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By using nuclear thermal propulsion technology, we are increasing efficiency and enabling deep space exploration beyond the Moon faster than ever before.

The future is clear. Actually, it’s nuclear.
Welcome

We are delighted you’re joining us for this 4th annual apex ASCEND event. This is your time to connect with the diverse dreamers and doers in the ASCEND community to accelerate the global space conversation. This year, we’re focused on building our sustainable off-world future through collaboration.

We see positive signs of progress by ASCEND convening the space industry to advance the space ecosystem. ASCEND is expanding our reach to involve adjacent industries in this interdisciplinary and inclusive community. We are relentlessly driving the conversation toward delivering outcomes. Powered by AIAA, ASCEND starts with a vision and every aspect progresses through a program of activities, presentations, and conversations that focus on action.

This year, we are thrilled to partner with Boryung to bring their Humans in Space Symposium to ASCEND. This new collaboration is bringing an exciting dynamic to our community and involving critical adjacent markets in the conversation. The Humans in Space pitch sessions are early glimpses into the future of space commerce, exploration, and new discoveries. We encourage you to engage with the entrepreneurs and investors making these visions realities.

ASCEND’s unique environment is intentionally designed to facilitate interaction and discussion. The thought leaders on our stages and in the technical paper sessions are encouraged to engage with attendees. Please take advantage of the opportunity to connect with them to further fuel collaboration. Your participation will enrich your experience. We are confident that the more you put into the experience, the more you’ll get out of it.

Thank you to our generous sponsors, exhibitors, speakers, Guiding Coalition members, and collaborative and technical program chairs. Without these industry leaders’ active involvement, ASCEND would not be possible.

Most importantly, we thank YOU for your attendance. We hope your experience at 2023 ASCEND will be insightful and rewarding.

JULIE VAN KLEECK
ASCEND Executive Producer
AIAA Space Domain Lead

CRAIG DAY
ASCEND Program Executive
Building an Off-World Future Together

Thank you to the key volunteers and partners who have made ASCEND possible.

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With an innovative spirit fueling our passion, we are always making progress toward the next horizon.

Learn more at boeing.com/space
**Macro Sessions** include some of the world’s most inspired thinkers and speakers, providing broad and bold perspectives on a wide range of topics around building our off-world future.

**Meta Sessions** offer mind-expanding knowledge from industry leaders and doers, and focus on spurring large-scale discussions of the trends, economic forces, technical challenges, and policymaking hurdles facing every member of the space ecosystem.

**Micro Sessions** include presentations, discussions, and interactive roundtables/workshops featuring different perspectives and opinions across one of our 16 targeted session topics.

**Technical Sessions** explore the wide array of research and developments focused on interdisciplinary approaches to the art and science of space technology, exploration, economics, and more via one of our six paper topic themes.

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<th>TUESDAY 24 OCT</th>
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Special Programming & Networking Sessions include the von Kármán Lecture in Astronautics, David W. Thompson Lecture in Space Commerce, William H. Pickering Lecture, AIAA committee-led sessions, daily opening sessions, finale closing session, networking coffee breaks, and receptions.

The schedule is set in Pacific Time USA.

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The schedule is set in Pacific Time USA.
<table>
<thead>
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<td>MACRO-01</td>
<td>From Dreaming to Doing: Utilizing Creativity and Imagination to Accelerate Our Off-World Future</td>
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<td>1000–1100 hrs</td>
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<td>META-01</td>
<td>Space Workforce 2030: A Diversity Pledge to Go Boldly, Together</td>
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<td>META-02</td>
<td>Use of Emerging and Venture-Funded Companies in National Security Space</td>
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<td>META-03</td>
<td>Cislunar Ecosystem: 100,000 Mile Perspective</td>
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<tr>
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<td>2023 AIAA von Kármán Lecture in Astronautics: “Celebrating a Century of Kármán’s Momentum-Integral and Space-Reductive Approaches: Applications in Rocketry and Beyond”</td>
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<td>Space 2050: The Future of Space Policy and Regulation</td>
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### Monday, 23 October Technical Sessions

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<td>Investment and Financing Approaches</td>
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<td>Space Medicine and Human Health</td>
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<td>1400–1600 hrs</td>
<td>Forum106</td>
<td>ISAM-01</td>
<td>Space Resource Stewardship I</td>
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<tr>
<td>1400–1600 hrs</td>
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<td>NTIS-01</td>
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<tr>
<td>1630–1830 hrs</td>
<td>Forum116</td>
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Password: **Last Name**
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<tr>
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<td>Summit Ballroom</td>
<td>MACRO-02</td>
<td>Accelerating Sustainable Space Exploration Through Global Cooperation</td>
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<td>Space Agencies’ Contributions to Monitoring Greenhouse Gases</td>
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Grab refreshments from the reception and bring to the lecture.
**Tuesday, 24 October Technical Sessions**

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**VULCAN**

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Humans In Space

The Humans In Space (HIS) Symposium calls for innovative solutions and research on the challenge of human life in space. We are proud to bring the HIS Symposium and HIS Challenge to 2023 ASCEND. This extraordinary gathering unites visionaries, experts, and enthusiasts from across the globe to explore and shape the future of humanity in space.

