Maui Economic Development Board, Inc. Presents

20 YEARS

AMOS

Advanced Maui Optical and Space Surveillance Technologies Conference

SEPTEMBER 17-20, 2019

Wailea Beach Resort, Maui, Hawai'i

emer-gen™

ENHANCING YOUR CAREER IN SPACE

The second annual EMER-GEN™ is a joint initiative of the AMOS Conference and SPACE GENERATION ADVISORY COUNCIL . The program is designed especially for young professionals and students (35 and under) enthusiastic about careers in space. Separate registration fee required.

SUN, SEP 15 | 6:00 PM - 7:30 PM, Dive Pool
Aloha Reception

MON, SEP 16 | 7:30 AM - 4:45 PM, Lokelani I Ballroom
Communication in Multicultural, Generationally Diverse, and Team Settings
Components of Effective Leadership
Mentor Session
Consensus Building Across Multiple Perspectives

6:00 PM - 7:30 PM, Maluhia Point
Pau Hana Reception

TUE, SEP 17 | 7:00 AM - 5:15 PM, Lokelani I Ballroom
Critical Thinking Concepts & Tools
AGI/STK Short Course & Challenge
Culminating Session

SPONSORED BY

BOEING · UNIVERSITY of HAWAI'I SYSTEM · AGI · LOCKHEED MARTIN · SECURE WORLD FOUNDATION · USRA

FEATURED EXHIBITORS

Advanced Scientific Concepts
Aerospace in Hawaii
Air Force Research Laboratory
Analytical Graphics Inc.
a.i. solutions
ALPAO
Applied Optimization
Applied Research Associates
ASA Astrosysteme
AstroHaven Enterprises
CACI
Charles River Analytics
EOS Space Systems
ExoAnalytic Solutions
Finger Lakes Instrumentation
Kratos RT Logic
L3 Harris
LeoLabs
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PO'OKELA | striving for the best

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Orchestrating a brighter world
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LOKAHI | collaboration and unity

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Peraton | SOLERS

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SECURE WORLD FOUNDATION

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UNIVERSITY of HAWAI'I SYSTEM

KUPA'A | loyal and committed

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EOS SPACE SYSTEMS

IDEX HEALTH & SCIENCE | FLI Finger Lakes Instrumentation

JSF Japan Space Forum

leidos

LEO LABS

ORBIT LOGIC

ps A Centauri Company

SERC

Tyvak A Terran Orbital Corporation

USRA

SEP 17 Tuesday | Po'alua

TECHNICAL SHORT COURSES (Separate registration fee required)

8:00 AM - 12:00 PM

Ilima Room

SC 1: Conjunction Assessment Risk
Presented by **Francois Laporte**, CNES; **Matt Hejduk**, Astrorum Consulting LLC; and **Lauri Newman**, Goddard Space Flight Center - NASA

Vanda Room

SC 2: Space Debris Risk Assessment and Mitigation Analysis – Verification of Compliance with Requirements on Space Debris Mitigation using ESA's Upgraded DRAMA and MASTER Software
Presented by **Tim Flohrer**, ESA/ESOC Space Debris Office; and **Srinivas Setty**, ESA/ESOC, GMV Insyen AG

Mauna Loa Room

SC 3: Demystifying Machine Learning and Deep Learning Neural Networks
Presented by **Joseph Coughlin**, L3Harris; **Rohit Mital**, KBR Inc.; and **Weston Faber**, L3Harris

Lokelani III Ballroom

SC 4: Theory and Application of Multi-Objective Optimization Using Genetic Algorithm
Presented by **Triet Tran**, Cornerstone Consulting LLC

Lokelani II Ballroom

SC 5: SSA Optical Systems Modeling and Simulation
Presented by **Patrick North** and **Rebecca Johnson**, AGI

1:00 PM - 5:00 PM

~~**Ilima Room**~~

~~**SC 6: Statistical Orbit Determination for Space Surveillance and Tracking**~~
~~Presented by **Moriba Jah**, The University of Texas at Austin~~ CXLD

