AMOS Conference 2024

PROGRAM

The AMOS Conference is an in-person event with virtual attendance options and kicks off with a number of virtual and in-person Technical Short Courses in various Space Situational/Domain Awareness-related disciplines. The three plenary program days open with Keynote Addresses and SSA Policy Forum discussions followed by Technical Presentations covering a range of broad topical areas relating to SSA/SDA, all streamed live to the virtual conference platform. Posters are available in digital format this year and are accompanied by on-demand presentation videos. A select number of posters are invited for in-person presentation during the evening poster sessions.

Please note all dates/times listed are Hawaii Standard Time (HST). Agenda is subject to change.

Program at a Glance

FRI Sep 13	**Virtual Platform Open to Registered Attendees**
	On-Demand Launch | Digital Poster Presentations
SUN Sep 15 – TUE Sep 17	**EMER-GEN® Program** *(separate registration fee required)* On-site Registration
MON Sep 16	**Virtual Technical Short Courses** *(separate registration fee required)*
TUE Sep 17	**Exhibitor Load-in** **In-person Technical Short Courses** *(separate registration fee required)* **Welcome Reception** | *Co-sponsored by Boeing*
WED Sep 18	**Conference Opening & Cultural Invocation** **Opening Keynote Address** | *Lieutenant General Philip A. Garrant* **SSA Policy Forum** | *Sustainable Operations of Large Constellations: The Role of Orbital Carrying Capacity and Other Tools* **Technical Session** | *Space Debris* **Technical Session** | *Space Domain Awareness Systems & Instrumentation* | *Sponsored by EO Solutions* **Featured Presentation** | *Colonel Jeremy Raley & Colonel Joseph Roth* **Technical Session** | *Machine Learning for SDA Applications* | *Sponsored by Anduril* **Poster Session + Exhibit and Networking Reception** | *Sponsored by SAIC* **Women & Allies in SDA**
THU Sep 19	**Keynote Address** | *Dr. Hiroshi Yamakawa* **SSA Policy Forum** | *SSA in the Asia-Pacific: Where We Are, Where We Are Going* **Technical Session** | *Astrodynamics* | *Sponsored by BAE Systems* **Technical Session** | *Conjunction/RPO* **Featured Presentation** | *Lieutenant Colonel Jason Altenhofen & Gregory Less* **Technical Session** | *Satellite Characterization* | *Sponsored by LeoLabs* **Technical Session** | *Space Domain Awareness* | *Sponsored by ExoAnalytic Solutions* **Poster Session + Exhibit and Networking Reception**
FRI Sep 20	**Keynote Address** | *Pam Melroy* **SSA Policy Forum** | *Space Weather and SSA – What's Needed Next?* **AMOS Student Space Exploration Day** **Featured Presentation** | *Richard DalBello*

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Technical Session | *Space Based Assets* | *Sponsored by LinQuest Corporation*
Featured Presentation | *Barbara Golf*
Technical Session | *Atmospheric & Space Weather* | *Sponsored by Mitre*
Technical Session | *Cislunar for SDA*
Featured Presentation | *EMER-GEN® Outcomes*
Conference Closing & Awards Ceremony
Pau Hana Reception | *Co-sponsored by L3 Harris*

Sunday 15 September – Tuesday 17 September

EMER-GEN®
The 7th annual EMER-GEN® is a joint initiative of the AMOS Conference and SGAC. The program is designed especially for young professionals and students enthusiastic about careers in space. Separate registration required. Visit www.emer-gen.com to learn more.

02:00 PM HST	06:00 PM HST	**ON-SITE REGISTRATION**	*Aulani Ballroom Foyer*

Monday 16 September

02:00 PM HST	06:00 PM HST	**ON-SITE REGISTRATION**	*Aulani Ballroom Foyer*

VIRTUAL TECHNICAL SHORT COURSES: *In-person and virtual short courses are offered this year. Separate registration fee required for each half-day course. Virtual short courses are "live" with the ability to interact with the instructor and attendees in real-time. Virtual courses will not be recorded. Access links will be provided to registrants closer to the course date.*

08:00 AM HST	12:00 PM HST	**VIRTUAL COURSE A**	Cross-Domain Learning for Space Law: Challenging the Lessons from Maritime, AI and Cyber Domains to Enable a Circular Space Economy	*Online Room-1* **VIRTUAL COURSE B**	Methods of Cognitive Learning for Space Traffic Management	*Online Room-2* **VIRTUAL COURSE C**	Astrodynamics Essentials: Mastering the Math and Physics of Space Orbits Simulation	*Online Room-3*
12:00	01:00	**BREAK**	*Explore the AMOS Virtual Venue and Digital Poster Hall*
01:00 PM HST	05:00 PM HST	**VIRTUAL COURSE D**	Imaging, Tracking, and Object Detection	Online Room-1 **VIRTUAL COURSE E**	SSA System and Catalog Architecture Design	Online Room-2