The HIS Challenge competition aims to discover early-stage startups and researchers dedicated to transforming human life in space. During the HIS Symposium, finalists will present solutions and research before a panel of prominent space experts. HIS Challenge winners will receive investments, research awards, and opportunities to participate in mentorship programs.

Don’t miss this extraordinary moment of inspiration and discovery as we celebrate the best and brightest in the realm of space innovation.

Humans In Space Challenge Research Pitch I & II
Ten distinguished research finalists, selected by leading experts, are poised to unveil their groundbreaking research endeavors, where the winner will secure a prestigious $30,000 research grant to advance their pioneering work.

Humans In Space Challenge Startup Pitch I, II, & III
Join us every day as fifteen pioneering startup finalists are set to present their game-changing ideas in front of top-tier space experts, with a chance to secure a $100,000 equity investment and $500,000 Axiom Space Credit.*

*Total of $500,000 Axiom Space credit will be shared amongst eligible startups to see their experiment in the next Axiom mission.

Monday, 23 October
MICRO-62
Humans In Space Challenge Research Pitch I
1400–1445 hrs
Forum 134

MICRO-63
Humans In Space Challenge Startup Pitch I
1700–1745 hrs
Summit Ballroom

Tuesday, 24 October
MICRO-64
Humans In Space Challenge Research Pitch II
1400–1445 hrs
Forum 134

MICRO-65
Humans In Space Challenge Startup Pitch II
1700–1745 hrs
Summit Ballroom

Wednesday, 25 October
MICRO-66
Humans In Space Challenge Startup Pitch III
1600–1645 hrs
Summit Ballroom

HIS EXHIBIT OVERVIEW
The Humans In Space exhibit will serve as an informative and networking area for people deeply interested or engaged in areas related to Space Exploration such as Human Health Research, Human Healthcare Journey, In-Space Lifestyle, and Advanced Data Analytics and Intelligence. Participants will have the chance to not only explore the prototypes of the HIS Startup Finalists and discuss their focused area and concerns in space application of their unique technology with them, but also will have the opportunity to build connection with notable HIS partners who have expertise in the relevant area of work.
STARTUP JUDGES
Audrey Berthier, Director, MEDES
Monica Jain, Partner, Wavemaker 360
Deok-Ho Kim, Professor, Johns Hopkins University
Kyu-Sung Kim, Professor, Inha University
Solange Massa, CEO, Ecoatoms
Junaid Mian, Partner, SpaceFund
Kathy O’Donnell, Leader of Space Product Solutions Architecture, Aerospace & Satellite, Amazon Web Services
Aenor Sawyer, Director, UC Space Health
Jacob Scoccimerra, Former Program Manager, Nanoracks
Arun Sharma, Assistant Professor, Cedars-Sinai
David Zuniga, Senior Director, In Space Solutions, Axiom Space

RESEARCH JUDGES
Dawn Bowles, Assistant Professor in Surgery, Duke University
Charles Chiu, Professor, Medicine, UC San Francisco
Alexander Chouker, Panel Chair, European Space Sciences Committee
Marissa Rosenberg, Senior Medical Research Engineer, SpaceX
Cathy Yeung, Associate Professor, Department of Pharmacy, University of Washington
David Zuniga, Senior Director, In Space Solutions, Axiom Space

STARTUP FINALISTS

Human Health Journey

AvatarMEDIC Inc. | U.S.
AvatarMEDIC Inc. offers real-time, remote medical relief for Austere, Isolated, and Confined Environments through their XR software, HoloTRIAGE, which integrates spatial computing to provide advanced visualization, data overlay, and interactive capabilities to complement medical providers.

BioBankHealing | South Korea
BioBankHealing develops an all-in-one cartridge and diagnostic device that monitors the gut microbiome of space travelers using just 1g of stool sample.

brain.space | Israel
brain.space builds an AI-based data collection gear and analysis software that enables effective long-term brain monitoring and expansive data collection and analysis.

Megnosis Co., Ltd. | South Korea
Megnosis develops a headset that measures EEG and brain impedance and applies electrical current to the scalp, which diagnose and treat Alzheimer’s disease (differentiation accuracy: 95%) and depression simultaneously.

Neursantys, Inc | U.S.
Neursantys is a pioneer in developing non-invasive bioelectronic medical devices and treatments for neuromotor conditions with no widely available pharmacological alternatives.

PAPRICALABS Co., LTD | South Korea
PAPRICALAB specializes in radiation detectors and radiation therapy products by developing wearable dosimeters that are soft contact lenses worn in the eye and flexible patches attached to the skin. They utilize a high-performance inorganic perovskite radiation-sensitive part that is flexible and responds to radiation even at a thin thickness of 350-450nm.

