28th Aerodynamic Measurement Technology,  
Ground Testing, and Flight Testing Conference 
including the Aerospace T&E Days Forum
30th AIAA Applied Aerodynamics Conference
4th AIAA Atmospheric and Space Environments Conference
6th AIAA Flow Control Conference
42nd AIAA Fluid Dynamics Conference and Exhibit
43rd AIAA Plasmadynamics and Lasers Conference
43rd AIAA Thermophysics Conference

CALL FOR PAPERS

Abstract Deadline: 17 November 2011
Final Manuscript Deadline: 11 June 2012

www.aiaa.org/events/neworleans
Abstract Submittal Guidelines
Submittals should be at least 1,000 words and in the form of an extended abstract or draft paper; draft papers are encouraged. Submittals shall clearly describe the purpose and scope of the work, the methods used, key results, contributions to the state of the art, and references to pertinent publications in the existing literature. The submittal should include figures and data that support the results and contributions asserted. Both abstracts and final papers should adequately address the accuracy of the numerical, analytical, or experimental results. Abstracts will be reviewed and selected based on technical content, originality, importance to the field, clarity of presentation, and potential to result in a quality full paper. As such, abstracts should describe clearly the work to be included in the full paper, its scope, methods used, and contributions to the state of the art. The abstract must include paper title, names, affiliations, addresses, and telephone numbers of all authors. It must also indicate on the front page the conference to which it is being submitted and the technical topic or category, from the conference call, that best fits the paper, or mark “other” if appropriate.

Procedures for Abstract and Manuscript Submission
Abstracts must be submitted no later than 17 November 2011. Authors will be notified of paper acceptance via e-mail by 1 February 2012. An Author’s Kit, containing detailed instructions and guidelines for submitting papers to AIAA, will be made available to authors of accepted papers. Authors of accepted papers must provide a complete manuscript online to AIAA by 11 June 2012 for inclusion in the online proceedings and for the right to present at the conference. 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. Sponsor and/or employer approval of each paper is the responsibility of the author. Government review, if required, is the responsibility of the author(s). Authors should determine the extent of approval necessary early in the paper presentation process to preclude paper withdrawals or late submissions.

Abstract submissions for the conference will be accepted electronically through AIAA’s Web site at www.aiaa.org/events/neworleans. This Web site will be open for abstract submittal through 17 November 2011. Visit the conference web site and click on “Submit Paper” on the right-hand side to begin your submission process. Authors having trouble submitting abstracts electronically should e-mail AIAA technical support at 888.503.1050 or ts.acsupport@thomson.com. Questions about the manual abstract submission or full draft manuscript themselves should be referred to the appropriate Technical Chair.

“No Paper, No Podium” and “No Podium, No Paper” Policy
This conference has a “No Paper, No Podium” and “No Podium, No Paper” policy. Submittal of an abstract is interpreted as an intention to attend the conference and to present the final paper. If a written paper is not submitted by the final manuscript deadline, authors will not be permitted to present the paper at the conference. Also, if the paper is not presented at the conference, the paper will not be published and it will be withdrawn from the conference proceedings. Videotaped presentations will not be allowed. These policies are intended to eliminate no-shows and to improve the quality of the conference for attendees.

Warning—Technology Transfer Considerations
All authors are reminded that technology transfer guidelines have substantially extended the time required for review of abstracts and completed papers by government agencies. Internal (company) plus external (government) review can consume 16 weeks or more. Government review is the responsibility of the author. Authors should determine the extent of approval necessary early in the paper preparation process to preclude paper withdrawals and late submissions.

International Traffic in Arms Regulations (ITAR)
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.

Publication Policy
AIAA will not consider for presentation or publication any paper that has been previously presented or published or is currently under consideration for publication elsewhere. Authors will be required to sign a statement to this effect.