Tuesday 17 September

07:00 AM HST	06:00 PM HST	**ON-SITE REGISTRATION**	*Aulani Ballroom Foyer*

AMOS Conference 2024

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IN-PERSON TECHNICAL SHORT COURSES: *In-person and virtual short courses are offered this year. Separate registration fee required for each half-day course. In-person short courses will not be livestreamed for virtual attendance, nor will they be recorded.*

08:00 AM HST	12:00 PM HST	**IN-PERSON COURSE 01** | CA Risk Assessment Technical Short Course | *Mauna Loa Ballroom* **IN-PERSON COURSE 02** | Astrodynamics for xGeo Space Domain Awareness | *Vanda Ballroom* **IN-PERSON COURSE 03** | Panchromatic, Multi-Spectral, Spectroscopy and Polarimetry Data Collection and Image Processing for Non-Resolved Object Characterization | *Ilima Ballroom* **IN-PERSON COURSE 04** | Uncertainty Quantification for Space Situational Awareness | *Lokelani III Ballroom* **IN-PERSON COURSE 05** | Using a Modular Open System Approach (MOSA) to Enhance Space Situational and Domain Awareness | *Lokelani II Ballroom*
12:00	01:00	**BREAK** | *Explore the AMOS Virtual Venue and Digital Poster Hall. Pick up lunch at one of the many locations on-site or next door at the Shops at Wailea.*
01:00 PM HST	05:00 PM HST	**IN-PERSON COURSE 06** | Deep Learning Methods for Space Domain Awareness | *Mauna Loa Ballroom* **IN-PERSON COURSE 08** | Observing and Characterizing Space Debris | *Lokelani III Ballroom* **IN-PERSON COURSE 09** | Telescopes and Optics: An Introduction to Ground-Based Optical SDA | *Lokelani II Ballroom* **IN-PERSON COURSE 10** | The Case for Space Environmentalism | *Ilima Ballroom*
06:00 PM HST	07:30 PM HST	**WELCOME RECEPTION** | *Luau Gardens* Join us for an oceanfront reception at sunset as we welcome the AMOS ʻohana back to the island. *Co-sponsored by* BOEING

AMOS Conference 2024

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Wednesday 18 September

The three-day plenary program will be livestreamed in its entirety to the virtual conference platform, with on-demand playback available in 24-48 hours. All registered attendees are encouraged to visit the virtual Exhibit Hall and Digital Poster Hall to review materials and interact with sponsors and poster presenters.

06:00 AM HST	07:30 AM HST	BREAKFAST AT LEISURE | *Luau Gardens*
07:30	08:15	**CONFERENCE OPENING** | *Aulani Ballroom* **Leslie Wilkins**, President & CEO, Maui Economic Development Board, Inc. **CULTURAL INVOCATION** **Kahu Kealahou Alika** **CELEBRATING 25 YEARS** **Paul Kervin,** AMOS Conference Technical Chair
08:15	08:45	**OPENING KEYNOTE ADDRESS** *Introduction by **Ian Christensen**, Senior Director, Private Sector Programs, Secure World Foundation*  **Lieutenant General Philip A. Garrant** Commander, Space Systems Command U.S. Space Force
08:45	09:45	**SSA POLICY FORUM | Sustainable Operations in the Space Environment: The Role of Orbital Carrying Capacity and Other Tools** *Given the increasing operational complexity in the space environment, including the deployment and of operation of large satellite constellations and the increasing range of space actors, the need to improve approaches to managing and mitigating risks to safety and sustainability in operations in that environment increases in relevancy. A more holistic approach that crosses policy, operational, and SSA services aspects will have important benefits for business and service continuity, maintaining access to orbit for future users, and ensuring safety in a multi-user domain. This session will discuss the status and relevancy of various tools for approaching management of the space environment in a more comprehensive fashion, including: orbital carrying capacity modeling; efforts to assess and reduce the footprint of constellations in orbit; and approaches to improving collision avoidance screening.* Moderated by: **Ian Christensen**, Senior Director, Private Sector Programs, Secure World Foundation

Panelists:
Erik Babcock, Director of Starlink Guidance, Navigation, and Control, SpaceX
Richard Linares, Associate Professor, Department of Aeronautics and Astronautics, Massachusetts Institute of Technology
Andrea Muciaccia, PhD Student, Politecnico di Milano
Andrew Ratcliffe, Chief Engineer, United Kingdom Space Agency
Audrey Schaffer, VP, Policy and Strategy, Slingshot Aerospace