Splendo Health | U.S.
SplendoHealth has its own platform which aggregates and calculates raw data, in real-time, from selected wearable device to make Cardiorespiratory Fitness (CRF)/VO2 max assessments accessible, affordable and efficient outside of a dedicated lab or hospital setting.
Extremo Technologies | Poland
Extremo Technologies uses microalgae in in-house designed products to support the future of life in space and on Earth. The microalgae bio-panel supports crew space missions through effective CO2 sequestration and O2 production.

Lumen Bioscience | U.S.
Lumen Bioscience plans to produce genetically engineered spirulina to provide on-demand biomedicines, protein nutrition, and remediation of environment for long-term space exploration.

Manakin Robotics | U.S.
Manakin Robotics specializes in real-time monitoring and detection of airborne pathogens using patent-pending biosensors for effective protection against exposure.

Mutagenetch, Inc | U.S.
Mutagenetch has developed the most precise error-corrected Next Generation Sequencing (ecNGS) platform for detecting rare somatic mutational variants in DNA.

Uptimai s.r.o | U.S.
Uptimai s.r.o characterizes models of human stress level response for professionals often exposed to stressful situations through Machine Learning methods.

Odyssey SpaceWorks | U.S.
Odyssey SpaceWorks offers high launch-cadence research lab satellites in space. They offer environmental control, in-orbit spectrophotometry, and organoid growth chambers that can better mimic human cancer growth than in labs on earth.

SpaceBox | Germany
SpaceBox develops fully automated mini laboratories, powered by AI, for biopharmaceutical research in space and earth applications.

LambdaVision Incorporated | U.S.
LambdaVision is developing the first protein-based artificial retina to restore meaningful vision for patients who are experiencing advanced retinal degenerative diseases, including Retinitis Pigmentosa (RP) and Age-related Macular Degeneration (AMD).

RESEARCH FINALISTS

Gopal Katkoria, International Institute for Astronautical Sciences (IIAS), U.S.
Citizen Science Research to build a data repository to understand the physiological effects of gravity transition on new and frequent flyers across different health profiles.

Miroslav Rozloznik, Faculty of Medicine, University of Ostrava, Czech Republic
Quantitative analysis of nitrogen elimination and venous gas emboli production during Normobaric oxygen breathing.

Hak Soo Choi, Harvard Medical School, U.S.
Point-of-care monitoring of space environmental stress using near-infrared fluorescence.

Alysson Muotri, University of California San Diego, U.S.
The impact of microgravity on human cognition.

Boaz Lerner, Ben-Gurion University of the Negev, Israel
AI system for continuous explanatory space and Earth health monitoring.
Immune

JangKeun Kim, Weill Cornell Medicine, U.S.
Comprehensive biomedical and multi-omic profiling of immune dysregulation with countermeasure development for astronauts.

Devon Lundine, Sloan Kettering Institute, U.S.
Shields up! Inhibition of DNA polymerase theta as a galactic cosmic ray countermeasure.

Christopher Porada, Wake Forest Institute for Regenerative Medicine, U.S.
Impact of uG-induced immune alterations on astronaut cancer risk.

Musculoskeletal

Luke Hughes, Northumbria University, UK
Personalized Tourniquet System for Spaceflight (ASTRA Study).

Alejandro Marcano, Karolinska Institutet, Sweden
Optimizing Fracture care for long-duration space missions.

I’m delighted to bring the Humans In Space (HIS) Symposium to 2023 ASCEND, the world’s premier collaborative, outcomes-driven, interdisciplinary event. Building on the success of the inaugural 2022 Care In Space (CIS) Challenge, Boryung launched the HIS initiative to explore the ideas and solutions for human survival in space. The HIS initiative aims to foster an ecosystem of innovative minds working to advance human activities in space. The initiative started with launching the HIS Challenge in May this year, and I’m thrilled to watch the grand finale of HIS Challenge and our HIS finalists’ insightful pitches here at the phenomenal stages of ASCEND.

Jay Kim
Chairman and CEO of Boryung

Our co-location with ASCEND is an invaluable partnership where we can add new perspectives and value to each other. We’re committed to this premier global space event, opening doors to endless opportunities. Starting with this year’s co-location, I’m looking forward to expanding our broader partnership with ASCEND.
REDEFINE WHAT IS POSSIBLE
BRING NEW IDEAS TO LIFE
DARE MIGHTY THINGS TOGETHER

Explore the possibilities at
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Monday, 23 October

SPEC-13

2023 AIAA von Kármán Lecture in Astronautics
1130–1230 hrs
Summit 204

“Celebrating a Century of Kármán’s Momentum-Integral and Space-Reductive Approaches: Applications in Rocketry and Beyond”

Joseph Majdalani, Francis Chair of Excellence and Professor of Aerospace Engineering, Auburn University

Named in honor of Theodore von Kármán, a world-famous authority on aerospace sciences, the lectureship honors an individual who has performed notably and distinguished themselves technically in the field of astronautics. Majdalani’s lecture celebrates the centennial of the momentum-integral approach, one of the most significant theoretical contributions of Theodore von Kármán, taught widely in the fields of aerodynamics. He will discuss the broad impact of this approach and often used in conjunction with Pohlhausen’s polynomial approximations.

