology of aeronautics or astronautics. Please support your colleagues, and join us for the induction of AIAA’s Associate Fellows class of 2013. Tickets to this prestigious event are available on a first-come, first-served basis, and can be purchased via the registration form or on site for $97, based on availability. Business attire is requested.

Monday, 7 January, 1100–1300 hrs

2013 Durand Lectureship in Public Service
Gen. John R. Dailey (USMC, Ret.), Director, Smithsonian National Air and Space Museum, Washington, DC, will provide the keynote address for the 9th Public Policy Luncheon. The luncheon is open to all attendees but is on a first-come, first-served basis. Once the room has met capacity, the doors will be closed.

Monday, 7 January, 1730–1830 hrs

2013 Dryden Lectureship in Research
Alan H. Epstein, Vice President, Technology and Environment, Pratt & Whitney Corporation, will present Mechanics and Dynamics Research for Advanced Airbreathing Propulsion. The lectureship emphasizes the great importance of basic research to advancement in aeronautics and astronautics, and is a salute to research scientists and engineers. It is named in honor of Dr. Hugh L. Dryden, renowned leader in aerospace research programs.

Tuesday, 8 January, 1200–1330 hrs

Awards Luncheon
The Tuesday Awards Luncheon is included in the registration fee where indicated. Additional tickets may be purchased for $52 at the AIAA on-site registration desk, based on availability.

Tuesday, 8 January, 1730–1830 hrs

2013 Wright Brothers Lectureship in Astronautics
James H. Crocker, Vice President and General Manager, Lockheed Martin Space Systems Company, will present From Galileo to Hubble: Mankind’s Extraordinary Journey. The lecture honors an individual who has performed notably and distinguished himself/herself technically in the field of astronautics. It is named for Theodore von Kármán, world famous authority on aerospace sciences.

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### Hotel Information

**Gaylord®**

**Texas Hotel and Convention Center**

1580 Gaylord Trail

Grapevine, Texas 76051

(Dallas/Fort Worth area)

Phone: 817.778.2000

#### Room Rates

- **Room rates are $189** for a standard room (single or double occupancy); includes non-negotiable $10.00 amenities fee for applied at checkout. Applicable taxes will apply.

- **Book your room at:**
  - hotel.aiaa.org/ASM2013#attendee

#### Federal Government Employees

There are also a small number of federal government per diem rooms available. **Book your room at:**

- hotel.aiaa.org/ASM2013#attendee

- If you reserve a government room you will need to present a government ID upon check-in.

#### Transportation

**The Gaylord Texan is just six minutes from Dallas/Fort Worth International Airport (DFW). Shuttle service and car service are available from the airport to the hotel.**

- **Shuttle:** $13
- **Taxi:** Approximately $25

### Registration

**Registration must be received by 10 December 2012 to receive the early-bird rate. Certification cannot be processed without full payment. Cancellations must be received in writing no later than 24 December 2012. There is a $100 cancellation fee.**

**Discounted Group Rate:** 10% discount off early-bird rate for 10 or more people from the same organization who register at the same time and pay with a single form of payment. Includes conference, Tuesday awards luncheon, Tuesday evening reception, Wednesday luncheon receptions, Thursday off-site event, and single-user access to online proceedings. A complete typed list of registrants, along with completed individual registration forms, must be received by the Standard Registration deadline of 4 January 2013.

**AIAA MEMBERSHIP:** If you are registering at the full conference rate, included with your registration fee is one year of AIAA membership. Those paying the group rate do not receive membership renewal.

### Pricing

- **Pricing subject to change.**

### Extra Tickets

- **Option 1**
  - Full Conference: $780
  - AIAA Member Plus: $930

- **Option 2**
  - Full-Time Undergraduate Student: $25
  - N/A

- **Option 3**
  - Full-Time Undergraduate Student with Networking: $297
  - $327

- **Option 4**
  - Full-Time Graduate or Ph.D. Student: $75
  - $105

- **Option 5**
  - Full-Time Graduate or Ph.D. Student with Networking: $347
  - $377

- **Option 6**
  - AIAA Retired Member Only: $60

- **Option 7**
  - Discounted Group Rate†: $698
  - $698

- **Option 8**
  - Rising Leaders in Aerospace Forum†: N/A

- **Option 9**
  - Continuing Education (CE) Course and Full Conference with Online Proceedings: $1,295
  - $1,400

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**These rooms will be held for AIAA until 17 December 2012 or until the room block is full, then released for use by the general public.**

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- hotel.aiaa.org/ASM2013#attendee

- If you reserve a government room you will need to present a government ID upon check-in.

*The Gaylord Texas requires a major credit card with expiration date to reserve a room. The Gaylord Texas Hotel and Convention Center on Lake Grapevine has a $10 per day plus tax, per room amenities fee that is included in the rate stated above. This fee includes:

- Wireless Internet access in each guestroom and throughout the hotel public space (not including the convention center and meeting rooms)
- Local phone calls up to 20 minutes ($0.18/minute thereafter).
- Toll-free and credit card calls up to 20 minutes ($0.18/minute thereafter).
- Bottled water (2 per room, per day).
- Access to the resort’s state-of-the-art Fitness Center.
- Discounted shuttle service to Grapevine Mills Mall and Downtown Grapevine on pre-set schedule.

If you have issues making reservations under one of the AIAA blocks, please contact Anna Kimmel, Event Manager, at annaki@aiaa.org.

**Transportation**

The Gaylord Texan is just six minutes from Dallas/Fort Worth International Airport (DFW). Shuttle service and car service are available from the airport to the hotel.

- **Shuttle:** $13
- **Taxi:** Approximately $25

**Pricing subject to change.**
Technical Sessions

Thousands of the most innovative advances in science and technology have come as a result of aerospace research and development. The AIAA Aerospace Sciences Meeting is the first, and largest, major multidisciplinary event of the year for aerospace scientists and engineers from around the world to share and disseminate scientific knowledge and research results. More than 1,300 papers present research that can address a multitude of business sectors beyond aerospace. The technical session tracks are as follows. To view the complete conference program, visit www.aiaa.org/ASM2013EP.

- Aeroacoustics
- Aerodynamic Measurement Technology
- Air Breathing Propulsion Systems Integration
- Aircraft Design
- Applied Aerodynamics
- Atmospheric and Space Environments
- Atmospheric Flight Mechanics
- Computer Systems
- Design Engineering
- Education
- Energetic Components and Systems
- Fluid Dynamics
- Gas Turbine Engines
- Ground Testing
- High Speed Air Breathing Propulsion
- History
- Homeland Security
- Intelligent Systems
- Meshing, Visualization, and Computational Environments
- Multidisciplinary Design Optimization
- Plasmadynamics and Lasers
- Propellants and Combustion
- Society and Aerospace Technology
- Software Systems
- Space Exploration and Colonization
- Space Operations and Support
- Systems Engineering
- Terrestrial Energy Applications of Aerospace Technology
- Thermophysics
- 6th Symposium on Space Resource Utilization
- 15th Weakly Ionized Gases Workshop
- 27th Symposium on Gravity-Related Phenomena in Space Exploration
- 31st ASME Wind Energy Symposium