09:45	10:15	**EXHIBITION AND NETWORKING BREAK** | *Sponsored by Exhibit Hall + Conference Platform* NORTHROP GRUMMAN Explore the Exhibit Hall on-site and online. Interact with our conference partners, view demos, access resources, schedule meetings, and more.
09:15 AM HST	06:50 PM HST	EXHIBITION HOURS FOR THE DAY
10:15	11:30	**SPACE DEBRIS** | *Aulani Ballroom* Co-chaired by **Heather Cowardin**, NASA JSC and **Zach Gazak**, SSC / SZGA *Analysis of Darkened Fragments Resulting from Laboratory Hypervelocity Experiments* **Heather Cowardin,** NASA JSC *Resilience of LEO Constellations to Accidental and Intentional Fragmentation Events* **Mark Sturza**, Viasat *Cislunar Missions End-of-Life Disposal Strategies* **Joshua Wysack**, BAE Systems **2023 Poster Golden Ticket Winner** | *Recent Evolution of the Sub-Catalogue Space Debris Population in High-Altitude Orbital Regions* **Thomas Schildknecht**, University of Bern, Astronomical Institute *OD-SSA Activity at NASA's Heliophysics Division* **Reinhard Friedel**, NASA
11:30 AM HST	12:30 PM HST	LUNCH | *Lokelani Ballroom*
12:30	02:45	**SPACE DOMAIN AWARENESS SYSTEMS & INSTRUMENTATION** | *Sponsored by Aulani Ballroom* EO SOLUTIONS Co-chaired by **Jeff Sherk,** The Aerospace Corporation and **Stacie Williams,** HQ U.S. Space Force *A Remarkable Boost in Satellite Brightness at Optical Wavelengths During the Daytime* **Sarah Caddy**, Macquarie University *Passive Radio Frequency Techniques & Demonstration for Space Domain Awareness* **Zachary Leffke**, Virginia Polytechnic Institute & State University *Novel Phased Array Laser Radar Architecture for Satellite Imaging and Identification* **James Leger**, University of Minnesota

POLSA Sensor Network Capabilities under Different Operating Modes
Tymoteusz Trocki, Polish Space Agency (POLSA)

The GSSAC Mission System: A New Solution for Space Objects Cataloguing from DLR
Alfredo Antón, GMV

Ultra-Fast Real-Time Target Recognition Using a Shift, Scale, and Rotation Invariant Opto-Electronic Joint Transform Correlator
Xi Shen, Northwestern University

Physics Guided Machine Learning for Wavefront Sensing on a Hybrid Optical Telescope
Fabien Baron, Georgia State University

The Power of Persistence: Persistent Custody Through Repurposed Meteorite Trackers and Observation Processing at Real-Time Rates and Volume
Joseph Diamond, Peraton

Re-Entry Event Prediction Through the Analysis of Optical Sensor Data Gathered from a Worldwide Network of Telescopes
Michal Zolnowski, 6ROADS

02:45 – 03:05 EXHIBITION AND NETWORKING BREAK | *Exhibit Hall + Conference Platform*

03:05 – 03:35 **FEATURED PRESENTATION | Space Logistics Drives SDA Architecture** | *Aulani Ballroom*
*Introduction by **Maj Sean Allen,** Chief, U.S. Space Force, Space Systems Command*

Colonel Jeremy A. Raley, Director, Space Vehicles Directorate, Air Force Research Laboratory (AFRL)
Colonel Joseph J. Roth, Director Innovation & Prototyping Acquisition Delta and Commander, Space Systems Command Detachment 1, United States Space Force

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03:35 – 05:20 **MACHINE LEARNING FOR SDA APPLICATIONS** | *Sponsored by* ANDURIL
Co-chaired by **Heather Griffith James**, Kitware, Inc. and
Nathan Toner, Cloudstone Innovations, Inc.

Backbone Architectures for Space Domain Awareness
Kyle Merry, Sandia National Laboratories

Regularizing Training of Physics Informed Neural Networks (PINNs) for Cislunar Orbit Determination via Transfer Learning
Gregory Badura, Georgia Tech Research Institute

Action-Free Inverse Reinforcement Learning for Evaluating Satellite Similarity and Anomaly Detection
David Witman, Slingshot Aerospace

Resolved Hyperspectral Imaging
Kimmy Chang, U.S. Space Force / Space Systems Command

Rapid and Uncertainty Quantified Orbital Propagation Using Uncertainty-Aware AI
Kevin Vanslette, Raytheon BBN

Integrating LLMs with SatSim for Enhanced Satellite Tracking and Identification
Enrique De Alba, Jr., EO Solutions

Building Trust in Human-Machine Teaming for Autonomous Space Sensing
Garrett Fitzgerald, U.S. Space Force / MIT AI Accelerator

05:20 — 06:50 **EXHIBITION AND POSTER SESSION** | *Exhibit Hall* | *Sponsored by* SAIC
Posters co-chaired by **Pat Patterson,** Space Dynamics Laboratory and **Matthew Stevenson,** LeoLabs
Meet select poster presenters while enjoying a cocktail and interacting with exhibitors and fellow attendees.

08:00 — 10:00 **WOMEN & ALLIES IN SPACE DOMAIN AWARENESS** | *Pacific Terrace Rooftop*
Desserts, dancing, and networking under the stars
Limited to first 300 guests. Separate registration required. Registration information is forthcoming.