SPEC-14

2023 AIAA David W. Thompson Lecture in Space Commerce
1245–1345 hrs
Summit Ballroom

Grab lunch and bring to the lecture.

“Connecting Space to Earth”

George Whitesides, Partner, Convective Capital

The lectureship recognizes a prominent industry leader who has created or grown a space-related business and generated substantial economic benefits and market value. The award commemorates the long and distinguished career of commercial space pioneer, David W. Thompson.

Whitesides’ lecture will address this moment in time when aerospace lessons and solutions can help solve the world’s greatest challenges. “Our leaders must be active in seeking out connections to national and global problems that we can help or solve. Climate change, inequality and inaccessibility, the carbon transition, foreign repression – all of these are among the challenges of our time. Perhaps now more than ever, the abilities of the aerospace sector are directly relevant to many of these challenges,” said Whitesides.

Tuesday, 24 October

SPEC-32

2023 William H. Pickering Lecture: Observing Earth’s Precious Water from Space
1830–1930 hrs
Summit Ballroom

The lecture will explore a space mission that will address some of Earth’s most pressing climate change questions of our time by informing decisions about our daily lives and livelihoods. Using state-of-the-art radar interferometry technology, SWOT is measuring the elevation of water to observe millions of lakes and wetlands with surface areas 250 m2 and thousands of rivers whose width exceeds 100 m, while detecting ocean features with unprecedented resolution, accuracy, and spatial coverage. The primary science payload, a novel Ka-band Radar Interferometer (KaRIn), is the first in-flight demonstration of wide-swath (2, 50Km swaths) SAR interferometry for more accurate and comprehensive mapping of Earth’s ocean and surface water from space.

The SWOT Mission is expected to revolutionize hydrology and oceanography, providing a set of observations for nearly all surface waters on planet Earth, allowing scientists to determine changing volumes of water across the globe. SWOT will also significantly advance climate and ocean sciences by detecting ocean features with 10 times better resolution than present technologies. The higher resolution will reveal small-scale ocean features that contribute to the Earth’s fundamental cycles of heat, energy, carbon, moisture, and nutrients.

Speakers: Nadya Vinogradova Shiffer, Ocean Physics Program Manager, NASA Headquarters
Parag Vaze, Project Manager, SWOT Mission, NASA Jet Propulsion Laboratory

TECHNICAL EXCELLENCE AWARD

2023 AIAA von Braun Award for Excellence in Space Program Management
0800 hrs
Summit Ballroom

John M. Grunsfeld, Endless Frontier Associates LLC

For exceptional leadership of America’s space science program resulting in amazing achievements exploring the Earth, our solar system, and unravelling the mysteries of the cosmos.
PROVEN ENGINEERING
POWERED BY INNOVATION
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Photo Credit: NASA
Onsite and General Information

REGISTRATION
ASCEND Registration is located in the Caesars Forum Lobby, at the bottom of the escalator.

Registration Hours
Sunday, 22 October  1500–1900 hrs
Monday, 23 October  0700–1800 hrs
Tuesday, 24 October  0700–1700 hrs
Wednesday, 25 October 0700–1700 hrs

FIRST AID
ASCEND will have a medic onsite, offering basic first aid services throughout the event. Contact event staff if needed.

HOTEL RESORT FEE
For those who booked their hotel reservations in the ASCEND room blocks at Harrahs and the LINQ, please note that the resort fee is optional and you should have been notified of that during the check-in process. You have the option to pay the resort fee, or pay for any of the services you wish to use individually. Please check your folios carefully so you do not overpay.

LUGGAGE STORAGE
There will be an unattended designated area in the Engagement Zone on Wednesday where you are welcome to leave your bags. AIAA is not responsible for any lost or missing items.

RECYCLING AND SUSTAINABILITY EFFORTS
ASCEND and our host facility are proud to do our parts toward making events green. Please help us continue to reduce our carbon footprint:
› All leftover conference materials and supplies are donated to local schools in need. This includes all office supplies, sign boards, leftover giveaways, etc. Please look for the box near registration where you can put any items you are not taking home with you.
› All waste and recycling is collected together and sorted off-site in Las Vegas to ensure maximum recycling and composting.
› There will be water coolers around the Engagement Zone.