Lokelani III Ballroom

SC 7 Observing and Characterizing Space Debris
Presented by **Thomas Schildknecht**, Astronomisches Institut Universität Bern Switzerland

Mauna Loa Room

SC 8: Deep Learning for Space Situational Awareness
Presented by **Richard Linares**, Massachusetts Institute of Technology; and **Roberto Furfaro**, University of Arizona

Lokelani II Ballroom

SC 9: Telescopes and Optics for Ground-Based Optical SSA
Presented by **Mark Ackermann**, Sandia National Labs; **Peter Zimmer**, JTMA

Vanda Room

SC 10: How to Get the Most out of Space-Track.org Website and its API
Presented by **Robert Wooldridge**, SAIC

6:00 PM - 7:30 PM | Luau Gardens

WELCOME RECEPTION

Co-sponsored by

BOEING

The conference kicks off with a welcome reception providing participants with a unique networking opportunity. Surrounded by tropical breezes participants and their guests will be greeted with a shell lei, a beverage and appetizers, all while listening to music by the U.S. Air Force Band of the Pacific. Conference badge required at entry.

SEP 18 Wednesday | Po'akolu

6:00 AM - 7:15 AM | Luau Gardens
BREAKFAST AT LEISURE

7:30 AM | Aulani Ballroom
CONFERENCE OPENING
Leslie Wilkins, President & CEO, Maui Economic Development Board, Inc.
Reverend Kealahou Alika, Keawala'i Congregational Church

WELCOME & INTRODUCTIONS
Gen. William L. Shelton, USAF (Ret.) Chairman, Space Foundation; and Former Commander, Air Force Space Command

7:50 AM
OPENING KEYNOTE ADDRESS
Major General John E. Shaw, Deputy Commander, Air Force Space Command, U.S. Air Force
Brigadier General Thomas James, Commander, U.S. Space Command's Joint Task Force Space Defense

8:10 AM
KEYNOTE ADDRESS
Hirohisa Mori, Director, National Space Policy Secretariat, Cabinet Office, Japan

8:30 AM
SSA POLICY FORUM
The Future of Launch and On-Orbit Safety
Moderated by **Andrew D'Uva**, President, Providence Access Company

Steph Earle, Aerospace Engineer, Federal Aviation Administration

Walter Everetts, Vice President, Satellite Operations and Ground Development, Iridium

T.S. Kelso, SDC Operations Manager, Center for Space Standards & Innovation; Senior Research Astrodynamicist, Analytical Graphics, Inc.

Wasanchai Vongsantivanich, Project Manager, Geo-Informatics and Space Technology Development Agency

Q&A Sponsored by KRATOS

9:30 AM | Exhibit Venue
COFFEE BREAK & EXHIBITS
(Exhibit Hours 9:30 AM - 6:30 PM)
Coffee Break Sponsored by numerica CORPORATION

10:00 AM | Aulani Ballroom
FEATURED PRESENTATION | The Space S&T Challenges in Support of Near-peer Conflict
Col Eric Felt, Director, AFRL/RV; and
Col Tim Sejba, Director, SMC/AD

10:20 AM
SPACE SITUATIONAL AWARENESS
Co-Chaired by **Scott Pierce**, AFRL/RDSMR; and **Sergio Restaino**, Naval Research Lab

Comparison of Multi-Objective Optimization Algorithms for GEO Space Surveillance Network Architecture Design | **Troy Dontigney**, Air Force Institute of Tech.

KARI Recent Activities on SSA & STM | **Jaedong Seong**, KARI

Automatic, Intelligent SSN Sensor Scheduling using Artificial Intelligence Techniques | **Richard Stottle**r, Stottler Henke Associates, Inc.