General inquiries concerning the program, format, or policies of the conference and suggestions for special high-interest informational presentations should be directed to the conference General Chair:

**GENERAL CHAIR**
STEVEN C. DUNN
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The Aerodynamic Measurement Technology Technical Committee (AMTTC) and Ground Testing Technical Committee (GTTC) solicit abstracts of proposed papers for the 28th AMT/GT/FT conference. We encourage submission of paper abstracts for research related to all aspects of the science, technology, and application of ground testing and aerodynamic measurements, from basic research, to measurements for understanding complex flows, to facility development, to system test and evaluation, to sustainment and advancement of capabilities. The following are general areas where papers are sought: 1) measurement and testing technology research and development; 2) advances in ground test capability; 3) operations and policy; and 4) ground test facilities infrastructure sustainment. Papers that address the interface between measurement and testing, such as the transfer of advanced diagnostics from research laboratories to test facilities and the lessons learned, are encouraged. A more detailed description of these four general areas of interest is as follows:

**Measurement and Testing Technology Research and Development:**
- Advances in non-intrusive methods of flow property and chemistry measurements
- Advances in surface measurement techniques for boundary layer transition, skin friction, heat transfer and surface temperature and pressure
- Development and application of MEMS-based measurement technology
- Miniaturization of aerodynamic probes
- Development of techniques for acquiring multiple flow properties
- Improvements in uncertainty analysis for advanced diagnostic techniques
- Development of new experimental methods
- Presentation of work in progress and/or completed work directed to new techniques
- Transition from laboratory to test facility

**Advances in Ground Test Capability:**
- Development of new and/or improved facilities and associated systems
- Advances in measurement techniques and calibration methodology
- Improvements in flow quality
- Projecting of requirements
- Innovations in experiment design and post-test analysis
- Development of automation sciences applications
- Integration of modeling and simulation,
- Improvements in ground test support and integration
- Developments in test facility and data networking

**BENEFITS TO SUBMITTING A PAPER:**

**NETWORKING**
Build your professional network when you interact with peers during your paper presentation.

**PRAISE**
Receive recognition from your peers and community.

**WORLDWIDE EXPOSURE**
Your paper will be added to the AIAA Electronic Library, the largest aerospace library in the world. More than 2 million searches are performed every year, with 150 institutions as subscribers!

**RESPECT**
AIAA journals are cited more often than any other aerospace-related journal and their impact factor is ranked in the top 10. When you publish with AIAA, you know that your name is connected with the most prestigious publications in the aerospace field.
Operations and Policy:
- Personnel and their skills
- Organization, economic considerations, metrics
- Transition process to new measurement techniques
- Working relationships and alliances, industry/government/academia interface
- Test process improvement, standardization
- Safety and environmental compliance issues
- Communications and data transfer, information security
- Agency policies

Ground Test Facilities
Infrastructure Sustainment:
- Integrated operations and maintenance
- Consolidation of existing ground test facilities
- Best practices in maintenance and capability sustainment
- Prioritization and work selection process with limited budgets
- Strategic investment planning

In keeping with the multidisciplinary nature of this call for papers, there will be several sessions held in conjunction with the other collocated conferences (e.g., Fluid Dynamics, Flow Control, and Plasmadynamics and Lasers). For these sessions, papers are sought in any areas where the conferences have overlapping interests, but the following areas are of particular interest:

Fluid Dynamics:
- The use of large data sets from modern measurement techniques to provide greater insight into the dynamics of fluid motion
- Survey papers describing aspects of experimental techniques important to the CFD community
- Survey papers describing aspects of computational methods important to experimentalists assessing and utilizing CFD results

Flow Control:
- The use of instrumentation, alone or coupled with flow-field estimation models, for developing feedback flow control methodologies
- The development of novel sensors to meet the sensing requirements of the estimation models for specific flow-control applications
- The novel use of sensors in flow control systems

Plasmadynamics and Lasers:
- The development or application of instrumentation in support of studies of plasma methods for enhancement of ignition and flame holding in high speed flow
- The development of electric discharge gas dynamic lasers

Thermophysics and Heat Transfer:
- The use of non-intrusive and advanced measurement techniques for studying heat transfer to and response of heatshields, materials, and structures in ground test and flight

Information pertaining to the above broad categories for measurement of data, testing peculiar to any speed range (low speed to hypervelocity), and for any type of ground test will be considered. Sessions will be organized within the above broad categories according to discipline and speed range, depending on the response to this call for papers. The sessions will include invited papers as well as contributed presentations. The Ground Test Technical Committee will award certificates for the best papers in the ground test sessions, based on feedback from the session chairs.