CONNECT TO THE WI-FI
To connect to the event wireless internet please select:
Network: ASCEND2023
Password: Airbus23

MEALS & COFFEE BREAKS
Lunch and coffee breaks will be provided throughout the day in the Engagement Zone Room 118. Join us Monday and Tuesday evening for a fun-filled networking reception both in the Engagement Zone and outside on the Forum Plaza. Look for the Daily Re-Fueling Board to find the offerings.
DEFYING GRAVITY IS ONLY THE BEGINNING

You routinely accomplish the unimaginable—solving the mysteries of space and flight. But your goal, like ours, is never wonder for wonder’s sake. When you join the world’s largest technical society devoted to aerospace engineering, you’ll become part of a fellowship of peers driven to push the limits of humanity. Take your place among AIAA’s community of 30,000 aerospace engineers and scientists and prepare for unmatched access to professional development, thought leadership, and global collaboration.

Become a Member Today!
AIAA.org/join
Onsite and General Information

BADGE POLICY
AIAA event badges are provided to those individuals who have paid for a registration to the event. Badges must be worn at all times to participate in all ASCEND activities. Badges are not provided at the registration desk for committee meetings attendance. In order to obtain an ASCEND badge, one must register for the event.

CERTIFICATE OF ATTENDANCE
All attendees will receive a Certificate of Attendance on the last day of the event via email. AIAA offers this service to better serve the needs of the professional community. Claims of hours or applicability toward professional education requirements are the responsibility of the participant.

EMPLOYMENT OPPORTUNITIES
AIAA members can post and browse resumes, browse job listings, and access other online employment resources by visiting the AIAA Career Center at careercenter.aiaa.org.

CONTINUE THE CONVERSATION ON ENGAGE
The conversation doesn’t have to end when ASCEND ends. AIAA Engage allows you to connect with a community of nearly 30,000 of your AIAA colleagues online and continue your conversations from the event. Discuss the sessions, connect with attendees you meet at ASCEND, and share your experiences. Visit engage.aiaa.org to start connecting.

BECOME AN AIAA MEMBER
AIAA is dedicated to helping forward-thinking professionals advance their work and continue shaping the future of aerospace. As part of that mission, we provide more than 30,000 members with thoroughly researched content focused on industry news, innovations, updates, and technical developments. Become an AIAA member to unlock a world of benefits designed to enhance your capabilities, career, and network. Visit aiaa.org/join.

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

ANTI-HARASSMENT POLICY
It is the policy of AIAA to maintain a professional environment at its events that is free from all forms of discrimination, harassment and conduct that can be considered unprofessional, disruptive, inappropriate or discourteous. Full details can be found at aiaa.org/about/Governance/Anti-Harassment-Policy.

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

AIAA PHOTOGRAPHY AND VIDEO NOTICE
Attendance at, or participation in, this American Institute of Aeronautics and Astronautics (hereinafter “AIAA”) event constitutes consent to the use and distribution by AIAA, its employees, agents, and assignees of the attendee’s image and/or voice for purposes related to the mission of AIAA, including but not limited to publicity, marketing, other electronic forms of media, and promotion of AIAA and its various programs and events. Please contact AIAA Director of Communications, Rebecca Gray, at rebeccag@aiaa.org with requests or questions.
CONFERENCE PROCEEDINGS
Proceedings for the event are now available. The cost is included in the registration fee where indicated.

Proceedings
To view proceedings visit aiaa.org → ARC → Meeting Papers

› Log in with the link at the top right of the page
› To browse, click on the Meeting Papers link at the top of the page and select the appropriate conference from the list
› To search for individual papers, use the Quick Search toolbar at the top and then use the Search textbox to find papers by author, title or keyword. To search by paper number - click the Anywhere drop down, select Find by Paper, select the conference year, and enter the paper number

All manuscript files submitted by four days prior to the conference event are currently in the proceedings. For questions concerning access to proceedings or ARC, email arcsupport@aiaa.org.

Manuscript Corrections
The manuscript in the proceedings is the version of record and may not be edited. All changes will be available through the Crossmark feature. View corrections by clicking the Crossmark icon, located on every article’s page and PDF. Corrections will be available online approximately 15 business days after the last day of the conference. Visit arc.aiaa.org/page/crossmark for more information.

ASCENDxTexas
Returns to Space City
14–15 February 2024
Houston, TX

Join 300+ space industry leaders in Houston and gain insights about Artemis, CLPS (Commercial Lunar Payload Services), CLD (Commercial LEO Destinations), and other signature programs, along with how these programs are forging a new future in space. With the space ecosystem and activities increasing exponentially, meet key global stakeholders and learn how they’re accelerating our progress toward a sustainable off-world future.

Registration Opens 8 November
www.ascend.events/ascendxtexas
"No Paper, No Podium" and "No Podium, No Paper" Policy

If a written paper is not submitted by the final manuscript deadline, authors will not be permitted to present the paper at the conference. It is also the responsibility of those authors whose papers or presentations are accepted to ensure that an author attends the conference to present the paper. 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, to improve the quality of the conference for all participants, and to ensure that the published proceedings accurately represent the presentations made at a conference.