Thursday 19 September

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06:00 AM HST — 07:30 AM HST BREAKFAST AT LEISURE | *Luau Gardens*

07:30 — 08:00 **KEYNOTE ADDRESS** | *Aulani Ballroom*
*Introduction by **Victoria Samson,** Chief Director, Space Security and Stability, Secure World Foundation*

Dr. Hiroshi Yamakawa
President
Japan Aerospace Exploration Agency (JAXA)

08:00 — 09:00 **SSA POLICY FORUM** | **SSA in the Asia-Pacific: Where We Are, Where We Are Going**

While it is agreed that a certain baseline level of SSA is needed to ensure spaceflight safety, different operators and actors have different needs for it. This panel will discuss what those needs are in the Asia-Pacific region and examine how countries and companies within it are determining what should be prioritized and how they are developing their own SSA

capabilities. The possibility of regional cooperation in sharing SSA data will be discussed, as will any challenges and possible roadblocks to doing so.
Moderated by:
Victoria Samson, Chief Director, Space Security and Stability, Secure World Foundation

Panelists:
Melrose Brown, Director, UNSW Canberra Space
Dan Ceperley, Founder & Chief Operating Officer, LeoLabs
Sittiporn Channumsin, Director of Space Technology Research Center, GISTDA
Lexie Weikert, Manager Business Development, National Security, Astroscale

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09:00 – 09:30

EXHIBITION AND NETWORKING BREAK | *Sponsored by SpaceNav*
Exhibit Hall + Conference Platform

Explore the Exhibit Hall on-site and online. Interact with our conference partners, view demos, access resources, schedule meetings, and more.

09:00 AM HST – 07:00 PM HST

EXHIBITION HOURS FOR THE DAY

09:30 AM HST – 10:30 AM HST

ASTRODYNAMICS | *Aulani Ballroom* | *Sponsored by* BAE SYSTEMS
Co-chaired by **Tom Kelecy,** Space Enthusiast and **Geoff Lake,** BAE Systems

Minimum Observation Methods of Initial Maneuver Determination
Sam Wishnek, BAE Systems

Early Classification of Space Objects Based on Astrometric Time Series Data
Giovanni Lavezzi, Massachusetts Institute of Technology

A Novel Stochastic Unscented Transform for Robust State Estimation Enabling Enhanced Space Domain Awareness
Jacob Griesbach, ARKA/Stratagem

Leveraging Corkscrew Patrol Orbits to Improve Custody of Closely Spaced Objects
Erin Griggs, Trusted Space, Inc.

10:30 – 11:30

CONJUNCTION / RPO
Co-chaired by **Jeff Aristoff,** Slingshot Aerospace and **Mariel Borowitz,** Office of Space Commerce / Georgia Tech

Contextual Predictive Model for Early Identification of High-Covariance Conjunctions
Timothy Olson, Slingshot Aerospace

A Novel Stochastic Unscented Transform for Probabilistic Drag Modeling and Conjunction Assessment
Piyush Mehta, West Virginia University

How to Categorize an Avoidance Maneuver: Untangling the Iridium Experience
Ryan Shepperd, Iridium

Real-Time Conjunction Assessment and Collision Avoidance of Satellites for Concurrent Avoidance Negotiation based on Comparative Analysis of Passive Ranging Method with Traditional Sources
Douglas Deok Soo Kim, Space Map

11:30 AM HST – 12:30 PM HST | LUNCH | *Lokelani Ballroom*

12:30 PM HST – 12:50 PM HST | **FEATURED PRESENTATION | Victus Nox: Tactically Responsive Space - Space Domain Awareness Mission** | *Aulani Ballroom*
*Introduction by **Lieutenant Colonel Philip Wagenbach,** Commander, 15th Space Squadron, U.S. Space Force*

Lieutenant Colonel Jason Altenhofen, U.S. Space Force, Space Systems Command
Gregory Less, Launch Systems Integration Manager, Millennium Space Systems

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12:50 – 02:35 | **SATELLITE CHARACTERIZATION** | *Sponsored by* LEOLABS
Co-chaired by **Carolin Frueh,** Purdue University and **Emily Gerber,** Ten One Aerospace

Multi-Layered Machine Learning for Rapid LEO Object Characterization Leveraging Global Radar Data
Chandler Phelps, LeoLabs

Advancing Geosynchronous Satellite Classification Utilizing Spectral Data via Fine-Tuned Pretrained Deep Learning Models
Chad Mello, U.S. Air Force Academy

Multi-Modal Transformers for Efficient EO/IR Signature Generation
Nathan Highsmith, Modern Technology Solutions, Inc.

Multi-Phenomenology Fusion for Satellite Identification
Trevor Putman, Johns Hopkins University Applied Physics Lab

High-Resolution Radar Imaging of Space Objects
Simon Anger, German Aerospace Center (DLR)

Super-Resolution Object Characterization in Low Earth Orbit (SROC LEO)
Stacey Jones, O Analytics, Inc.