Submissions pertaining to aerodynamic measurements should select the AMTTC and submissions specific to ground testing should select the GTTC during the upload process. For the joint sessions, submit the abstract to only one conference, but clearly indicate the joint session (e.g., AMTGT/Flow Control) for which the paper is targeted.

Flight Testing Topics

Technical papers and presentations on future requirements, integrated processes, infrastructure capabilities, T&E methodologies, lessons learned, design of operational tests, and emerging T&E technologies are solicited. These presentations will highlight state-of-the-art capabilities for applying T&E to the development and fielding of emerging systems.

The following list of topics is intended to provide ideas for papers and is not meant to limit papers to specifically mentioned topics. Papers should identify experience gained, opportunities, and future requirements for the test and evaluation community. Papers should present technical lessons learned from recent test programs and recommend new methods, strategies, and capabilities for the test and evaluation community. Public Release Authority for papers should be pursued early.

Improved Test Methods:
- Application of statistical quality control and modern design of experiments in test and evaluation
- Correlation of analysis, ground, and flight test results
- Application of net-centric capabilities in enhancing test effectiveness
- Test process improvements
- Early T&E involvement in test requirements and development
To build on the success of the Air Force T&E Days Conference, AIAA has now incorporated the technical paper sessions with the 28th AIAA Aerodynamic Measurement Technology, Ground Testing and Flight Testing Conference and is introducing the Aerospace T&E Days Forum.

**Aerospace T&E Days Forum**

*Chaired by:*

Major General David J. Eichhorn, Commander, Air Force Operational Test and Evaluation Center, Kirtland Air Force Base

*Supported by:*

- Air Force Flight Test Center (AFFTC)
- 46th Test Wing at the Air Armament Center (AAC)
- Air Force Operational Test and Evaluation Center (AFOTEC)
- Air Force Materiel Command (AFMC)
- Arnold Engineering Development Center (AEDC)

### Analysis automation
### Test technique improvements
### Effective operational testing of large footprint weapons (i.e., supersonic JDAM, JASSM, Small Diameter Bomb, etc.) in range constrained environments
### Applying lessons learned from contemporary programs

**Test Programs and Requirements (Commercial, Military, and Civil):**

- Requirements creep (historical view of plans and actual test programs)
- Future systems and associated test requirements
- Effective derivation and traceability processes
- DT&E/OT&E in an operational environment
- Qualification testing for tier II and III suppliers
- Lessons learned from recent programs
- A historical look at past programs that have made significant contributions

**Systems Engineering:**

- Test through a system life-cycle approach (cradle to grave)
- Processes designed to reduce acquisition or system development risk and cost
- Integrated system testing for satellite systems

**Test Infrastructure, Workforce and Capabilities:**

- Effect of acquisition reform on test capabilities and infrastructure
- Effect of foreign test capabilities on the viability of U.S. infrastructure
- Maintaining technical excellence of the T&E workforce
- Feedback on capabilities
- Emerging test capabilities
- Space test range
- Telemetry and data relay
- Roadmap process

**Emerging T&E Technologies and Techniques:**

- Industry solutions
- Military solutions
- Academic solutions

- Transformational use of space systems in T&E
- Network architectures applicable to T&E

**Network-Centric Operations/Warfare (NCO/W):**

- Application of modern design of experiments and statistical analysis of NCO/W architectures, networks, and systems
- Test and evaluation of “plug and play” systems into a network
- Distributed live, virtual, constructive testing in a networked architecture
- Testing for information assurance in a net-centric environment

**Emerging Space T&E Technologies and Techniques:**

- Transformational use of space systems in T&E
- T&E methods and technologies for operationally responsive space systems