Journal Publication

Authors of appropriate papers are encouraged to submit them for possible publication in one of the Institute’s archival journals: AIAA Journal; Journal of Aerospace Information Systems; Journal of Air Transportation; Journal of Aircraft; Journal of Guidance, Control, and Dynamics; Journal of Propulsion and Power; Journal of Spacecraft and Rockets; or Journal of Thermophysics and Heat Transfer. You may now submit your paper online at http://mc.manuscriptcentral.com/aiaa.

TECHNICAL PAPERS SESSION PREP

Authors who are presenting papers will meet with session chairs and co-chairs in their session rooms for a short 30-minute briefing on the day of their sessions to review final details prior to the session. Please attend on the day of your session(s). Technical Paper Session Prep will be held from 1315–1345 hrs for Monday and Tuesday sessions, and from 1200–1230 hrs for Wednesday sessions.

SPEAKER READY ROOM

Speakers who wish to practice their presentations may do so in room 221. A sign-up sheet will be posted on the door. In consideration of others, please limit practice time to 30-minute increments.

SESSION CHAIR REPORTS

All session chairs are asked to complete a session chair report to evaluate their session for future planning purposes, including session topics and room allocations. Please submit your session chair report electronically by Wednesday, 1 November.

AUDIOVISUAL

Each session room will be preset with the following: Laptop computer, LCD projector, screen, microphone and sound system (if necessitated by room size), and a laser pointer. You may use your own laptop if you wish. Any additional audiovisual equipment requested onsite will be at cost to the presenter. Please note that AIAA does not provide security in the session rooms and recommends that items of value not be left unattended.

COMMITTEE MEETINGS

Sunday, 22 October

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<tr>
<th>TIME</th>
<th>ROOM</th>
<th>SESSION</th>
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<tr>
<td>1400–1600 hrs</td>
<td>Forum 126</td>
<td>Space Automation and Robotics TC Meeting</td>
</tr>
<tr>
<td>1600–1800 hrs</td>
<td>Forum 119</td>
<td>Unidentified Anomalous Phenomena IOC Meeting</td>
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<tr>
<td>1700–1900 hrs</td>
<td>Forum 126</td>
<td>Space Systems TC Meeting</td>
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<tr>
<td>1800–1930 hrs</td>
<td>Forum 119</td>
<td>Management IOC Meeting</td>
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Wednesday, 25 October

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<tr>
<th>TIME</th>
<th>ROOM</th>
<th>SESSION</th>
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<tr>
<td>1700–1900 hrs</td>
<td>Summit 222</td>
<td>Space Architecture TC Meeting</td>
</tr>
<tr>
<td>1700–1900 hrs</td>
<td>Summit 220</td>
<td>Space Resources TC Meeting</td>
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Advanced Test Equipment Corp.  
**BOOTH 910**

10401 Roselle St.  
San Diego, CA 92121  
www.atecorp.com

Advanced Test Equipment Corp. (ATEC) is a leading provider of test & measurement equipment rentals, sales, calibration, and service. Since 1981, test engineers, government agencies, and Fortune 500 companies have relied on ATEC to guide them to the right equipment, ship it quickly, and offer them the industry’s best technical expertise and customer care. ATEC’s broad inventory includes EMC, Power Supplies & Loads, RF Safety, Electrical, NDT, Environmental, Communications, and General Purpose test equipment. Explore the ATEC inventory at www.atecorp.com.

AIAA  
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12700 Sunrise Valley Dr.  
Reston, VA 20191  
www.aiaa.org

Since 1963, members from a single professional society have achieved virtually every milestone in modern American flight. That society is the American Institute of Aeronautics and Astronautics. With nearly 30,000 individual members from 91 countries, and 95 corporate members, AIAA is the world’s largest technical society dedicated to the global aerospace profession. Created in 1963 by the merger of the two great aerospace societies of the day, the American Rocket Society (founded in 1930 as the American Interplanetary Society), and the Institute of the Aerospace Sciences (established in 1933 as the Institute of the Aeronautical Sciences), AIAA carries forth a proud tradition of more than 80 years of aerospace leadership.

AIAA Los Angeles - Las Vegas Section  
**BOOTH 1018**

2629 Manhattan Ave.  
Hermosa Beach, CA 90254

BORYUNG  
**BOOTH 1023**

104 Bukchon-Ro  
Seoul, Republic of Korea  
https://www.boryung.co.kr/en/

Boryung is a healthcare investment company founded in 1957 and headquartered in Seoul, South Korea. Following the company’s mission to become an indispensable contributor to human health, we have expanded our business portfolio to the space healthcare industry.