Policy and Geopolitical Implications of Launch-on-Demand Capabilities | **Liberty Shockley**, U.S. Air Force

Optical, Laser and Processing Capabilities of the New Polish Space Situational Awareness Centre | **Maciej Konacki**, Polish Space Agency

12:00 PM | Lokelani Ballroom
LUNCH

1:00 PM | Aulani Ballroom
SPACE SITUATIONAL AWARENESS (cont.)

Detection, Tracking, and Characterization of Small, Faint Targets at GEO Distances using the Magdalena Ridge Observatory 2.4-meter Telescope | **William Ryan**, New Mexico Tech/MRO

Introducing the Space Law Games - Predicting Legal Liability and Fault in Satellite Operations | **Ralph Dinsley**, Northern Space and Security Ltd/Reflecting Space

1:40 PM

NON-RESOLVED OBJECT CHARACTERIZATION

Co-Chaired by **Heather Cowardin**, JACOBS; and **John Lambert**, Cornerstone Defense

Space Object Attitude Stability Determined from Radar Cross-Section Statistics | **Matthew Stevenson**, LeoLabs

Attitude Estimation of Space Objects Using Imaging Observations and Deep Learning | **Ryohei Arakawa**, Kyushu University

Autonomous Space-based Shape Estimation using Range Sensors | **Emily Lambert**, L3 Harris

2:40 PM | Exhibit Venue

EXHIBITS & REFRESHMENT BREAK

3:00 PM

NON-RESOLVED OBJECT CHARACTERIZATION (cont.)

Satellite Shape Recovery from Light Curves with Noise | **Carolin Frueh**, Purdue University

Evaluating Catalog Photometric Uncertainties of Satellites using Bayer Arrays | **T.J. Rodigas**, L3Harris

3:40 PM

MACHINE LEARNING FOR SSA APPLICATIONS

Co-Chaired by **Islam Hussein**, L3 Harris; and **Michael Werth**, The Boeing Company

Feature-Based Satellite Detection using Convolutional Neural Networks | **Justin Fletcher**, SMC/DirSP-G

4:00 PM

Shape Identification of Space Objects via Light Curve Inversion using Deep Learning Models | **Roberto Furfaro**, University of Arizona

Automated Resolution Scoring of Ground-Based LEO Observations Using Convolutional Neural Networks | **Jacob Lucas**, The Boeing Company

Use of AI for Satellite Model Determination from low resolution 2D images | **Leon Muratov**, Spectral Sciences Inc.

5:00 PM - 6:30 PM | Exhibit Venue

POSTERS & EXHIBIT SESSION

Co-sponsored by SAIC

20 YEARS

AMOS

Advanced Maui Optical and Space Surveillance Technologies Conference

Anniversary Celebration Dinner

6:30 PM - 9:00 PM | Pacific Terrace Rooftop

***Purchase your dinner ticket at the Hospitality Desk.

CONNECT

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Access the program schedule; Read abstracts and speaker bios; and more!
(Non-iPhone and Android users, visit http://bit.ly/AMOSpro19)

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SEP 19 Thursday | Po'aha

6:00 AM - 7:15 AM | Luau Gardens
BREAKFAST AT LEISURE

7:30 AM | Aulani Ballroom
KEYNOTE ADDRESS
Francesca Letizia, Space Debris Engineer, Space Debris Office, European Space Agency

8:00 AM
SSA POLICY FORUM | Oversight of Satellite Constellations: Licensing and Norms
Moderated by **Brian Weeden**, Director of Program Planning, Secure World Foundation

Agnieszka Lukasczyk, Senior Director for European Affairs, Planet

David Goldstein, Director of Special Programs, SpaceX

Michael Nicolls, Founder and Chief Technology Officer, LeoLabs, Inc.

