

50th AIAA Aerospace Sciences Meeting

Including the **New Horizons Forum** and **Aerospace Exposition**

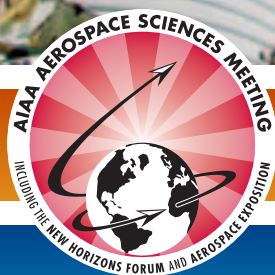
9–12 January 2012

Gaylord Opryland Resort & Convention Center
Nashville, Tennessee

www.aiaa.org/events/asm

**CALL FOR
PAPERS**

Abstract Deadline:
1 June 2011



Advancing the Science of Flight Technology

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AEROSPACE
A M E R I C A

Organized by

AIAA
The World's Forum for Aerospace Leadership



Advancing the Science of Flight Technology

Organizing Committee

General Chair

Mark Lewis
AIAA President 2010–2011

Aerospace Sciences Meeting Chair

Frank Coton
University of Glasgow

Important Dates

Web Site Open
for Abstract Submission
18 January 2011

Abstract Deadline
1 June 2011

Author Notification
19 August 2011

Final Manuscript Deadline
20 December 2011

Synopsis

AIAA Aerospace Sciences Meeting

The **AIAA Aerospace Sciences Meeting** is the first major multidisciplinary event of the year for aerospace scientists and engineers from around the world. It provides an ideal forum for scientists and engineers from industry, government, and academia to share and disseminate scientific knowledge and research results with a view toward new technologies for aerospace systems.

This meeting is built around excellent technical paper presentation sessions. Plenary sessions that focus attention on program areas of current interest will start some sessions, followed by technical papers providing additional discussion of these topics. Distinguished lectures and evening networking events fill out the remainder of the program throughout the week.



New Horizons Forum

The **New Horizons Forum**, held in conjunction with the Aerospace Sciences Meeting, will feature keynote speakers from industry and government who will share their perspectives on the new challenges, future opportunities, and emerging trends in aerospace education, research, and programs. The New Horizons Forum will also feature panel discussions in which leaders from industry, government, and academia will address current issues and trends in aerospace technology research and development.

Aerospace Exposition

The **Aerospace Exposition** will showcase exhibits from government, industry, and small businesses, allowing one-on-one discussions with exhibitors, hardware and software demonstrations, and opportunities for side meetings with these organizations throughout the week.

Call for Papers

The contributed papers for this meeting are chosen by a competitive selection process based on peer review. In addition, invited papers of the highest quality review major trends and accomplishments within or across various aerospace disciplines. To facilitate simultaneous sessions, papers will begin on the hour and half-hour. Six to eight 30-minute paper presentations per session are planned (20 minutes for presentation and 10 minutes for audience questions and discussion), but session organizers are encouraged to include one-hour survey papers where appropriate.

Listed in this call for papers are the AIAA Technical Committees sponsoring this meeting, the areas in which papers are being solicited, and the names and addresses of the topic organizers to whom questions should be addressed. Every effort will be made to provide uniformly rigorous evaluations and acceptance rates for all sessions.

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

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Technical Topics

Aeroacoustics

Papers are solicited that address computational, experimental, and analytical results and techniques in all areas related to aeroacoustics and structural acoustics. Specific areas of interest include, but are not limited to:

- Jet noise (subsonic and supersonic, flight effects)
- Shock-associated noise (jet screech, broadband shock noise)
- Jet noise suppression
- Cavity tones and their suppression
- Computational aeroacoustics
- Turbomachinery noise; core noise
- Combustion noise
- Propeller noise
- Fan noise
- Open rotor noise
- Rotorcraft noise
- Airframe noise
- Sound-structure coupling, sonic fatigue
- Duct acoustics
- Atmospheric sound propagation/sonic boom
- Statistical energy analysis methods
- Modal analysis and synthesis
- Community noise and metrics
- Interior noise
- Active noise control
- Vibration control techniques

Please direct questions to:

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Aeroacoustics Branch
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Aerodynamic Measurement Technology

Papers are solicited on topics related to advanced and novel aerodynamic measurement techniques for ground-test or flight-test applications. Submissions are encouraged for all types of flows, including all speeds from incompressible to hypersonic, all thermodynamic conditions including plasmas and combustion, all scales from microfluidics to geophysical flows, and all diagnostic techniques from surface sensors to laser-based imaging. Topics of interest include, but are not limited to:

- Flow velocimetry
- Spectroscopic methods including laser-induced fluorescence, absorption, Rayleigh, and Raman techniques
- Planar and volume flow visualization and temporally-resolved imaging
- Surface measurements including boundary layer transition, skin friction, heat transfer, and surface temperature and pressure (including temperature- and pressure-sensitive paint techniques)
- Techniques for microfluidics
- Sensors based upon microelectromechanical systems (MEMS) and sensor miniaturization
- Techniques for acquiring multiple properties, property correlations, or space-time derivatives
- Aeroacoustic diagnostics including microphone arrays or pressure/density measurements
- Measurement of species concentration or thermodynamic state
- Aerodynamic data acquisition, processing, and display
- Diagnostics for harsh environments such as gas turbine engines, fires, cryogenic, high-G, or in-flight applications
- Application to production-scale testing
- Uncertainty quantification and error analysis of advanced diagnostics
- Novel calibration and data processing methodologies

To be included in an Aerodynamic Measurement Technology session, papers should emphasize advancements or innovations in the measurement technique itself or its implementation, rather than the particular fluid dynamic problem to which the technique is applied.

Please direct questions to:

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Sandia National Laboratories
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Air Breathing Propulsion Systems Integration

Papers are sought that discuss the science and technology of optimizing air vehicle propulsion, air vehicle power systems, and air vehicle interface integration.