**Test Design for Operational T&E:**

- Application of design of experiments techniques
- Testing across the entire operational environment
- Test design for space systems

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**AERODYNAMIC MEASUREMENT TECHNOLOGY TECHNICAL PROGRAM CHAIR**

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**FLIGHT TESTING TECHNICAL PROGRAM CHAIRS**

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The Applied Aerodynamics Technical Committee is soliciting papers on topics related to aerodynamic design, vehicle aerodynamics, and aerodynamic phenomena to include, but not limited to:

- Unsteady aerodynamics
- Vortical/vortex flow
- High angle-of-attack and high lift aerodynamics
- Tumbling body and debris aerodynamics
- Transonic and supersonic aerodynamics
- Recent hypersonic vehicle and aerodynamic advances
- Sonic boom mitigation
- Low speed, low Reynolds number aerodynamics
- Bio-inspired aerodynamics
- Unmanned aerial vehicle designs/tests
- Solar powered aircraft
- Airfoil/wing/configuration aerodynamics
- Weapons carriage and store separation
- Innovative aerodynamic concepts and designs
- Aerodynamic and multidisciplinary design methodologies
- Optimization methods in applied aerodynamics
- Wind tunnel and flight testing aerodynamics
- Ground-to-flight scaling methodology and wind tunnel correlations
- Active and passive flow control
- Missile/projectile/guided-munition aerodynamics
- Aerodynamic-structural dynamics interaction
- Applied CFD with correlation to experimental data
- Propeller/rotorcraft/wind turbine aerodynamics
- VSTOL/STOL aerodynamics
- Icing or roughness effects on vehicle aerodynamics
- Environmentally friendly and efficient aerodynamics and enabling technology
- Special Session: Unsteady Aerodynamics at Low Reynolds Number
- Special Session: CFD High Lift Prediction Workshop follow-on
- Other topics in applied aerodynamics

The above contains three new topic areas. “Sonic boom mitigation” focuses on applied aerodynamics flight test, experimental, or computational efforts to mitigate the sonic boom of supersonic aircraft. “Tumbling body and debris aerodynamics” involves the aerodynamics and trajectories of launch debris such as the fallback of missile or launch vehicle stages. It also includes the analysis of the trajectories of objects such as ice shed from structures on an aircraft. “Solar powered aircraft” includes the aerodynamics of unmanned aerial vehicles powered by solar arrays.

In addition to the topics listed above there are two CFD High-Lift Prediction special sessions planned on the NASA Trapezoidal Wing. The 1st AIAA CFD High-Lift Prediction Workshop (HiLiftPW-1) was held in Chicago in June, 2010. At the workshop, force/moment and surface pressure wind tunnel test data were provided to the participants for use in comparing to their CFD simulations. Although much was learned, additional research and development was recommended. To this end, a set of
informal special sessions will be held in order to further explore CFD prediction of the NASA Trapezoidal Wing high-lift configuration. For these sessions, additional experimental data, including 7-hole probe velocity data, will be made available to participants. Particular solicited areas of interest include (but are not limited to) effects of: transition, turbulence modeling, grid adaption, tunnel walls, and support brackets. Participants will be asked to provide data from their CFD simulations to the special sessions organizers. Participation in the special sessions is open to all and is sponsored by the AIAA Applied Aerodynamics Technical Committee. An open, unbiased forum will be held at the conclusion of the special sessions to discuss the results and promote cross-pollination of best practices. For more information, visit the HiLiftPW web site: http://hiliftpw.larc.nasa.gov.

There will also be a special joint session with the Fluid Dynamics Technical Committee on “Unsteady Aerodynamics at Low Reynolds Number.” The session theme is flow separation and aerodynamic loads history for a high angle of attack pitch ramp-hold-return motion of a flat plate, initially in 2D but now extended to 3D. Any work relating to the canonical case is welcome. For questions please contact Prof. Aaron Altman at Aaron. Altman@notes.udayton.edu or Dr. Michael Ol at Michael.Ol@wpafb.af.mil. Authors should indicate under which of the above topics they prefer their paper to be included.