Diane Howard, Chief Counsel for Space Commerce, U.S. Department of Commerce

Chris Kunstadter, Global Head of Space, AXA XL

Q&A Sponsored by KRATOS

9:00 AM | Exhibit Venue
COFFEE BREAK & EXHIBITS
(Exhibit Hours 9:00 AM - 6:00 PM)

9:20 AM | Aulani Ballroom
FEATURED PRESENTATION | EMER-GEN™ Program Briefing

9:30 AM
SPACE-BASED ASSETS
Co-Chair by **Thomas Kelecy**, L3Harris; and **Andrew Nicholas**, Naval Research Laboratory

Cooperative Multi-spacecraft Observation of Incoming Space Threats | **Jekan Thangavelautham**, University of Arizona/ SpaceTREx

9:50 AM
The ELSA-d End-of-life Debris Removal Mission: Mission Design, In-flight Safety, and Preparations for Launch | **Ron Lopez**, Astroscale U.S.

Geosynchronous Orbit CubeSat Operating Guidelines to Help the Space Situational Awareness Community | **Christopher Tamanini**, Lockheed Martin

Orbit Design of an Autonomous Space-based SSA Swarm: Distributed Deep Learning at the Edge | **Lorraine Weis**, L3Harris Technologies

Future On-Orbit Spacecraft Technologies and Associated Challenges for Space Situational Awareness | **Simon George**, DSTL

Star Tracker Accuracy Improvement and Optimization for Attitude Measurement in Three-Axis | **Michael Lichter**, Air Force Institute of Technology

11:30 AM | Lokelani Ballroom
LUNCH

12:30 PM | Aulani Ballroom
ADAPTIVE OPTICS & IMAGING
Co-chaired by **Mark Ackermann**, Sandia National Labs; and **Sue Lederer**, NASA Johnson Space Center

Demonstration of Shift, Scale, and Rotation Invariant Target Recognition Using Polar Mellin Transforms in a Hybrid Opto-Electronic Correlator | **Selim Shahriar**, Northwestern University

High Resolution and High Contrast Imaging of Faint Objects Near Satellites | **Douglas Hope**, George State University

Satellite and Debris Characterisation with Adaptive Optics Imaging | **Michael Copeland**, Australian National University

Multi-Frame Blind Deconvolution Accelerated with Graphical Processing Units (GPUs) | **Michael Werth**, The Boeing Company

1:50 PM
OPTICAL SYSTEMS & INSTRUMENTATION
Co-chaired by **Greg Cohen**, Western Sydney University; and **Carolin Frueh**, Purdue University

Sensor Network for Global Monitoring of Spacecraft Situational Awareness | **Mark Werremeyer**, Raytheon

Daylight Imaging of LEO Satellites Using COTS Hardware | **Nathan Estell**, University of Michigan

2:30 PM | Exhibit Venue
EXHIBITS & REFRESHMENT BREAK

2:50 PM
OPTICAL SYSTEMS & INSTRUMENTATION (cont.)

Spectral Performance Optimization of Small Telescopes for Space Object Detection | **Gregory Badura**, Georgia Tech Research Institute

Ground-based Daytime Modeling and Observations in SWIR for Satellite Custody | **Grant Thomas**, Air Force Institute of Technology

3:30 PM
Atmospheric Characterization of the Space Environment: Unique Observations from Haleakala | **Randall Alliss**, Northrop Grumman

Interaction of VLF and ELF Waves and Impact on Energetic Electrons in a Radiation Belt | **Vladimir Sotnikov**, Air Force Research Laboratory

Optical Sensor Model and its Effects on the Design of Sensor Networks and Tracking | **Kyle DeMars**, Texas A&M

4:30 PM | Exhibit Venue
POSTERS & EXHIBIT SESSION
Co-sponsored by SpaceNav

8:00 PM - 10:00 PM | Pacific Terrace Rooftop
CELESTIAL VIEWING SOCIAL
Sponsored by AGI

Look up at the night sky with the Haleakalā Amateur Astronomers, a local astronomy outreach group. With their telescopes on hand, they'll point out stars, planets, deep-space objects, and satellites. Download SatelliteAR or visit Celestrak.com for real-time visualization of satellites above your head at this very moment.