Recognizing space as a new growth realm, we acknowledge the increasing number of individuals anticipated to embark on extended space missions, highlighting the importance of ensuring human survival in the hostile space environment. Hence, Boryung believes there will be substantial opportunities to foster new technologies and meet the emerging needs in this field.

ispace  
**BOOTH 816**

12876 E Adam Aircraft Cir.  
Englewood, CO 80112  
www.ispace-inc.com

ispace is a lunar exploration company with a vision to extend human presence into outer space. Our vision is to expand our living sphere and create a sustainable world. The Moon’s water resources represent untapped potential. Our aspiration is to explore and develop these water resources and spearhead a space-based economy. Water can be broken down into hydrogen and oxygen to produce fuel, so we are mapping lunar resources to accelerate the pace of space development. Imagine the Moon supporting construction, energy, steel procurement, communications, transportation, agriculture, medicine, and tourism... We believe that by 2040 the Moon will support a population of 1,000, with 10,000 people visiting every year. ispace will be instrumental in supporting life on Earth through space-based infrastructure.

Lockheed Martin Space  
**BOOThS 609 & 613**

12257 S Wadsworth Blvd.  
Littleton, CO 80125  
www.lockheedmartin.com

Headquartered in Bethesda, Maryland, Lockheed Martin Corporation is a global security and aerospace company that employs approximately 116,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services.

Magneto Space  
**BOOTH T14**

4646 13th St. N.  
Arlington, VA 22207  
www.magneto.space

Magneto Space (MS) is enabling R&D to bring Pulsed Electromagnetic Fields (PEMF) & Spintronics to improve the performance of biological and abiotic systems beyond Earth.
For more than 50 years since the 1970s, spacecraft, systems, and space stations have operated without based on principals of electromagnetism. As organisms have evolved within Earth’s magnetic field (.2-.7 Gauss (20-70µT) and electric field (100-300 V/min) for billions of years, electromagnetic fields induce vibrations for ion transport, signaling, and molecular bonds to sustain the health of plants, humans, and life.

Magneto is pioneering a new breed of subsystems that hold potential to monitor and improve energy storage & generation by 50-100%. Our team is designing an affordable low power PEMF device to replicate Earth’s electromagnetic field in NNMF and space environments.

**Motiv Space Systems**
350 N Halstead St.
Pasadena, CA 91107
www.motivss.com

Motiv Space Systems is the leading provider of innovative space robotic systems, mechanisms and motion control solutions for mission critical orbital and planetary applications.

**NASA**
300 E St. S.W.
Washington, DC 20546
www.nasa.gov

The National Aeronautics and Space Administration (NASA) is responsible for unique scientific and technological achievements in human spaceflight, aeronautics, space science, and space applications that have had widespread impacts on our nation and the world. Established in 1958, NASA has been the center of U.S. civil aerospace research and development for more than half a century.

**National Reconnaissance Office (NRO)**
14675 Lee Rd.
Chantilly, VA 20151
www.nro.gov

NRO develops and operates the world’s most capable and innovative overhead reconnaissance systems to collect intelligence for U.S. national security, and to support disaster relief and humanitarian efforts.

**Nevada National Security Sites**
2621 Losee Rd.
Las Vegas, NV 89030
https://nnss.gov

Nevada Space Proving Ground at the NNSS is a full-scale lunar/martian analog testbed featuring hundreds of craters, a 50m tall HLS/Starship analog, and ample supporting infrastructure for all types of equipment testing and personnel training.

**Northrop Grumman**
45101 Warp Dr.
Dulles, VA 20166
www.northropgrumman.com

Northrop Grumman is a leading global aerospace and defense technology company. Our pioneering solutions equip our customers with the capabilities they need to connect and protect the world, and push the boundaries of human exploration across the universe. Driven by a shared purpose to solve our customers’ toughest problems, our 95,000 employees define possible every day.

**NovaWurks, Inc**
10772 Noel St.
Los Alamitos, CA 90720
www.novawurks.com

NovaWurks is a pioneering aerospace company headquartered in Los Alamitos, California. We specialize in the development and production of SLEGO building blocks, a revolutionary type of space architecture that integrates diverse-sized space applications to create adaptable and configurable buses capable of supporting any payload.

Our visionary approach to space architecture is redefining the future of space exploration and transportation. By focusing on payload-centric bus designs, NovaWurks aims to overcome the limitations of traditional spacecraft by offering a versatile and scalable platform capable of accommodating a wide range of payloads, regardless of their size or complexity.
Astroscale is the first private company with a mission to secure spaceflight safety and orbital sustainability for the benefit of future generations. Founded in 2013, Astroscale is developing innovative and scalable solutions for satellite End of Life and Active Debris Removal services to mitigate the hazardous buildup of space debris.

PickNik Robotics is the Unstructured Robotics Company. We are the industry leaders in solving the hardest robotics problems. Companies of all sizes, both on Earth and in space, rely on PickNik for bringing the most advanced solutions to life for both structured and unstructured environments.