Papers are sought that provide the aerospace community (aviation, rockets, launch vehicles, and spacecraft) with scientific and technical information concerning interactions between aerospace systems and the atmospheric/space/planetary environment. In addition, new or refined information improving the basic understanding of the atmosphere, space, planets, or their applications to aviation and aerospace vehicle design and operations issues is solicited. Atmospheric and Space Environments includes the areas of:

**Space Environment**: Plasma, neutral, and radiation environments in the magnetosphere, ionosphere, and the Van Allen radiation belts; correlation between space weather and troposphere weather; impacts of space weather on space systems and on climate; space environment ground or flight experiments. Planetary space, surface, and atmospheric environments are also of interest.

**On-Orbit Spacecraft–Environmental Interactions**: Interactions of spacecraft and the on-orbit environment. Environments of interest include the environment in the absence of the spacecraft (i.e., natural) and the induced neutral and charged environments.

Possible topics include anomalous behavior due to the space environment, spacecraft charging, material interactions, and fault mitigation strategies.

**Natural Environment Definitions for Space Vehicle Design and Development**
Conference Information

- **Surface Environments of Planets, Moons, Asteroids, and Comets**: Characterization of the environments of the surface of planets, moons, asteroids, and comets as well as their ground-based simulation. This includes descriptions of the dust, electrostatic fields, radiation environment, and the like. Of particular interest are effects on spacecraft, rovers, habitats, and other human and robotic exploration systems and methods to mitigate those effects.

- **Aircraft Icing**: Aerodynamic degradation (including rain effects, etc.), certification; policies and procedures, computational modeling, flight and ground testing; techniques and facilities, ice protection: systems and sensors, ice accretion physics and scaling, ground de-icing; icing education and training; material development, icing environment characterization; in-situ measurements, remote sensing, and forecasting.

- **Atmospheric Environment**: Reference and standard atmosphere and other environment model developments and implementation for aviation and space vehicle design and operations within the Earth’s atmosphere, including on-orbit environment; space weather and atmospheric ionizing radiation, and impacts of aviation on climate and air quality.

- **Aircraft Wake Vortex Technology**: Observation, modeling, atmospheric effects, operational implementation to optimize traffic rates and flight safety, etc.

- **Atmospheric Dynamics**: Meso- and micro-scale modeling and observations to characterize the nature of aviation weather hazards and their expected time, location, and intensity more accurately.

- **Aviation Weather Accident Prevention**: Includes present safety statistics as well as improved concepts for measurement, prediction, and display systems for icing, turbulence, wind shear, wake vortices, hail, lightning, low ceiling, and visibility hazards.

- **Green Aviation**: Assessment of the impacts of aviation on climate and air quality; improvements in environmental observations and models; atmospheric radiation, chemistry and contrail studies; environmental impacts of improved and alternative designs for airframes, propulsion systems and fuels.

- **Meteorological Applications to Aerospace Operations**: Basic design criteria and design verification; day of launch procedures; launch commit criteria; economic impact of weather information on operations; severe storms; communication of weather information to flight crews; improved techniques for extrapolation and short-term forecasting; cloud-free line-of-sight observations, and forecasting. Additional topics include the upper atmospheric environment, space weather and atmospheric ionizing radiation, aviation weather and range meteorology, AIM Weather Integration, and impacts of aviation on climate and air quality.

- **Satellite and Ground Based Measurement Systems**: Earth observing systems, measurements, monitoring, modeling, and assessment; data and information systems requirements for global climate change research; remote sensing of land and oceans; airborne and spaceborne remote and in situ sensors for tropospheric, stratospheric, mesospheric, and thermospheric investigations; evaluation of advanced instruments; performance verification/validation/calibration of remote sensing instruments; and sensor performance and evaluation.

- **Environment Standards**: Reference and standard atmosphere and other environment model developments and implementation for aviation and space vehicle design and operations within the Earth’s atmosphere, including on-orbit environment.