SEP 20 Friday | Po'alima

6:00 AM - 7:15 AM | Luau Gardens
BREAKFAST AT LEISURE

7:30 AM | Aulani Ballroom
KEYNOTE ADDRESS
Kevin O'Connell, Director of the Office of Space Commerce, U.S. Department of Commerce

8:00 AM
SSA POLICY FORUM | SSA Data Sharing and Open Data Repositories
Moderated by **Victoria Samson**, Washington Office Director, Secure World Foundation

Pascal Faucher, Chairman, European Space Surveillance and Tracking; Defense and Security, CNES

Diana McKissock, SSA Sharing Lead, US Air Force

SSA POLICY FORUM (cont.)
Mark Mulholland, U.S. Department of Commerce

Rogel Mari Sese, Program Leader, Philippines National Space Development Program; President | Regulus SpaceTech

Q&A Sponsored by KRATOS

9:00 AM | Exhibit Venue
COFFEE BREAK & EXHIBITS
(Exhibit Hours 9:00 AM - 2:00 PM)

9:15 AM - 12:30 PM | Mauna Loa & Exhibit Venue
SPACE EXPLORATION STUDENT SESSION

The AMOS Conference welcomes 150 Maui County middle school students and STEM educators to meet astronaut Dr. Janet Kavandi and visit exhibit booths for hands-on STEM activities.

9:20 AM | Aulani Ballroom
ASTRODYNAMICS
Co-chaired by **Keric Hill,** Senior Scientist Pacific Defense Solutions, A Centauri Company; and **Laura Pirovano**, University of Surrey

Object Detection Methods for Optical Survey Measurements | **Alejandro Pastor**, GMV

On-Orbit Observations of Conjuncting Space Objects Prior to the Time of Closest Approach | **Lauchie Scott**, Defence R&D Canada

Physics-based Approach to Density Estimation and Prediction using Orbital Debris Tracking Data | **Shaylah Mutschler**, University of Colorado Boulder

An Australian Conjunction Assessment Service | **James Bennett**, EOS Space Systems

Statistical Covariance Realism Assessment of LeoLabs' Orbit Determination System | **Inkwan Park**, LeoLabs, Inc.

Space Object Tracking using a Jump Markov System based Delta-GLMB filter for Space Situational Awareness | **Martin Adams**, Universidad de Chile

11:20 AM | Lokelani Ballroom
LUNCH

12:20 PM | Aulani Ballroom
ASTRODYNAMICS (cont.)

Dynamic Calibration of Multiple Data Types | **Thomas Kelecy**, L3Harris Technologies

Aliasing of Unmodeled Gravity Effects in Estimates of Non-gravitational Coefficients | **Vishal Ray**, CU Boulder

Multi-Fidelity Orbit Uncertainty Propagation with Systematic Errors | **Enrico Zucchelli**, University of Texas at Austin

Data Association for Too-short Arc Scenarios with Initial and Boundary Value Formulations | **Laura Pirovano**, University of Surrey

1:40 PM | Exhibit Venue
EXHIBITS & REFRESHMENT BREAK

2:00 PM | Aulani Ballroom
FEATURED PRESENTATION | Space Enterprise Acquisition
Col Russell Teehan, Portfolio Architect, Air Force Space and Missiles System Center

2:20 PM
ORBITAL DEBRIS
Co-chaired by **Darren McKnight**, Centauri; and **Thomas Schildknecht**, University of Bern

Optical Measurements of Faint LEO RSOs: CubeSats and Fengyun 1C Debris | **Peter Zimmer**, JTMA

BVRI Photometry to Space Debris Objects at the Astronomical and Geophysical Observatory in Modra | **Jiri Silhai**, Comenius University

ESA Optical Surveys to Characterize Recent Fragmentation Events in GEO and HEO | **Thomas Schildknecht**, Astronomisches Institut Universität Bern

Space Environment Management – A Common Sense Framework for Controlling Orbital Debris Risk | **Darren McKnight**, Centauri

3:40 PM - 4:00 PM
CLOSING & AWARDS CEREMONY
In collaboration with the Space Surveillance Technical Committee of the American Astronautical Society (AAS), the Conference recognizes outstanding efforts in the field of Space Situational Awareness by presenting the second annual AMOS Conference Best Paper, Presentations, and Student Awards.