Of high interest this year are papers concerning:

- Hypersonic engine-vehicle integration and combined-cycle engines
- Supersonic inlet aerodynamics and integration
- Inlet-fan integration for subsonic and supersonic aircraft
- Integrated energy management for improved system-level efficiency and reduced fuel burn

Other topics of interest for these sessions include, but are not limited to, the following:

- Alternative fuel cycle and subsystem design and integration
- Open rotors/unducted fans
- Sonic boom-mitigating inlets and nozzles for supersonic aircraft
- Propulsion Systems Engineering: propulsion architecture definition; requirements, schedule, cost, and risk; total system performance responsibility
- Installed Performance and Controls: steady-state, dynamic, MDO, and real-time models; integrated flight/propulsion control; hardware/software integration
- Propulsion Aerodynamics (experimental, computational, and flight test): inlet/nozzle analysis, integration, installed performance; engine/inlet compatibility; application of flow control to inlets and nozzles; thrust vectoring; secondary air systems and bay ventilation; throttle-dependent drag and jet effects
- Power/Thermal Management: integrated propulsion/power/thermal architecture; power/fluid systems integration; thermal management systems
- Engine Physical Integration: performance-based specification development, interface control, and associate contractor/supplier management
- Propulsion Operations: reliability and maintainability; field support; removal and installation; overhaul and maintenance; prognostics and health maintenance
- Flight Certification: validation and verification; FAA compliance/regulations
- Environmental Factors: corrosion, icing, noise, bird strike, safety zone, etc.
- Full Range Of Systems: V/STOL, UAV, commercial/transport, missile, lighter-than-air, propeller-driven and non-turbine (reciprocating/rotating) systems

Please direct questions to:

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Aircraft Design

Papers are sought on all aspects of aircraft airframe and systems design. Topics such as design methodologies and processes, design integration, technology developments, innovative designs, and case studies are welcome. Review papers on recent developments and trends in aircraft design are also sought. Design considerations such as environmental issues, energy optimization, noise reduction, electric aircraft systems, etc. are also important topics of interest. Applications to aircraft of all types are welcome including fixed and rotary wing, subsonic through

hypersonic, micro air vehicles to jumbo jets, and manned or unmanned aircraft. Papers on design education are also solicited. Example categories of interest include:

- Design processes and tools
- Design for cost
- Environmental issues (e.g., noise, emissions, fuel consumption)
- Innovative aircraft design / design case studies
- Unmanned aircraft design
- Aircraft design education

Please direct questions to:

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Applied Aerodynamics

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
- Transonic, supersonic, and hypersonic aerodynamics
- Low speed, low Reynolds number aerodynamics
- Bio-inspired aerodynamics
- Unmanned aerial vehicle designs/tests
- Airfoil/wing/configuration aerodynamics
- Weapons carriage and store separation
- Innovative aerodynamic concepts and designs
- Aerodynamic design methodologies
- Optimization methods in applied aerodynamics
- Wind tunnel and flight testing aerodynamics
- Ground-to-flight scaling methodology and wind tunnel correlations
- Active 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
- Sports-related aerodynamics
- Aerodynamic design and enabling technologies for environmentally friendly and efficient aircraft
- Special Session: Aerodynamics of Supersonic Inlets
- Special Session: Aerodynamics, Aeronautics and CFD in the Undergraduate Curriculum
- Special Session: Frequency Domain/Harmonic Balance Methods for Rotorcraft Flows
- Other topics in applied aerodynamics

A special session co-sponsored by the Propulsion Integration TC will be held, entitled "Aerodynamics of Supersonic Inlets." This session will address the aerodynamic challenges of supersonic engine inlet design, where flow control is essential for success. A selection of invited presentations will provide

a historical perspective of inlet research and an overview of the current status of inlet flow control research. Papers are sought which address fundamental research of supersonic inlet flowfields and associated three-dimensional shock/boundary-layer interactions as well as studies reporting on relevant flow control methods or inlet aerodynamic design and performance.

A second special session entitled "Aerodynamics, Aeronautics and CFD in the Undergraduate Curriculum" is also being planned, as a joint session with the Fluid Dynamics TC. Presentations and/or papers are solicited that address application of modern engineering education practice to Intro to Aero/Flight, Aerodynamics, and CFD instruction in the undergraduate aerospace engineering curriculum. The goal is to provide a forum for an open exchange of ideas and to ultimately create a "Best Practice" document and make it available to the aerospace engineering education establishment as a whole.

A third special session titled "Frequency Domain/Harmonic Balance Methods for Rotorcraft Flows" is also being planned. The goal of the session is to provide a forum to heighten the interest and accelerate the advancement of these methods for helicopter rotors.

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

Please direct questions to:

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Atmospheric and Space Environments

Papers are sought that provide the aerospace community (ground operations, 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, or their applications to aviation and aerospace vehicle design and operations issues is solicited. Atmospheric and Space Environments includes the areas of:

- Atmospheric environment
- Impacts of aerospace on the environment
- Aircraft wake vortex science, applications, and technology
- Aviation weather and atmospheric dynamics
- Meteorological applications to aerospace operations
- Satellite and ground-based measurement systems
- Environment standards
- Meteoroid and debris environment
- On-orbit spacecraft-environment interactions
- Space environment

Potential ASE contributors are reminded that these and additional topic areas such as Aircraft Icing will also be represented at the 4th Atmospheric and Space Environments Conference, planned for June 2012.

Please direct questions to:

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Atmospheric Flight Mechanics

Papers are solicited that present new theoretical, computational, or experimental results in atmospheric flight mechanics. Topics of interest include recent simulation and flight test evaluation of a variety of vehicle configurations, including X-vehicles, unmanned aerial vehicles, and missiles. Papers covering advanced technologies to meet challenging atmospheric flight problems during ascent/abort and reentry flight phases of launch vehicles are also welcome. Interesting and novel flight mechanics problems or lessons learned during the development and testing of these vehicles would be of particular interest as well. Specific areas of relevancy include, but are not limited to, the following:

- Aerodynamic Prediction Methods: This technology area covers the prediction of aerodynamic forces and moments acting on all types of atmospheric flight vehicles. Of particular interest is the integration of a variety of methods such as computational aerodynamics, advanced dynamic testing techniques, and unique flow-field measurement methods into unified approaches for the prediction of aerodynamic loads. Also of interest is flight simulation in subsonic, transonic, supersonic, and hypersonic flight environments, at steady and unsteady conditions, and at low and high angles of attack.
- Aircraft Flight Dynamics, Handling Qualities, and Performance: This topic area includes aircraft stability, control response, handling qualities, and response to atmospheric disturbances. Subtopics of interest include determination of stability and control derivatives, manned and unmanned vehicle handling qualities, high-angle-of-attack control, nonlinear modeling, rotorcraft handling qualities with and without slung loads, trajectory optimization, effects of icing and turbulence on flight dynamics and control, aeroelastic and aeroservoelastic dynamics, flow-field effects, departure prevention, and spin characteristics.
- Launch Vehicle, Missile, and Projectile Flight Dynamics: This area pertains to the application of analytical or experimental methods for the analysis and prediction of the flight dynamics of expendable and reusable launch vehicles, missiles, and projectiles. The advanced technology areas include performance, stability, and control; adaptive guidance, control reallocation, and re-configurable flight control methods during ascent/abort and reentry phases of the mission to improve safety and operability of second-generation reusable launch vehicles. Topics of interest include high-angle-of-attack aerodynamics, determination of dynamic stability derivatives, component and store-to-store interference effects, projectile launch and flight dynamics, incorporation of predictions into trajectory simulations,

trajectory flight dynamics affecting the impact accuracy of missiles and projectiles, and analysis of flight test data.