- **Meteoroid and Debris Environment**: Description of on-orbit and deep space meteoroid and debris model developments, applications, and effects on satellites and spacecraft relative to technical, programmatic, and political issues.

Other areas of atmospheric environment pertinent to aircraft and aerospace vehicle applications are also welcome.

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**ATMOSPHERIC AND SPACE ENVIRONMENTS TECHNICAL CHAIRS**

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www.aiaa.org/events/neworleans
The 6th AIAA Flow Control Conference is being held in conjunction with the 42nd AIAA Fluid Dynamics Conference. This biennial event is the central forum for all aspects of fluid control technology while emphasizing the multidisciplinary interaction among a diverse range of research disciplines with a common basis in fluid dynamics.

Papers are being solicited over a very broad area from fundamental studies to actual, closed-loop flow control applications in vehicle systems. Theoretical, numerical, and experimental approaches, especially combinational approaches demonstrating methods and tools to model or predict capability are highly encouraged. Papers are requested on both external (airframe) and internal (propulsion) flow control and within all flow regimes. Of special interest is the development of actuation, sensing, and closed-loop control technologies to optimize some aspect of system performance. Authors are requested to carefully consider how information is reported so as to reach as broad an audience as possible and to convey a sense of the system impact of the technology.

The program will consist of invited papers, contributed papers, and a poster/demonstration session. Themes for special sessions and panel discussions should be submitted to the technical chair well in advance of the abstract deadline.

Session topics include, but are not limited to:

- Bio-inspired flow control
- High-speed flow control
- Impact of flow control in vehicle design cycle
- Interaction between flow control and vehicle acoustics
- Closed-loop investigations of flow control
- Flow control system architectures, theory, and models
- Flow control modeling including simulations of flow control
- Measurement techniques for flow control
- Best practices for flow control reporting
- Novel sensors and systems for feedback flow control
- Novel actuators for flow and noise control
- Actuator-induced flow physics
- MEMS-based flow control and actuation
- Coupled fluid/structure interactions for flow control actuators
- Smart materials/structures applications for flow control
- Multi-disciplinary actuator design and fabrication
- Flow control testing facilities
- Flow control testing facilities

Sessions will be coordinated with the Fluid Dynamics, Applied Aerodynamics, Plasmadynamics and Lasers, and Aerodynamic Measurement Technology and Ground Testing Conferences. Indicate on the first page of your abstract the most relevant session from the above list. Authors who wish for their abstract to be considered for a joint session with one of the above conferences should also clearly indicate this preference on the first page.

FLOW CONTROL TECHNICAL PROGRAM CHAIR

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www.aiaa.org/events/neworleans
Special Poster Event

A “Progress in Flow Control” poster session will be held during a break in the regular Flow Control technical sessions. The poster session will emphasize current or recent projects utilizing flow control. Posters should be in large font size, colorful, and in a presentation style format. Demonstration and displays of hardware are also acceptable and desired. Small-font reproductions of text from papers are discouraged from this event. The content should be clear and concise to stimulate and inform the observer. Entries may be from simulations, experiments, or system-level demonstrations. Posters could emphasize comparisons of the flow phenomena with “control on” versus “control off.” No paper is required to participate in this event. A poster title and an abstract, not to exceed 100 words, must be submitted to participate in the poster event. Abstracts that show control on and control off phenomena are highly encouraged. Please e-mail the submittal to the conference technical chair with the subject line: “Flow Control Poster” prior to the abstract deadline in order to participate in this event. Do not submit poster abstracts to the AIAA Web site.