Centroiding Caused Errors in Tracking and Adaptive Optics
Joshua Garretson, U.S. Space Force

02:35 – 02:55 | EXHIBITION AND NETWORKING BREAK | *Exhibit Hall + Conference Platform*

PROGRAM

02:55 05:25 **SPACE DOMAIN AWARENESS** | *Sponsored by* ExoAnalytic Solutions
Co-chaired by **Ayla Reed,** AFRL/RDSM and **Lauchie Scott,** Defense R&D Canada

Space Debris and Nuclear Strategic Stability: Collision Risks and Attribution Potential in GEO
Roohi Dalal, Outer Space Institute

Automated, Collaborative Applications to Close Kill Chain Gaps
Greg Furlich, University of Colorado Boulder, Center for National Security Initiatives

A Technical Comparison of the Public SSA Services in the United States and the European Union
Mariel Borowitz, National Oceanic and Atmospheric Administration

Developing Optical Sensor Constellation Architectures for Space Domain Awareness through Model-Based Trade Studies
Mitchell Kirshner, University of Arizona, Steward Observatory

A Decomposition Algorithm for Optimal Selection and Placement of Heterogeneous Sensors to Holistically Satisfy Mission
Michael Bynum, Sandia National Laboratories

Post-Maneuver UCT Correlation Using Multi-Source Data Streams
Gavin Hofer, Katalyst Space Technologies

A Multi-Agent Trust Framework for Fusing Subjective Opinions with Imperfect Understanding in Space Domain Awareness Using the Scruff AI Framework
Matthew Wilkins, L3Harris

Extending the Quality Standards for Non-Traditional Sensors: A Pathway to Increased Data Utilization
Steven Paligo, a.i. solutions

Resection of Long-Range Sensor Models for Mono and Stereo Exploitation of Non-Earth Imagery
Reuben Settergren, BAE Systems

Integration of Air and Space Traffic Management: Establishing Criteria for Tracking of Debris Objects Prior to Uncontrolled Reentry
Michael Kezirian, University of Southern California

05:25 06:55 **EXHIBITION AND POSTER SESSION** | *Exhibit Hall*
Posters co-chaired by **Pat Patterson,** Space Dynamics Laboratory and **Matthew Stevenson,** LeoLabs

Meet select poster presenters while enjoying a cocktail and interacting with exhibitors and fellow attendees.

Friday 20 September

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06:00 AM HST	07:30 AM HST	BREAKFAST AT LEISURE | *Luau Gardens*
07:30	08:00	**KEYNOTE ADDRESS | Sustainable Space: Aligning Efforts to Preserve the Solar System |** *Aulani Ballroom* *Introduction by **Krystal Azelton,** Senior Director, Program Planning, Secure World Foundation*  **Pam Melroy** Deputy Administrator NASA
08:00	09:00	**SSA POLICY FORUM | Space Weather and SSA – What's Needed Next?** *Recent events such as February 2022 loss of 38 Starlink satellites due to space weather highlight the important connection between space weather and orbital trajectory predictions. Historically, the limited operational low Earth orbit (LEO) population with an altitude distribution biased towards high LEO meant operations were less sensitive to the accuracy of space weather prediction. The proliferation of LEO and very LEO with large constellations makes space weather modeling and forecasting an acute challenge. This session will examine space weather prediction capabilities, current practices for atmospheric density modeling, and the impact that these have on both the accuracy of SSA and conjunction warnings as well as the ability to share SSA data among various stakeholders. Further, it will look to US and international plans to address these issues in light of changing SSA data and service models.* Moderated by: **Krystal Azelton,** Senior Director, Program Planning, Secure World Foundation Panelists: **Marco Concha,** Flight Dynamics Lead, Amazon Kuiper **Tzu-Wei Fang,** Space Scientist, NOAA Space Weather Prediction Center **Piyush Mehta,** Associate Professor, West Virginia University **Matthew Shouppe,** Senior Associate, Commercial Space Strategy, Booz Allen Hamilton
09:00	09:30	EXHIBITION AND NETWORKING BREAK | *Exhibit Hall + Conference Platform* Explore the Exhibit Hall on-site and online. Interact with our conference partners, view demos, access resources, schedule meetings, and more.
09:00 AM HST	03:00 PM HST	EXHIBITION HOURS FOR THE DAY