- **Small/Mini/Micro Aerial Vehicles:** Currently there is great interest in very small flight vehicles for a variety of purposes. Such small vehicles pose many new challenges for the design engineer. Low flight speeds, hovering flight, light-weight-low-inertia vehicles, and unconventional designs all present challenges for development. Papers are therefore requested relating to the unique flight mechanics and handling qualities of small/mini/micro aerial vehicles. Topics include low Reynolds number aerodynamic prediction methods, flight mechanics for low-inertia vehicles, effects of flexible vehicle structures, very low speed flight mechanics, and transition between forward and hovering flight. Additionally, topics relating to the flight mechanics of unconventional small/mini/micro flight vehicles (e.g., ornithopters, flapping wing vehicles, rotorcraft, etc.) are welcome.
- **Planetary Entry and Aeroassist Technology:** Papers are requested relating to the entry dynamics into the Earth's atmosphere as well as the atmosphere of other celestial bodies. Topics include hypersonic flight performance, optimization of reentry vehicle configurations, trajectory optimization, and trans-atmospheric vehicles. Papers are also requested in the area of aerogravity assist orbit transfer dynamics. Topics include planetary aerobraking and aerocapture, low-density atmospheric flight mechanics, and atmospheric maneuvering to effect orbital transfer. Papers in other areas related to very high speed reentry atmospheric flight mechanics are also welcome.

Please direct questions to:

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Computer Systems

Abstracts are solicited on in a wide range of topics in aerospace related applications of computer systems. Areas of interest include different aspects of high-performance computing and computational simulation, visualization and graphics, performance benchmarking, parallel algorithm and optimization on multi-core, distributed, network, and cloud architectures. HPC grand challenge problems in aerospace areas are of particular interest. Abstracts are also solicited in system and network architectures, embedded systems, real-time systems, mission critical systems, digital avionics, and aerospace-related information systems. Authors are also encouraged to submit their manuscripts, either before or after the meeting, to the *Journal of Aerospace Computing, Information, and Communication* for possible publication.

Please direct questions to:

Chiping Li

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Design Engineering

Papers are solicited on current design engineering and design process activities. Design-oriented papers should focus on innovative, novel, or otherwise distinctive designs or concepts resulting in or leading toward products that effectively satisfy requirements or demonstrate design efficiency improvements. Emphasis on current aerospace programs such as commercial access to space, very light business jets, NASA Environmentally Responsible Aviation, ESTOL, satellites, missile systems, Unmanned Air Systems, and service life extension projects are encouraged. The definition, application, and implementation of emerging design tools that have resulted in significant design-cycle time reduction from tool integration, and the use of experiments, simulation, or rapid synthesis and analysis tools that have resulted in the ability to analyze a large number of design configurations resulting in or leading toward reduced program cost and risk should be emphasized.

Process-oriented papers should focus on current design engineering process activities, such as process definition, analysis, architecture, and metrics, as applied to aerospace hardware products from the exploratory design phase through the detailed design phase. Papers on the advances in model based design processes and related activities are especially encouraged. Other design engineering process-related activities that may be addressed are the interaction between processes and tools, impact of tool integration on a process, and risk reduction from the use of higher-fidelity tools earlier in the design process. Other enablers to reducing design cycle time and cost while increasing the ability to meet all cost, schedule, and technical requirements may also be addressed.

Education-oriented papers are solicited that emphasize design in curriculum development, class content and student activities. Examples showing how to teach design are especially requested.

Please direct questions to:

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Education

Aerospace engineering is both the most specialized and the most diversified of fields, thus challenging the aerospace community to effectively educate engineering students to meet a dynamic environment. As the complexity of our field continues to increase, the multidisciplinary aspects of the aerospace curriculum must be strengthened while maintaining or improving the more traditional fundamentals of engineering science. For this year's meeting, papers are especially encouraged that address these issues, including but not limited to:

- New, more effective pedagogies for improving understanding of the fundamentals of engineering science and subdisciplines such as aerodynamics and propulsion
- Curricular development addressing the multidisciplinary nature of aerospace system analysis and design
- Novel teaching approaches that incorporate nontraditional methods

- Best practices for ABET assessment
- Broader innovative collaboration of industry and academia in engineering education

Topics for papers and/or open forums:

- Innovations on the horizon — new directions in research and development by industry and educational institutions
- Translating the effects of globalization and green engineering practices from industry to the classroom
- Better preparing graduates for a rapidly evolving work environment

Please direct questions to:

Dolores S. Krausche

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Energetic Components and Systems

The science of energetic materials is critical to the aerospace community. Energetic components, both explosive and pyrotechnic, provide critical performance attributes to aeronautical and astronautical missions. The successful engineering and application of the controlled use of energetic materials in these components is a result of fundamental understanding of scientific phenomena that govern the performance of these materials. Papers relating to the science of energetic materials and devices are sought for sessions for ASM 2012. Paper topics are solicited in the following, non-inclusive list of areas:

- Energetic materials synthesis/characterization
- Energetic materials compatibility/aging/surveillance
- Analytical method development for analysis of energetic materials
- Testing and diagnostics of energetic materials events
- Numerical simulation of energetic materials/components
- Nano-scale phenomena of energetic material performance
- Environmental initiatives relating to energetic materials and components
- Practical applications and novel uses of energetic materials

Please direct questions to:

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Fluid Dynamics

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:

- Transition, including low- and high-speed flows, roughness effects and control methods
- Turbulence, including free-shear and wall-bounded flows
- Shock-dominated flows, including shock boundary-layer interactions
- Hypersonic and chemically-reacting flows
- Aerodynamics of low Reynolds number flows, including biologically-inspired flight, maneuvering and flow over flexible and deformable surfaces
- Fluid-dynamic aspects of aeroacoustic applications
- Turbomachinery, combustion and internal flows
- Flow control, including active, passive, and closed-loop flow control as well as flow control actuators
- Innovative flow measurement technologies and combined experimental-computational studies, including uncertainty quantification
- Higher-order unstructured CFD algorithm development, methodology, and validation
- Structured CFD algorithm development, methodology, and validation
- CFD applications, including case studies, modeling, optimization, and uncertainty quantification
- Cross-disciplinary fluid dynamics involving aero-optics, fluid/structure interactions, micro- and nano-fluidics, multi-material flows, and multiphase flows
- Extension of aerospace-related fluid dynamics concepts, tools, and processes to non-aerospace fields (e.g., automotive, biological, materials processing, and electronics cooling)
- Other areas of fluid dynamics