42th AIAA Fluids Dynamics Conference and Exhibit

Papers are solicited in the areas of experimental, theoretical, and computational fluid dynamics relevant to aerospace applications, including basic research and development, applied research, and advanced technology development. Papers that present new insights into flow physics, introduce innovative applications, address emerging technical areas, or combine experimental, computational, and/or theoretical approaches are strongly encouraged. Authors who have recognized expertise in a particular area and are interested in writing a comprehensive review are encouraged to contact the track chair. Potential subject areas include, but are not limited to:

- Laminar instability and transition to turbulence
- General stability, including local, global, and transient growth analysis
- Theoretical techniques and analyses in fluid dynamics
- Turbulent jets, mixing layers, boundary layers
- Turbulence modeling, analysis, simulation and experimentation
- Hypersonics (flight test, experimentation and computation)
- Shock-wave/boundary layer interaction
- Structured and unstructured CFD algorithm development, methodology and validation
- CFD applications, including case studies, modeling, optimization and uncertainty quantification
- Fluid structure interaction, including adaptive systems and morphing
- Internal aerodynamics, including rotating machinery, combustion systems, inlets, and nozzles
- Wind energy aerodynamics
- Vortex dominated flows
- Unsteady fluid dynamics
- Multidisciplinary fluid dynamics
- Innovative and unconventional applications of fluid mechanics
- Multi-phase and chemically reacting flows
- Nonequilibrium gas dynamics
- Biologically-inspired flight mechanisms and propulsion
- Biological and physiological fluid dynamics

- Studies integrating experimental, theoretical, and/or computational approaches
- Experimental methods and innovative measurement technologies
- Aero-optics
- Micro/Nanofluidics and MEMS devices
- History of fluid mechanics, aeronautics, and astronautics
- Educational initiatives

Authors should indicate under which of the above topics they prefer their paper to be included.

FLUID DYNAMICS TECHNICAL PROGRAM CHAIR
DARREN L. HITT
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Papers describing basic and/or applied research and development results in the areas of plasmadynamics and lasers and related topics are solicited. Efforts combining contemporary theoretical/computational analyses with experimental verification/validation and which represent notable advancements in the aerospace sciences are especially encouraged. Special consideration will be given to works reporting milestone R&D and/or engineering achievements related to aerospace system application of plasma and laser technologies. Survey papers on the current state of the art and historical perspectives are also desired. Specific topics of interest include, but are not limited to:

- **Plasma and Laser Physics:** Including fundamental processes, laboratory plasma generation and characterization, experimental research or methods, plasma chemistry and kinetics, non-equilibrium reacting flows, properties, and advances in theory and/or computational simulation methods
- **Space Plasma Physics and Applications:** Including spacecraft-plasma interactions, space laser applications, and space experiments
- **Laser Devices and Systems:** Including the physics, engineering, and application of high-energy lasers, chemical lasers, electric lasers, laser material interaction, laser optics, and fluid-optic interactions
- **Highly Energetic Plasma Systems:** Including the physics, engineering, and application of high-power gas discharge and plasma generation devices, arc-heater technology, explosively-generated plasma applications, compact pulse power, and high temperature systems and environments
- **Magnetohydrodynamics (MHD):** Including MHD power generation and propulsion technologies, terrestrial and aerospace systems applications, combustion plasma methods, innovative non-equilibrium plasma techniques, nuclear MHD systems, electromagnetic fluid interaction and characterization, fundamental processes, and theoretical and/or computational simulation methods
- **Plasma and Laser Propulsion:** Including innovative and efficient plasma formation and acceleration approaches, high power thruster concepts, electrode erosion issues, electrodeless discharge mechanisms, modeling of fundamental processes, experimental performance characterization, and beamed energy propulsion
- **Plasma Materials Processing and Environmental Applications:** Including exhaust gas treatment, remediation, and hazardous materials disposal
- **Advanced Diagnostics:** Including the development and utilization of laser-based diagnostics, flow field characterization methods, and plasma diagnostics
- **Weakly Ionized Plasma Physics and Aerospace Applications:** Including plasma actuators for aerodynamic flow control
- **Fluid-Optics Interactions:** Including the propagation of laser beams through the atmosphere and the effects of aerodynamics on the transmission of laser beams
- **Fusion Energy Science:** Including emerging confinement concepts for terrestrial or in-space power or propulsion, experimental programs, enabling technologies, instrumentation and diagnostic development, computational or theoretical modeling, and mission analysis

Papers concerning dual-use technologies, which address non-aerospace issues of major public concern, such as energy, environment, and medicine are strongly encouraged. Suggestions for invited papers and joint sessions are also welcome.