09:00 AM HST	01:00 PM HST	**STUDENT SPACE EXPLORATION DAY** | *South Pacific Ballroom + Exhibit Hall* The AMOS Conference welcomes 150 Maui County middle school students and their STEM educators to meet astronaut Pam Melroy and visit exhibit booths for hands-on STEM activities.
09:30 AM HST	10:00 AM HST	**FEATURED PRESENTATION | Updates on the Traffic Coordination System for Space (TraCSS)** | *Aulani Ballroom* *Introduction by **Mariel Borowitz,** Director of International SSA Engagement, Office of Space Commerce* **Richard DalBello,** Director, Office of Space Commerce
10:00	11:30	**SPACE-BASED ASSETS** | *Sponsored by* LinQuest Co-chaired by **BT Cesul,** Umbra and **Orlando Diaz,** NASA Ames Research Center *Completion and Test of a Compact, Extremely Accurate Star Tracker* **Greg Finney**, IERUS Technologies *Event-Based Vision Sensor Noise Modeling for Space Domain Awareness* **Rachel Oliver,** Air Force Institute of Technology *The Use of Flyby Space-to-Space Non-Earth Imagery to Rapidly Identify and Characterise Unknown Objects* **James Allworth,** HEO *Concept of Operation and Initial Performance Summary of the NorthStar Space-Based Optical SSA System* **Yann Picard**, Northstar Earth & Space *Wide FOV Imagers for Co-Orbiting Object Detection* **Randa Qashoa,** York University *Experimental Results from On-Orbit Edge-Deployed AI Detection of Resident Space Objects Using Computer Vision* **Paul Day,** Booz Allen Hamilton
11:30 AM HST	12:30 PM HST	LUNCH | *Lokelani Ballroom*
12:30	12:50	**FEATURED PRESENTATION | Joint Commercial Operations (JCO) Introduction and Way Forward** | *Aulani Ballroom* *Introduction by **Scott Hunt**, Technical Director, 15SPSS* **Barbara Golf,** U.S. Space Force, Strategic Advisor for SDA, Space Systems Command
12:50	01:50	**ATMOSPHERICS / SPACE WEATHER** | *Sponsored by* MITRE Co-chaired by **Mary Ellen Craddock,** Northrup Grumman Corporation and **Shaylah Mutschler,** Space Environmental Technologies

		Measuring the Vertical Profile of Atmospheric Turbulence with the Laser Communication Relay Demonstration Downlink at Table Mountain Facility **Francis Bennet**, Australian National University *Detection and Tracking of Space Objects with the HAARP HF Facility in Conjunction with Ground and Satellite-Based Sensors* **Paul Bernhardt,** University of Alaska Fairbanks *Operational Space Weather Forecasts to Support Satellite Operations* **Sean Elvidge**, University of Birmingham *Harnessing Satellite Constellations as Signals of Opportunity for Atmospheric Forecasting and Enhanced Space Situational Awareness* **David Fitzpatrick**, University of Colorado Boulder
01:50	02:35	**CISLUNAR SDA** Co-chaired by **John Iannamorelli,** The Charles Stark Draper Laboratory and **Jaime Stearns,** Air Force Research Laboratory (AFRL) Space Vehicles Directorate *Applications of Poincare Search Maps for Space-Based Cislunar SDA Detection* **Raymond Wright**, BAE Systems *Cislunar Surveillance Optimization and Key Region Identification* **Carolin Frueh,** Purdue University *Simultaneous Observation Association and Maneuver Reconstruction for Non-Keplerian Initial Orbit Determination using Nonlinear Programming* **Casey Heidrich**, University of Colorado Boulder
02:35	02:55	EXHIBITION AND NETWORKING BREAK | *Exhibit Hall + Conference Platform*
02:55	04:10	**CISLUNAR SDA Cont.** | *Aulani Ballroom* Co-chaired by **John Iannamorelli,** The Charles Stark Draper Laboratory and **Jamie Stearns,** Air Force Research Laboratory (AFRL) Space Vehicles Directorate *An Adaptive Approach to the Initial Orbit Determination Problem in the Cislunar Regime Using Machine Learning* **Juan Ojeda Romero**, JHU / APL *Cislunar Initial Orbit Determination Using Sensor and Measurement-Centric Admissible Regions* **Queenique Dinh**, University of Colorado Boulder *Efficient Cislunar Multi-Target Tracking with Adaptive Multi-Fidelity Propagation* **Benjamin L. Reifler**, The University of Texas at Austin *Reachability Analysis of Low-Thrust Cislunar Spacecraft Using State-Transition Tensors* **Aaron Rosengren**, University of California, San Diego *Cislunar Orbit Determination with Passive RF Sensors* **Francois Thevenot**, Safran Data Systems

04:10	04:25	**FEATURED PRESENTATION** | **EMER-GEN® Outcomes**
04:25	05:00	**CONFERENCE CLOSING & AWARDS CEREMONY** In collaboration with the Space Surveillance Technical Committee of the American Astronautical Society (AAS), the AMOS Conference recognizes outstanding efforts in the field of Space Situational/Domain Awareness by presenting the fifth annual AMOS Conference Best Paper and Student Awards. Also awarded are Best Presentation for each technical session and a series of Poster Awards.
05:00	06:30	**PAU HANA RECEPTION** | *Kahoolawe Lawn* Commemorate the end of the 25th AMOS Conference with live music, cocktails, and friends as we say *Aloha* and *A Hui Hou* *Co-sponsored by* L3HARRIS™ FAST FORWARD

Digital Poster Presentations | *Access Starts Sep 13*

All posters are available in digital format this year and are accompanied by brief presentation videos in the virtual conference platform's Poster Hall. Interact with poster presenters online. The online Poster Hall opens Sep 13.

A select number of posters are invited for in-person presentation during the Poster Sessions, as indicated with a (**) double asterisk.