RS&H provides fully integrated architecture, engineering, and consulting services to help clients realize their most complex facility and infrastructure projects for land, air, and space. We are consistently ranked among the nation’s top 100 design firms and have worked in over 50 countries across the globe. With a tradition that began in 1941, RS&H has helped pioneers build the launch platforms for the national space program, create global airports that connect communities, shape progressive highway systems across the country, and provide facilities for Fortune 1000 companies.

As an employee-owned firm, our people are our greatest asset. Our forward-looking experts streamline complex challenges at every stage, providing a panoramic view of each client’s requirements and opportunities.

Sierra Lobo Inc. specializes in providing test, evaluation and engineering services to the aerospace sector nationwide. We also offer in-house engineering and R&D services through our Technology Development and Engineering Centers (TDEC) in Milan, Ohio and Pasadena, California. We have a proud history providing excellent services and products to our customer in government and industry. We believe that our success is based on adhering to our core principles and values that include: integrity; service; excellence; dignity; and growth. Please take time to learn more about our people, business, and ideals.

Space Force Association is the industry leaders in solving the hardest robotics problems. Companies of all sizes, both on Earth and in space, rely on PickNik for bringing the most advanced solutions to life for both structured and unstructured environments.

Stellar Access is your connection to space. We are building an out-of-this-world network – literally – to bring space to you, your community, your business. Everything you need to make a space experience a reality – information, resources, providers, and partners – whether for business or pleasure, Stellar Access provides it. We created a network of space flight providers, equipment, and specialists in retail, tourism, and business, all interested in finding resources and working together for future commerce in space. We have more than 40 years of experience in the space and aerospace industries. Let us bring your project over the finish line.

Terran Orbital is a leading manufacturer of satellite products primarily serving the aerospace and defense industries. Terran Orbital provides end-to-end satellite solutions by combining satellite design, production, launch planning, mission operations, and on-orbit support to meet the needs of the most demanding military, civil, and commercial customers.
The University of Nevada Las Vegas Branch of AIAA

1550 Orchard Falls Ct.
Henderson, NV 89014
https://involvementcenter.unlv.edu/organization/unlvaiaa

We will showcase projects and aircraft that the local student branch of AIAA has been working on for the past year. This may include a VTOL prototype and a cinelifter drone for aerial photography.

Thunderbird School of Global Management

One Global Pl.
Phoenix, AZ 85004
https://thunderbird.asu.edu/thought-leadership/centers/space-leadership-initiative

The Thunderbird Initiative for Space Leadership, Policy and Business serves as a hub for academic-industry-governmental collaboration in space research, education and development. We bring scholars, executives, founders, policymakers and military officers together to address industry, national and global challenges.

Our vision is to build a better future for our nation and planet by ensuring that space organizations are well managed, and that space technologies are well applied. We will achieve this by empowering the next generation of global space leaders with domain expertise, 21st-century management skills, and powerful personal networks in the space community. The future is launching here.

United Launch Alliance (ULA)

9501 E. Panorama Cir.
Aurora, CO 80018
www.ulalaunch.com

With more than a century of combined heritage, ULA is the world’s most experienced and reliable launch service provider. ULA has successfully delivered more than 130 satellites to orbit that provide Earth observation capabilities, enable global communications, unlock the mysteries of our solar system and support life-saving technology.

UTEP Aerospace Center

500 W. University Ave.
El Paso, TX 79968
www.utep.edu/aerospace

Valcor Engineering Corporation

2 Lawrence Road
Springfield, NJ 07081
www.valcor.com

Valcor Engineering Corporation, founded in 1951, designs and manufactures solenoid valves and other fluid control components, as well as subsystems, clutches, brakes and OBIGGS systems in critical applications in the aerospace, nuclear, light industrial and scientific industries. Headquartered in Springfield, New Jersey, Valcor’s world-class staff of engineers, designers, and technical support personnel utilize fully equipped, modern test facilities to test the most precise and exacting standards.

With a library of more than 18,000 designs, Valcor’s design team can modify existing technology to suit practically every hard to handle application. Valcor specializes in custom applications and can create an entirely new product to meet your needs.
CALL FOR CONTENT OPEN

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ASCEND supports an interdisciplinary, collaborative community of aerospace professionals, students, and enthusiasts who are accelerating humanity’s progress toward our off-world future.

Help shape the 2024 ASCEND program with your own session proposal or technical presentation. Session formats include roundtables, panels, debates, workshops, and more.

2024 ASCEND Session & Paper Topics:
› Expanding and Evolving the Space Economy
› Space Exploration and Infrastructure: Exploring, Living, and Working in Space
› Space and Society, Education, and Workforce
› Space and Sustainability
› Space Security and Protection
› Space Traffic Management / Coordination

WILL YOU ANSWER THE CALL?

DEADLINE IS 12 DECEMBER 2023.
www.ascend.events/presenters