Completed feedback forms will also be collected at this time for the iPad Mini 4 drawing. Must be present to win.

4:00 PM - 5:00 PM | Mei Court
PAU HANA RECEPTION
Co-sponsored by L3HARRIS

SAVE THE DATE
SEP 15-18, 2020

POSTER PRESENTERS

Sodium Guidestar Signal Levels Measured at AMOS | **Michael Abercrombie**, The Boeing Company

Multi-Frame Blind Deconvolution of Closely Spaced Dim Stellar Objects | **Ronald Aung**, USAF

Optical Imaging of Faint Geosynchronous Debris with the Isaac Newton Telescope | **James Blake**, University of Warwick *(2019 Student Award Winner)*

Characterizing LEO Objects using Simultaneous Multi-Color Optical Array | **Tanner Campbell**, University of Arizona

Precision Optical Light Curves of LEO and GEO Objects | **Paul Chote**, University of Warwick

Experimentally Derived Bidirectional Reflectance Distribution Function Data in Support of the Orbital Debris Program Office | **Heather Cowardin**, JACOBS

Machine Learning for RSO Maneuver Classification and Orbital Pattern Prediction | **Michael Czajkowski**, Lockheed Martin Advanced Technology Laboratories

Machine Classification and Sub-classification Pipeline for GEO Light Curves | **Phan Dao**, AFRL

ARGUS: A UK Citizen Science Study in Support of the Surveillance of Space | **Joshua Davis**, Defence Science and Technology Laboratory

Correlation-based Shack-Hartmann Wavefront Sensing with Extended Source Beacon | **Takao Endo**, Mitsubishi Electric Corporation

CREAM - ESA's Proposal for Collision Risk Estimation and Automated Mitigation | **Tim Flohrer**, ESA/ESOC Space Debris Office

Survey Design for Small Autonomous Ground-Based Telescopes To Detect Uncontrolled/Debris GEO Objects | **David Geller**, Utah State University

Image Restoration in Daylight using Closed Loop Sodium Guide Star | **Michael Hart**, Hart Scientific Consulting LLC

Search-Based Vs. Task-Based Space Surveillance for Ground-Based Telescopes | **Fred Hertwig**, U.S. Air Force

Determining Multi-Frame Blind Deconvolutions Resolvability using Deep Learning | **Trent Kyono**, The Boeing Company

NASA's Orbital Debris Optical Program: MCAT Updated and Upgraded | **Sue Lederer**, NASA Johnson Space Center Orbital Debris Program Office

A Virtual Assistant for Space Situational Awareness | **Jeremy Ludwig**, Stottler Henke Associates, Inc.

~~Autonomous Satellite Fingerprinting using Machine Learning | **Simon Melia**, Roke Manor Research Ltd~~ CXLD

An Open Source Long Term Archiving and Trending Solution for SSA | **Ryan Melton**, Ball Aerospace

Commercial SSA Capability in Japan | **Daiki Mori**, NEC Corporation

Examining the Effects of On-Orbit Aging of SL-12 Rocket Bodies using Visible Band Spectra with the MMT Telescope and 5-Color Photometry with the UKIRT/WFCAM | **Eric Pearce**, University of Arizona Steward Observatory

Satellite Tracking and Characterization Using Signal Data | **Tatum Poole**, Lockheed Martin

Observations and Design of a New Neuromorphic Event-based All-Sky Camera and Fixed Region Imaging System | **Nicholas Ralph**, Western Sydney University

Blockchain Enabled Space Traffic Awareness (BESTA) | **Harvey Reed**, The MITRE Corporation