Extreme Gradient Boosting and Deep Learning Models for the Classification of Synthetic Space Debris Light Curves
Anne Adriano, University of Waterloo**

SDA TAP Lab Using Commercial Technology to Avoid Operational Surprise
Sean Allen, U.S. Space Force, Space Systems Command

Design of Wide Angle and Large Aperture Optical System of a LiDAR Sensor for Characterization of Space Debris Particles
Davud Asemani, The Aerospace Corporation

Optimizing GEO Belt Observation through Analytical Methods and the Traveling Salesman Problem
Shashanka Athigiri, Digantara

On-chain TDM Validation using AI over a Proof of Stake (PoS) Blockchain
Samya Bagchi, University of Adelaide**

Utilising Australian National Infrastructure To Support Cislunar Orbit Determination and Space Traffic Management
Timothy Bateman, UNSW Canberra Space**

Error Analysis of Bulk-Density Measurements for Metal-Type Debrisat Fragments
Matthew Biles, University of Florida**

Guiding Lunar Growth: Architectural Solutions for Space Traffic Management
Michael Bilka, BAE Systems**

A Benchtop Simulator for Evaluating PSF Engineering with a Fizeau Imaging Sparse Aperture Telescope
Megan Birch, Georgia Tech Research Institute / Georgia State University**

Learned Initial Orbit Determination from Simulated Electro Optical Observations
Alexander Cabello, EO Solutions**

Dynamic EO/IR Satellite Signature Prediction with High-Fidelity MuSES Simulation
Logan Canull, ThermoAnalytics, Inc.**

Autonomous Trajectory Planning for Cislunar Space
Fabio Chiappina, a.i. solutions**

Concept of the Korean Optical Space Surveillance Telescope System NSOS_Beta for Monitoring the High-Altitude Orbit Region
Jin Choi, Korea Astronomy and Space Science Institiute**

The Falcon Telescope Network: A Newly Upgraded Global Array of Optical Telescopes
Francis Chun, U.S. Air Force Academy**

An Australian Experimental SDA System: RED STAR
Duncan Cook, Defence Science and Technology Group**

Adaptive Sensor Tasking Strategies for Tracking Non-Cooperative Cislunar Space Objects
Jeremy Correa, Katalyst Space Technologies**

Enhanced Heuristic Algorithm for Optimal Cislunar Space Situational Awareness Architecture
Jacob Dahlke, Air Force Institute of Technology

Attitude Determination and Monitoring of 3-Axes Controlled Satellites with Photometric Observations
Adrián de Andrés Tirado, GMV

Towards an All-Orbit Optical Data Service Provisioning Based on ArianeGroup Helix System
Thibault de la Villegeorges, ArianeGroup

Optimal Control-Based Track-to-Track Correlation with Optical Measurements
Alessia De Riz, Politecnico di Milano

Robust Strategies for Incorporating Parameter Uncertainty in Constrained Admissible Regions
Thomas Dearing, ARKA**

Neural Network Enhanced Numerical Propagation to Enhance SSA/SDA
Duane DeSieno, Data Fusion & Neural Networks**

Machine Learning for Space Domain Awareness Sensor Scheduling
Neil Dhingra, Auria**

Automated 6DOF Satellite Pose Estimation from Resolved Ground-Based Imagery
Thomas Dickinson, Air Force Institute of Technology, Rochester Institute of Technology Center for Imaging Science**

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John Ebeling, Data Fusion & Neural Networks

An Investigation of Impulsive-Maneuver Transfers from L3, L4 and L5 to Earth-Orbit
Evangelina Evans, University of Colorado Boulder

Initial Orbit Determination from Ambiguous TDOA and FDOA Measurements of Passive Radio Frequency Signals
Benjamin Feuge-Miller, Applied Research Laboratories, The University of Texas at Austin**

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Carolin Frueh, Purdue University

Joint Commercial Operations (JCO) - Integrated Space Operations with Event Ledgers
Joseph Gerber, The Tech7 Company**

A Common Task Framework for Testing and Evaluation at the Space Domain Awareness Tools, Applications, and Processing Lab
Imène Goumiri, Lawrence Livermore National Laboratory**

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Christopher Griffith, The Aerospace Corporation

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Marta Guimaraes, Neuraspace

Exploring the Impact of Maneuvering Guidelines for Space Traffic Management
Brian Gunter, Georgia Institute of Technology**

Photometric Attitude Estimation Using Gaussian Process Regression
Ryui Hara, Kyushu University**

Multi-Frame Observation-to-Orbit Association for Angles-Only Measurements
Cameron Harris, EO Solutions**

The TraCSS Consolidated Pathfinder: Leveraging Commercial Capability in LEO
Matthew Hejduk, The Aerospace Corporation**

SOM-erizing Cislunar Orbits: Classification of Cislunar Orbits Using Self-Organizing Maps (SOMs)
Denvir Higgins, Lawrence Livermore National Laboratory**

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Nathan Holzrichter, MITRE**

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Emma Kerr, Defence Science and Technology Laboratory**

A Comprehensive Approach to Optimized Cislunar Architecture Design Utilizing Capacity
Justin Kim, BAE Systems**

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Michael Klonowski, University of Colorado Boulder**