In addition, special sessions are planned in the following areas of emerging interest:

- Turbulence in high-speed flows
- Three-dimensional flow separation
- Wind turbine aerodynamics: Overcoming modeling and deployment barriers
- Aerodynamics, aeronautics and CFD in the undergraduate curriculum

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

Please direct questions to:

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Gas Turbine Engines

Papers are solicited in the disciplines of thermodynamics, aerodynamics, aeroelasticity, mechanical design and fabrication, combustion, heat transfer, icing, and controls as related to the science, research, technology development, and testing of gas turbine engines and related components for air vehicles in the subsonic and transonic flight regimes. Topics areas include but are not limited to the following:

- Experimental and computational efforts related to inlets, fans, compressors, combustors, turbines, augmentors, transmissions, bearings, seals, and nozzles
- Techniques for the advancement of engine component technologies, including design and manufacturing methods, materials, testing, diagnostics, and instrumentation
- Improved analytical/computational methodologies for fluid, thermal, and structural analysis of engine components
- Analytical and computational models for engine-level analysis/simulation
- Advances in turbine engine systems and components
- Advanced engine cycles and game-changing component technologies
- Engine preliminary and detailed design methodologies
- Variable cycle engines
- Turbomachinery noise
- Engine icing
- Electric power generation
- Comparisons of engine flight test with ground test data and simulation results
- Auxiliary systems and structures, and their interaction with the primary engine system
- Open rotor
- "Green" / environmentally friendly aviation
- Engine inlet compatibility
- Geared turbofan engines

Please direct questions to:

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Ground Testing

Ground Testing papers are solicited on unclassified topics related to all aspects of aerodynamics, propulsion, and space systems ground testing and related facilities. Topics of interest include, but are not limited to:

- Test simulations for all aerodynamic flow regimes, propulsion (including propellant conditioning), and space environments
- Design, development, and performance of new, modified, or unique ground test facilities, subsystems, and components thereof
- Advances in test techniques, experimental uncertainty, and integration of computation with experiment, for reduced risk in predicted flight characteristics
- Emerging requirements for aerospace ground testing that exceed current capabilities
- Issues focused on computational fluid dynamic comparisons with wind tunnel and flight test data, including code development, validation, and verification
- Integration and use of computing equipment for real-time test control, data acquisition, processing, validation, and presentation
- Development, application, and validation of flow diagnostics in ground testing facilities, with special emphasis on pressure sensitive paints, temperature sensitive paints, video model deformation, infrared imaging, and optical diagnostics
- All aspects of increasing "knowledge per test," including new test techniques, instrumentation, automation, design of experiments, and experimental uncertainty
- Unique or innovative uses of existing facilities
- Improvements in the quality of wind tunnel testing and reduction of the cost and cycle times for these tests, with emphasis on test article design, fabrication, and usage, testing productivity, and test program management
- Ground and flight test integration
- Expert systems, artificial intelligence, and neural networks related to ground test issues
- Knowledge capture for ground test related facilities, systems, and techniques
- Development of educational and continuing education/career path opportunities in experimental testing for new students, technicians, and engineers

In addition, timely surveys and reviews of these topics are sought. The Ground Test Technical Committee will also conduct a program to recognize "Outstanding Papers" presented in the Ground Test sessions.

Please direct questions to:

Sheri Smith-Brito

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High Speed Air Breathing Propulsion

Papers are solicited which address the design, analysis, testing, and evaluation of technologies and systems that enable supersonic and hypersonic air vehicle propulsion. Topic areas include, but are not limited to:

- Advances in propulsion systems including ramjets, scramjets, pulse detonation engines, and combined cycles (including rocket and turbine based)
- Experimental and/or numerical results pertaining to high-speed inlets, isolators, combustors, injectors, nozzles, and integrated flowpaths

- Instrumentation and diagnostics techniques
- Engine component materials and manufacturing
- Analytical/computational methods involving fluid, thermal, structural, or multidisciplinary analysis
- Comparison of numerical simulation with flight or ground engine test data

Papers on other topics related to high speed air breathing propulsion technologies and systems are also invited.

Please direct questions to:

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History

In 2012, we celebrate the 100th anniversary of Marine Corps Aviation, the first American west-to-east cross-country flight, and French Naval Aviation, as well as the 50th anniversary of the first manned American spacecraft to orbit the Earth, the first flight of the Boeing 727, and the first successful planetary flyby (Mariner 2 – Venus). This year's history sessions will remind us of the early accomplishments of AIAA, its members, and the industry. Papers are sought covering significant advancements of flight, both in air and in space. All papers on the history of aeronautics and space flight will be considered.

Please direct questions to:

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Homeland Security

Homeland security depends critically on a number of research areas, encompassing the full range of AIAA technical committees and beyond. We strongly encourage submission of abstracts for the relevant sessions, including examples such as:

- Fluid dynamics and multi-phase flow relating to atmospheric dynamics, climate, oceans, and water supplies
- Unmanned sensor platforms
- Space assets and capabilities/limitations
- Sensors and intelligent systems
- Manned assets/operations
- C2I, communications, and interoperability
- Human factors and dynamics
- Biometrics
- Economic and legal considerations/impact
- Air traffic and operations
- Energy, lasers, directed energy, and non-lethal counter-asset/counter-personnel technologies
- Modeling/simulation in any pertinent areas

The above list is simply to suggest possibilities. All papers relating to homeland security will be considered.

Please direct questions to:

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Intelligent Systems

Papers are sought that illustrate the relevance of Intelligent System (IS) technologies to aerospace sciences. Topics of interest include, but are not limited to:

- Autonomous systems
- Data fusion and reasoning
- Evolutionary (genetic) algorithms
- Expert systems
- Fuzzy logic
- Human-machine interaction
- Intelligent and adaptive control
- Intelligent data/image processing
- Knowledge-based systems and knowledge engineering
- Machine learning techniques
- Model-based reasoning
- Neural networks
- Planning and scheduling algorithms
- Qualitative simulation

Please direct questions to:

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Meshing, Visualization, and Computational Environments

The Meshing, Visualization, and Computational Environments TC solicits papers describing tools and techniques that facilitate simulation of real-world problems in all areas of computational field simulation including computational fluid dynamics (CFD), computational aeroacoustics (CAA), computational solid mechanics (CSM), and computational electromagnetics (CEM). Although not limited to these topics, papers that describe advanced techniques and extreme applications in the following areas are particularly encouraged:

- A priori and a posteriori grid quality metrics related to solution accuracy involving real-world configurations such as the Drag Prediction Workshop, Shock Wave Boundary Layer Interaction Workshop, High Lift Prediction Workshop, and large-eddy simulation.
- Collaborative environments, including user interfaces, Internet technology, virtual reality, and linkages to design optimization and advanced engineering environments
- Post processing, including multi-dimensional and transient visualization of very large data sets, feature detection, knowledge capture, and engineering animation
- Geometry modeling for meshing and simulation, including CAD-CAE interoperability
- Meshing techniques, including surface and volume grids, grid adaptation, overset grid techniques, and moving/deforming meshes
- Applied meshing for real-world engineering applications

Authors are encouraged to submit their manuscripts, either before or after the meeting, to the *Journal of Aerospace Computing, Information, and Communication* for possible publication.