Students are strongly encouraged to present papers on their research at this meeting. Papers submitted and accepted for the PDL meeting whose principal author is a student and that are delivered by that student will be considered for a “Best Student Paper Award.” Please identify the principal author as a student (graduate or undergraduate student) at the time the abstract is submitted.

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**PLASMADYNAMICS AND LASERS TECHNICAL PROGRAM CHAIR**

MARK RENNIE

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The Thermophysics Technical Committee solicits abstracts of papers on topics in thermophysics and heat transfer. Papers are solicited on topics related to all aspects of thermal energy, heat transfer and aerospace applications therein. Contributions related to analytical, numerical and/or experimental studies are welcomed. Scientific and technical contributions are emphasized, rather than status reports on work in progress. Areas of specific interest include, but are not limited to:

- Ablation
- Aerothermodynamics
- Aircraft and spacecraft thermal management
- Computational heat transfer
- Cryogenics and cryogenic systems
- Direct simulation Monte Carlo methods
- Electronic and microelectronic thermal management
- Heat exchangers
- Heat pipes
- Heat transfer: conduction, convection, phase change, and radiation
- Heat transfer and cooling in turbomachinery
- High-speed flows
- Historical perspectives in thermophysics research
- Hypersonic and low density facilities
- Microgravity effects on thermal management systems
- Microgravity testing for aerospace applications
- Missile thermal management
- Molecular dynamics simulations
- Multiphase flows
- Nonequilibrium flows
- Nonequilibrium radiation
- Nonintrusive diagnostics
- Particle-laden flow modeling and measurement
- Plumes and combustion
- Power systems
- Propulsion
- Radiation analyses and surface properties
- Rarified flows
- Space environmental effects
- Spacecraft contamination
- Surface catalysis
- Test facility diagnostics and instrumentation
- Thermal challenges in lunar or planetary exploration
- Thermal contact conductance
- Thermal control
- Thermal protection systems
- Thermophysical properties
- Turbulent flow and heat transfer
- Others (please specify)

Emerging Topics:
- Continuum methods for transition to rarefied flows
- Entropy generation minimization and the Second Law
- Integrated and multidisciplinary modeling and simulation
- MEMS and nanotechnologies
- Metamaterials
- Micro-scale heat transfer and micro-fluidics
- Wireless thermal measurements

Authors should indicate under which of the above topics they prefer their paper to be included. Please note that the extended abstract minimum word count is identified in the Abstract Submittal Guidelines at the beginning of this call for papers and will be strictly enforced.

Thermophysics Conference sessions will be coordinated with the collocated Applied Aerodynamics, Fluid Dynamics, Plasmadynamics and Lasers, and Atmospheric and Space Environments conferences. Authors with multiple submissions to these meetings are advised to alert the relevant Technical Program Chairs via e-mail in order to minimize any scheduling conflicts.

Each year, the Thermophysics Technical Committee selects a best paper award for both the Professional and Student Categories (with the student receiving a monetary award). Student submissions are strongly encouraged. Also, timely survey and review articles on the above topics are solicited. Authors are encouraged to submit their manuscripts, either before or after the meeting, to the AIAA Journal of Thermophysics and Heat Transfer for possible publication.
28th Aerodynamic Measurement Technology, Ground Testing, and Flight Testing Conference including the Aerospace T&E Days Forum

30th AIAA Applied Aerodynamics Conference

4th AIAA Atmospheric and Space Environments Conference

6th AIAA Flow Control Conference

42nd AIAA Fluid Dynamics Conference and Exhibit

43rd AIAA Plasmadynamics and Lasers Conference

43rd AIAA Thermophysics Conference

25–28 June 2012
Sheraton New Orleans
New Orleans, Louisiana

Abstract Deadline: 17 November 2011

Final Manuscript Deadline: 11 June 2012

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