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Oleksandr Kozhukhov, National Space Facilities Control and Test Center of State Space Agency of Ukraine

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Ed Kruzins, UNSW Canberra Space

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Naman M Ladhad, Digantara

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Garrick Lau, University of Colorado Boulder

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Kimoon Lee, University of Science and Technology

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Miles Lifson, The Aerospace Corporation**

Debris Tracking Laser Network
Jose Miguel Lozano, GMV**

An Efficient Collision Analysis Framework Enabling Real-Time Spacecraft Self-Protect
Jordan Maxwell, Scout Space LLC**

CubeSat Radar Cross-Section Measurement Campaign
Matt Mayne, Defence Science and Technology Laboratory

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Tristan Meyer, German Aerospace Center

Recovery of Periodic Signals in Event Camera Data: Theory and Empirical Results
Mark Moretto, University of Colorado Boulder

Real-Time Atmospheric Turbulence Layer Determination Using Multi-Task Learning
Nick Murphy, Georgia State University**

ML-Driven Optimal Design of Multispectral Instruments for the Characterization of Resident Space Objects
Kedar Naik, BAE Systems**

Preliminary Study of Hyperspectral Unmixing Analysis Associated to Resident Space Objects Using DIRSIG™
Aryzbe Najera, The University of Texas at El Paso

Multi-Perspective Multi-Modal PoL Characterization of LEO Objects
Rithwik Neelakantan, Digantara

Deep Reinforcement Learning Applications to Space Situational Awareness Scenarios
Benedict Oakes, University of Liverpool

Passive Radar for Launch and Re-Entry Support
James Palmer, Silentium Defence

Enhancing the Pointing Accuracy Using Adaptive Terminal Sliding Mode Control for Satellite with Single Gimbal VSCMG
Mayur Vijay Pawar, MIT Art, Design and Technology University

Enhancing Unknown Near-Earth Object Detection with Synthetic Tracking and Convolutional Neural Networks
Kevin Phan, EO Solutions**

Poland's Evolving Space Law: Assessing Space Debris Mitigation and Remediation in the European Context
Malgorzata Polkowska, Lomza Academy

Exploring Soliton Enhancement for Ground-Based Detection of Lethal Non-Trackable Space Debris
Kristine Rosfjord, InTrack Radar Technologies

The Resonant Structure of xGEO and Implications for Cislunar Domain Awareness
Shane D. Ross, Virginia Tech******

Challenges of Deep Learning Deployment for Space-Based RSO Detection
Shane Ryall, Defense Research & Development Canada

Data Insights, Pedigree, and Automation for Space Domain Awareness
Oliver Schultz, Lockheed Martin

Optimizing the Radar Network Architecture for LEO Space Domain Awareness
Jack Schuss, SpaceEM******

Catalog of US Launched Objects for Active Debris Removal
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Monitoring of Rendez-vous & Proximity Operations with SST and SDA Techniques Combination
Jaime Serrano, GMV

Challenges in Orbital Debris Modeling: A Comparative Analysis of NASA SBM and Space Fence Data
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Architecting a Decision Support System for Continuing Supervision of Commercial In-Space Servicing
Jacqueline Smith, Massachusetts Institute of Technology

Satellite Pattern-of-Life Identification Challenge: Competition Design and Results
Haley Solera, Massachusetts Institute of Technology******

Autonomous, Hybrid Space System Fault and Anomaly Detection, Diagnosis, Root Cause Determination, and Recovery
Richard Stottler, Stottler Henke Associates, Inc.******

Dragster 2.0: An Operations-Ready Framework for Neutral Density Assimilation
Rachel Stutz, Orion Space Solutions******

Attitude Determination Model Input Parameters Constraints for the Restitution of Tumbling Motion of Defunct Satellites from Photometric Data
Henri Tarrieu, Aldoria

Estimating Physical Properties of 3U CubeSat's Rotation Based on Photometric Observations and Solar Illumination Modeling
Takuro Tsuchikawa, Mitsubishi Electric Corporation

Feasibility Study of Spaceborne Pulsed Laser System Removing Small Debris Objects in Near-Earth Orbits
Shigeaki Uchida, Henan University of Science and Technology******

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Denis Vida, University of Western Ontario

Analysis of Receiver Position and Velocity Uncertainty on Passive RF Cislunar SSA Architectures
Kullen Waggoner, U.S. Space Force

Low Signal to Noise State Space Modeling Using Simulation Based Inference
Ingo Waldmann, Spaceflux

ML-Based Photometric Fingerprinting and Event Detection at Scale for LEO Satellite Monitoring
Brian Williams, Slingshot Aerospace**

MOCAT on Temporal Analysis and Quantification for Policies in Space Sustainability
Di Wu, Massachusetts Institute of Technology**

Operational Responses to LEO Satellite Orbital Decay during the 25th Solar Cycle Maximum
Chen Yap, Planet Labs PBC

Space Weather Effect via Periodic Photometric Observations of Geostationary Satellites
Matej Zigo, Comenius University - Bratislava, Slovakia