Please direct questions to:

Eric Blades

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Huntsville, AL 35756
Phone: 256.325.1116
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Multidisciplinary Design Optimization

Multidisciplinary Design Optimization (MDO) is a computational technology for the discovery and exploitation of interactions among disparate disciplines to improve performance, lower cost, and shorten the product/system design cycle through the application of optimization algorithms. The influence of MDO reaches diverse phases of a product or system life, including manufacturability, operability and serviceability.

We seek papers discussing applications of MDO methods towards a wide variety of aerospace engineering design problems. Additionally, we seek papers discussing: 1) the development of MDO frameworks (including framework elements such as environments, visualization techniques, and interfaces to CAD); 2) the development of general purpose MDO principles (including strategies to decompose design problems and modeling and simulation strategies); 3) the development of general purpose MDO algorithms (including uncertainty quantification and robust design); and 4) shape and topology optimization challenges both abstract and applied. Papers incorporating more than one discipline or technology should explain the nature and benefit of interdisciplinary synergies at the system level. Papers limited to single discipline optimization should emphasize aspects of the optimization process such as sensitivity analysis, approximation or visualization. MDO applications of interest address aeronautical and mechanical systems that may incorporate any number of enabling technologies.

Core topics of interest include:

- Multidisciplinary analysis and optimization methods and applications
- Computational design frameworks
- Modeling and simulation methods
- Uncertainty quantification and nondeterministic design optimization
- Shape and topology optimization

Please direct questions to:

Timothy Takahashi

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Plasmadynamics and Lasers

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. There will be a student paper competition for those papers where the student is the primary author. Papers submitted and accepted for the PDL meeting whose principal author is a student and which 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.

Comprehensive abstracts of several pages that state the purpose and scope of the work, methods used, and relevant contributions including figures and preliminary results are recommended for accurate evaluation.

Please direct questions to:

David E. Ashpis

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E-mail: ashpis@nasa.gov

Propellants and Combustion

Papers are sought from all areas of propellants and combustion relevant to aerospace sciences, technologies, and applications. New developments as well as review papers are of interest. Potential topics include the following:

- Rocket and Air-Breathing Combustion: design and analysis issues for practical combustors such as rockets, gas turbines, turbojets, ramjets, and other hybrid engines;

related topics of interest include combustion instabilities, thermo-acoustic interactions, active and passive combustion control, plume characteristics, fuel flexibility, and other fundamental combustion processes related to conventional propulsion systems

- Detonations, Explosions, and Supersonic Combustion: fundamental research in detonation and supersonic combustion as well as combustion dynamics involving scramjets, pulse detonation engines, oblique detonation engines, ram accelerators, and other unconventional propulsion systems
- Spray and Droplet Combustion: liquid-jet break-up processes, atomization, vaporization, mixing, and their impact on spray flame characteristics as well as droplet combustion, supercritical combustion, and other related topics
- Combustion Chemistry: development and application of reduced kinetic mechanisms, surrogate fuels, NOx and SOx chemistry, soot formation and oxidation, flow-chemistry interaction, and other related physical and chemical processes affecting reaction kinetics
- Micro-Combustion and Micro-Propulsion: micro-scale combustion for power generation, micro-IC engines, micro-propulsion engines, and micro-thrusters
- Combustion Diagnostics: development and application of advanced diagnostic or sensing techniques for understanding and controlling the combustion phenomena
- Heterogeneous Combustion and Propellants: fundamental aspects of combustion of solid fuels, propellants, and fuel additives, as well as propellant synthesis and related topics
- Turbulent Combustion: fundamental aspects of turbulent reacting flows and combustion dynamics involving premixed, partially-premixed, and non-premixed turbulent flames linked to rockets, air-breathing combustors, etc.
- Laminar Flames: fundamental aspects of laminar flame behavior along with their ignition, extinction, stabilization, instabilities, and interactions with laminar flow processes
- Advanced Combustion Concepts, Fuel Technology, and Environmental Impact: fundamental aspects of flameless combustion, alternative fuels, bio-fuels, hydrogen technologies, and other combustion-related environmental technologies as well as papers on associated environmental impact
- Other topics in combustion and propellant research, such as fire research, high-energy fuels, endothermic fuels, novel propellants, and in situ propellant production for planetary missions

Please direct questions to:

Robert W. Pitz

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Vanderbilt University
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Sensor Systems Technology

Papers are solicited on topics related to sensor systems technologies for airborne, space-based and ground-based applications. Topics of particular interest include:

- Sensors, sensing systems, and sensing technologies utilized for acquisition and interpretation of remote sensing data
- Detection and evaluation of physical parameters and fields associated with terrestrial, oceanographic, atmospheric, or extraterrestrial phenomena and effects
- Detection and evaluation of environmental parameters associated with aerospace vehicles, their parts and components, as well as with the media in which they operate
- Detection, recognition, tracking, and remote control of airborne objects
- Measurement and evaluation of the environmental impact of airborne vehicles
- In-flight measurement and definition of aerospace vehicle airflow parameters
- In-flight measurements for evaluation and improvement of vehicle performance
- In-flight vehicle health monitoring
- In-flight vehicle control
- Airborne applications of measurement techniques used at ground test facilities
- Measurement and acquisition of inertial sensing data
- Novel applications of advanced MEMS devices as primary sensors in the sensor systems defined above and in other related technology areas

Please direct questions to:

Matt Nixon

Boeing-SVS
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Society and Aerospace Technology

The Society and Aerospace Technology Technical Committee examines societal benefits of aerospace technologies as well as the relationship between aerospace and society, culture, and the arts. Abstracts are solicited that address these and related issues. Areas of interest include, but are not limited to:

- Aerospace and terrorism
- Aerospace and public safety
- Astrosociology
- Benefits and examples of aerospace technology spin-offs
- Utilization of aerospace assets to address social problems
- Space medicine and medical astrosociology
- Group dynamics and societal institutions in isolated communities (space settlements, Antarctica, etc.)
- Discussion of aerospace topics and programs from the perspective of disciplines such as psychology, social psychology, sociology, and anthropology

Please direct questions to:

Ronald Kohl

R. J. Kohl & Associates
3581 Mar Lu Ridge Road
Jefferson, MD 21755
Phone: 301.874.3509
E-mail: rjkohl@prodigy.net

Software Systems

Abstracts are solicited on a wide range of topics in aerospace-related applications of software engineering and software systems. Areas of interest include, but are not limited to:

- COTS and Open-Source Software
- Knowledge Management and Collaborative Software
- Autogeneration of Software
- Software Agents
- Requirements
- Validation and Verification
- Testing
- Software Education and Training
- Real-time Software
- Parallel Computing Software Issues
- Object Oriented Programming
- Safety-, Mission-, or Security-Critical Software
- Formal Methods
- Software Standards and Certification
- Plug-and-Play Software

Authors are encouraged to submit their manuscripts, either before or after the meeting, to the *Journal of Aerospace Computing, Information, and Communication* for possible publication.

Please direct questions to:

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Space Exploration and Colonization

The Vision for Space Exploration encompasses robust robotic and human exploration missions beyond low Earth orbit, leading to a robust civil space program and the eventual development of space settlements on the moon and Mars. The goals of exploring space include learning about our past, improving life on Earth, and shaping our future through discovery, scientific scrutiny, and sound judgment, planning, and management. The Apollo era was shaped by the space race and was widely popular and successful. The present environment presents unique challenges for the space program to be relevant and to captivate the next generation. Experience in space has shown that operations outside Earth's atmosphere and on the surfaces of extraterrestrial moons, planets, and asteroids frequently encounter serious and unique challenges. These include the effects of radiation and microgravity on materials and humans, electrical charging and arcing,

pervasiveness of abrasive lunar dust, effects of hard vacuum, atomic oxygen, and rarefied gases, and significant thermal loads. New exploration strategies and technologies must be developed to address these challenges and support mission logistics for human and robotic exploration, power generation, and resource utilization. The yearning of people to travel into space, even in short sub-orbital flights, is an important first step towards future space colonization by humans. Space tourism represents an important commercial aspect of this endeavor as we mature the technologies, achieve measurable successes, and develop the strong advocacy needed to enable us to move permanently to new residences elsewhere in the solar system, hopefully within this century. Papers are invited that address the following specific topics within the broad portfolio of Space Exploration and Colonization. Submissions should contain sufficient detail for the program committee to evaluate the technical content of the final presentation and paper. Topics include:

- Value Proposition for Space Exploration and Colonization
- Space, Lunar, and Planetary Environmental Challenges
- Applied Space Research Tailored to Present and Future Problems
- Space Exploration Strategies and Mission Logistics
- Space Transportation and Lander Vehicle/Architecture Design
- Design Concepts for Surface Mobility and Power
- Design Concepts for Space Colonies
- Design Concepts for Space Tourism/Adventure
- Lunar, Planetary, and Asteroid Commercialization
- Legal Issues Including Sovereignty and Land Rights

Please direct questions to:

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The Boeing Company
Space & Intelligence Systems
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or

Narayanan (Ram) Ramachandran

Chair, AIAA Space Colonization Technical Committee (SCTC)
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Space Operations and Support

The AIAA Space Operations and Support Technical Committee (SOSTC) is soliciting papers in all areas of space operations and ground support. Topics include, but are not limited to, original space operations research and reports in the areas of new technology, technology trends, operations procedures, standards and practices. Areas of interest include:

- Human Factors
- Space Policy and Law Factors
- Human and Robotic Space Exploration Operations
- Space Operations Tools and Technologies
- Space Operations Policies
- Ground Support in Space Operations
- Public Safety for Launch and Reentry Planning and Operations
- Commercial Space Operations
- Error reduction (command file error reduction, process improvement, etc.)

Please direct questions to:

Jackie Schmoll

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E-mail: jackie.schmoll@ai-solutions.com

Systems Engineering

Papers in all areas of systems engineering (SE) are encouraged. All types of papers will be considered, including case studies, developmental work and technical analysis. Topics include but are not limited to systems engineering applications, integrated disciplines and technology, future trends and predictions in systems engineering, systems engineering education and research, and systems engineering life cycle processes and systems effectiveness.

Please direct questions to:

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Terrestrial Energy Applications of Aerospace Technology

The Terrestrial Energy Systems Technical Committee is sponsoring sessions on the use of aerospace technology in ground-power systems. Papers are solicited on development and application of technology common to the aerospace and terrestrial energy communities. Experimental, computational, and theoretical papers dealing with fundamental and applied energy conversion technologies will be considered for presentation. Topics include, but are not limited to:

- Combustion modeling and measurements
- Alternative fuels, bio-fuels, and their blends with JP fuels
- Active and passive combustion control
- Nano-energetic materials
- Clean and high energy density fuels
- Unwanted combustion, fires and explosions, control of liquid and gaseous environmental pollution
- Energy-power system efficiency and economics
- Micro scale combustion and power generation

- Waste minimization and treatment including materials recovery and thermal destruction of solid and liquid waste
- Alternative energy sources, such as solar, wind, fuel cells, batteries, heat pumps, thermionic and thermoelectric devices
- CO₂ issues for land based systems
- Green energy, and global energy and environmental issues

Please direct questions to:

Ajay K. Agrawal

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Thermophysics

The Thermophysics Technical Committee solicits abstracts of proposed papers on topics in thermophysics and heat transfer. Papers are solicited on topics related to all aspects of thermal energy transfer and aerospace applications therein. Contributions based on 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:

- Aircraft/Spacecraft Thermal Management
- Ablation
- Aerothermodynamics
- Cryogenics and Cryogenic Systems
- Direct Simulation Monte Carlo Methods
- Electronic and Microelectronic Avionics Cooling
- Electronic Thermal Management
- Heat Pipes, Loop Heat Pipes, and Innovative Heat Pipe Designs
- Heat Exchangers
- Heat Transfer: Computational, Conduction, Convection (free and forced), 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 High Power Two-phase Thermal Management Systems
- Microgravity Testing for Aerospace Applications
- Micro-scale Heat Transfer and Micro-fluidics
- Missiles Thermal Management
- Non-equilibrium Flows
- Non-equilibrium Radiation
- Non-intrusive Diagnostics
- Particle-laden Flow Modeling and Measurement
- Rocket Plumes
- Propulsion
- Power Systems
- Radiation Analyses (Surface Properties)
- Radiators and Heat Rejection Systems
- Spacecraft Contamination
- Space Environmental Effects
- Spacecraft Thermal Management and Modular Spacecraft

- Surface Catalysis
- Thermal Contact Conductance
- Thermal Control
- Thermal Protection Systems
- Thermophysical Properties

Emerging Topics:

- Advanced Thermoelectrics
- Integrated and Multidisciplinary Modeling and Simulation
- Minimization of Entropy Production
- Nano-scale Heat Transfer and Nano-fluidics
- MEMS and Nanotechnologies
- Multiphase Flows and Heat Transfer Continuum Methods for Transition-to-Rarefied Flows
- Plasma Actuated Heat Transfer
- Wireless Thermal Measurements

Authors are requested to address a single subject area from the above list. Each year, the Thermophysics Technical Committee has offered 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 Journal of Thermophysics and Heat Transfer for possible publication.

Please direct questions to:

Jay Frankel

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5th Symposium on Space Resource Utilization

The 5th Symposium on Space Resource Utilization is soliciting papers on research and development of processes, technologies, and hardware that demonstrate the utilization of space resources in support of human or robotic exploration and science missions to the moon, Mars, the moons of Mars, and Near-Earth Objects. Papers including analytical and hardware development results in the following areas are of particular interest:

- Production of mission critical consumables including oxygen, hydrogen, water, and propellants
- Acquisition and conditioning of planetary atmospheres in preparation for processing
- Physical processing of surface regolith, rocks, and dust including drilling, excavation, beneficiation, dust mitigation, and surface transportation
- Production of metals, glasses, ceramics, and plastics from natural resources and from recycled hardware and consumables

Additional areas of interest include:

- Concepts for making use of natural thermal gradients, radiation, particle fluxes, vacuum and pressure differentials, atmospheric gases, and other aspects of the space environment which reduce the mass launched from Earth to further exploration and science objectives

- Integration of ISRU systems with other surface systems including joint use technologies such as electrolysis or cryogenic storage systems
- Utilization of in-situ derived propellants to supply propellant depots in support of missions to various destinations (including mass and cost-benefit comparisons)

Where possible, papers should include performance of hardware or hardware concepts in the space environment at the component, sub-system, or system levels.

Please direct questions to:

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14th Weakly Ionized Gases Workshop

The 14th Weakly Ionized Gases (WIG) Workshop will be held concurrently with the 50th AIAA Aerospace Sciences Meeting. The workshop will consist of technical papers and invited presentations. Technical papers will be integrated into a series of 8 to 12 Workshop sessions to be held throughout the week.

Papers are solicited on a broad range of topics related to the study of flight interactions with weakly ionized gases. Subject material for papers can range from basic R&D to applied and advanced technology. Papers regarding contemporary experiments, analytical and computational methods, new theory, results, test data, and conclusions are desired. Interdisciplinary papers and those that combine theory and analysis with experimental validation, with results and conclusions that can be directly applied, are of special interest. Survey papers and those that are of an historical perspective are also sought.

Topics of interest include:

- Air/fuel plasma properties and interactions
- Internal and external plasma aerodynamics
- Non-equilibrium thermal and chemically reacting flows, including combustion
- Methods of on-board plasma generation
- Plasma-based drag reduction and flow control
- Shock attenuation in plasma flows
- Electromagnetic (EM) and magnetohydrodynamic (MHD) interactions and applications, including flow control and energy extraction
- Systems applications

Please direct questions to:

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26th Microgravity Symposium on Gravity-Related Phenomena in Space Exploration.

The 26th Symposium on Gravity-Related Phenomena in Space Exploration is being organized for January 2012 to actively investigate scientific and technological possibilities in gravity-dependent research and to support strategic research and technology enabling space exploration. As such, papers are solicited from academic, commercial, and governmental institutions in the following areas:

- Acceleration Environment: measurements of microgravity, sensitivity of physical phenomena to acceleration environment including disturbance
- Biotechnology: bio-fluids, protein crystals
- Combustion Science and Chemically Reacting Flows: fundamental and applied research in flames, fire detection and suppression, heterogeneous combustion, micro-combustion systems, and reacting systems for in-situ space resource utilization such as propellant production and life support systems
- Fluid Physics and Transport Phenomena: fundamental and applied research related to biological systems, in-space propulsion, in-situ space resource utilization, and space-based power and life support systems
- Materials Science: fundamental and applied research in electronic materials, metals and alloys, ceramics, glasses, polymers, radiation shielding, advanced materials for propulsion systems, space manufacturing
- Special Session: technological applications from research in reduced gravity, including examples from the scientific, commercial, and educational realms

Papers in related topics not cited are strongly encouraged. Papers describing space-flight hardware will be considered where specific innovations in functionality, performance, or hardware development processes are the focus.

Abstract submissions should be sufficiently detailed to survive competitive peer-review for selection into the symposium. Summaries of the research or study activity, results, and applications should be highlighted, keeping background information to a minimum. Important references, graphs, or pictures may be included.

A Best Paper and Best Student Presentation will be selected by the Microgravity and Space Processes Technical Committee from among the participants in the Symposium.

Please direct questions to:

Stephen D. Tse

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30th ASME Wind Energy Symposium

Papers are solicited for a broad range of topics related to wind energy conversion, both land-based and offshore. Topics of interest include, but are not limited to:

- Acoustics
- Airfoil, Blade, and Wake Aerodynamics
- Atmospheric Physics and Inflow
- Wind Farm and Turbine-Wake Interactions
- Offshore Wind Systems and Environment
- Hybrid and Off-Grid Systems
- Testing: Non-Destructive Testing, Inspection and QA, Field Test Results, Laboratory Testing Techniques
- Controls: Energy Capture Enhancement, Load Attenuation, Sensors and Actuators, Generator and Power Electronics
- Structural Dynamics
- Reliability
- Fatigue and Failure
- Innovative Components and Subsystems
- Materials and Manufacturing Processes
- Turbine Design and Development: Design Loads and Certification, Site Specific Design and Optimization
- Drivetrains
- Health Monitoring
- Electrical Systems and Machines
- Utility and Grid Integration
- Radar Interference

This conference will follow the abstract/manuscript submission and approval process used by the AIAA as outlined in this call for papers.

Please direct questions to:

Pat Moriarty

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Abstract Submittal Guidelines

Abstract submissions will be accepted electronically through the AIAA Web site at www.aiaa.org/events/asm. The Web site will open for abstract submission on **18 January 2011**. The electronic submission process is as follows:

The electronic submission process is as follows:

1. Access the AIAA Web site at www.aiaa.org/events/asm
2. On the right-hand side click the **'Submit Paper'** button.
3. In order to access the submission site, you must be logged in to the AIAA Web site.
 - a. If you already have an account with AIAA, enter your User Name and Password in the **'Login'** box on the left-hand side and hit the arrow button.
 - b. If you do not have an account with AIAA, complete the steps for **'Create Account'**.
4. Once logged in, you will be provided an active link for **'Begin a New Submission or View a Previous Draft/ Submission'**. Click the link to be directed to the Welcome page of the submission site.
5. Click the Submission tab at the top of the page.
6. Once selected, you will be provided with general information on the conference's abstract submission requirements and policies. To begin the submission, click the **'Create a New Submission'** link on the left-hand side. PLEASE NOTE: If you have previously visited the site and begun a draft submission, click the **'View Submissions'** link on the left-hand side to resume your submission.

STEP 1: Type or paste the title of your abstract into the Title field and the presenting author's biography (if requested by the conference) into the Presenter Biography field. Upload your abstract/draft manuscript file. Accepted file types are .pdf (preferred), .doc and .docx

Scroll down to read through the Rules and Reminders section and check the box noting you agree. Click **'Save & Continue'** to proceed to the next step.

STEP 2: Select your Presentation Type and the Topic Area of your abstract.

STEP 3: In this system, affiliations are added before author information. The information will be filled in for the person logged in to the site. Add additional author affiliations, if necessary, by clicking the **'Add'** button after each new affiliation. Click **'Save & Continue'** to proceed to the next step.

STEP 4: To create a list of co-authors for this submission, click the **'Add Author'** button. Search for your co-authors with the boxes provided and click the **'Add'** button next to the correct person. If no record is found for your co-author, you may add that person by clicking the link at the bottom of the page. Click **'Save'** after entering each one and then associate each author with their respective affiliation by entering the appropriate reference number from the drop down boxes to the right of each name. When you have finished entering all authors **YOU MUST put them in the order they should appear on the abstract and program**. Use the drop-down boxes in the far left column of the list to do this. Failure to properly order the authors will result in them being incorrectly listed

when the submission is published. After you have reordered the authors, click the **'Save'** button at the bottom of the list. Click **'Save & Continue'** to proceed to the next step. **The author designated as the presenter will be the only person given access to upload the final manuscript for accepted submissions.**

STEP 5: Select at least one key word that best represents your work. While only one selection is required, you may list up to six for your submission. Click **'Save & Continue'** to proceed to the next step.

STEP 6: If you have no errors or omissions in your abstract a **'Submit'** button will appear at the end of the proof. If the Error Box appears you must correct all errors before the abstract can be submitted. Once the errors have been resolved the **'Submit'** button will appear at the bottom. If you exit the system without submitting the abstract, it will be logged in the system as a draft and will appear in the **'Draft'** section of your **'View Submissions'** page when you reenter the system. After you submit the abstract, you will receive a confirmation e-mail.

Special Notes:

1. If authors wish to revise an abstract which has already been submitted, they must go to **'View Submissions'** and select **'Return to Draft'** in order to make any corrections. This removes the abstract from the organizers' view. Authors then need to submit the abstract again in order for it to be considered. An abstract cannot be returned to draft if it has been reviewed.
2. Once the abstract submission deadline passes, authors will no longer be able to submit new submissions or return previous submissions to draft for revisions. **Be sure that all of your submission data—authors, keywords, title, and abstract file—are accurate before finalizing your submission as no modifications can be made to this data after the submission site closes.**
3. **The author designated as the presenter at step 4 will be the only person given access to upload the final manuscript for accepted submissions.**

Authors having trouble submitting abstracts electronically should e-mail AIAA technical support at paper_tech_support@aiaa.org. Questions about the manual abstract submission or full draft manuscript themselves should be referred to the appropriate Technical Chair.

The deadline for receipt of abstracts via electronic submission is **1 June 2011, 2359 hrs Eastern Time, USA.**

Abstracts should have a total length of 5–10 pages including figures and tables. Draft papers are encouraged. The extended abstract or draft paper should clearly describe the purpose and scope of the work to be included in the final manuscript, methods used, key results, and contributions to the state of the art. The submittal should include illustrations and data that support the results and contributions asserted.

Both abstracts and final manuscripts must adequately address the accuracy of results. Abstracts will be reviewed and selected based on technical content, originality, importance to the field, clarity of presentation, accuracy validation, and the potential to result in a quality final manuscript. Note that all abstracts are chosen by a competitive process based on anonymous peer review using these criteria. The review and acceptance process will be weighted in favor of authors submitting more relevant documentation of their proposed papers. The length of the final manuscript should be appropriate for a conference paper, not a major project, final report, or final thesis.

The abstract should not be submitted to more than one technical topic. If an author is unsure which topic is most appropriate, it is the author's responsibility to communicate with the technical topic organizers in question well before the abstract deadline to determine the topic area under which the abstract best fits. There will be too little time in the review process for an abstract rejected by one topic to be considered for review under another.

Questions pertaining to the abstract or technical topics should be referred to the corresponding technical topic chair.

Authors will be notified of paper acceptance or rejection on or about **19 August 2011**. Instructions for preparation of final manuscripts will be provided by AIAA for accepted papers only.

There will be "No Paper, No Podium" and "No Podium, No Paper" Policies in effect. If a written paper is not submitted by the final manuscript deadline, authors will not be permitted to present the paper 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. If a paper is not presented at the conference, it will be withdrawn from the conference proceedings. These policies are intended to eliminate no-shows and to improve the quality of the conference for attendees.

Publication Policy

AIAA will not consider for presentation or publication any paper that has been or will be presented or published elsewhere. Authors will be required to sign a statement to this effect.

Final Manuscript Guidelines

An Author's Kit containing detailed instructions and guidelines for submitting papers will be made available to authors of accepted papers. Authors must submit their final manuscripts via the conference Web site no later than **20 December 2011**.

WARNING—Technology Transfer Considerations

Prospective authors are reminded that technology transfer guidelines have considerably extended the time required for review of abstracts and completed papers by U.S. government agencies. Internal (company) plus external (government) reviews can consume 16 weeks or more. Government review, if required, 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. The conference technical committee will assume that all abstracts, papers, and presentations are appropriately cleared.

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.



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