Poster Sessions | Wed, 5:00 PM - 6:30 PM and Thu, 4:30 PM - 6:00 PM

Assessing and Minimizing Collisions in Satellite Mega-Constellations | **Nathan Reiland**, The University of Arizona

Network Performance Analysis of Laser-optical Tracking for Space Situational Awareness in the Lower Earth Orbit | **Wolfgang Riede**, DLR

Panoptes-1AB and Solaris-5 Unique Wide Field Telescopes with sCmos Cameras | **Beata Rogowska**, Nicolaus Copernicus Astronomical Center

Modeling Energy Dissipation and Deformation in a Tumbling Defunct Satellite Using a Finite Element Method | **Ryotaro Sakamoto**, University of Colorado Boulder

Application Development with High Definition SSA Information | **Takao Sato**, NEC Aerospace Systems, Ltd.

Phasing an Optical Interferometer using the Radio Emission from the Target | **Henrique Schmitt**, Naval Research Laboratory

Daytime GEO Tracking with Aquila: Approach and Results from a New Ground-Based SWIR Small Telescope System | **Jeffrey Shaddix**, Numerica Corporation

Design & Development of an Optimized Sensor Scheduling & Tasking Programme for Tracking Space Objects | **David Shteinman**, Industrial Sciences Group

Large Format Cross Strip Readout Image Sensors for High Temporal Resolution Astronomy and Remote Sensing | **Oswald Siegmund**, University of California

Development of the Slovak 70-cm Optical Passive System Dedicated to Space Debris Tracking on LEO to GEO Orbits | **Jiri Silha**, Comenius University

Remote Manoeuvre of Space Debris using Photon Pressure for Active Collision Avoidance | **Craig Smith**, EOS Space Systems

Dragster: An Assimilative Tool for Satellite Drag Specification | **Eric Sutton**, University of Colorado / SWx TREC

Conditionally Augmented Temporal Anomaly Reasoner And Convolutional Tracking System | **Dwight Temple**, ExoAnalytic Solutions

Building Small-Satellites to Live Through the Kessler Effect | **Jekan Thangavelautham**, University of Arizona, SpaceTREx

Fast Covariance Propagation for Two-Line Element Sets | **Blair Thompson**, 319 Combat Training Squadron

A Testbed to Evaluate New Approaches for STM | **Kevin Toner**, MITRE FFRDC

Streak Detection in Wide Field of View Images using Convolutional Neural Networks (CNNs) | **Luis Varela**, New Mexico State University

Ultrafast Wide Field Telescope for Space Debris Detection and Tracking | **Dietmar Weinzinger**, ASA Astrosysteme GmbH

Test Phase of OWL-Net : Global Network of Robotic Telescopes (2017-2018) | **Hong-Suh Yim**, Korea Astronomy and Space Science Institute

A Robust Vision-based Algorithm for Detecting and Classifying Small Orbital Debris Using On-board Optical Cameras | **Yasin Zamani**, University of Utah

POSTER DISPLAYS

Sponsored by

BOEING

CELEBRATING 20 YEARS AMOS

1999
Inaugral AMOS Conference
Hosted by AFRL and executed by MEDB

2005

Haleakala: A Sense of Place
An educational program and film produced by MEDB for Air Force and University of Hawaii employees and contractors who work at the summit

2006
MEDB Assumes Ownership
Sponsorships are introduced to further secure AMOS as the premiere SSA technical conference in the nation

2007
First AMOS Exhibition

2010
Space Exploration Day
Over 300 Maui STEM students and educators interact with AMOS exhibitors and presenters

2012
SSA Policy Forum Introduced
International issues are explored to foster the link between policy and technical development

2014
Technical Short Courses Debut

2016
First International Reception
Welcomes 18 countries to AMOS

2017
Journal Publication
In collaboration with AAS, select AMOS authors were peer-reviewed for inclusion in the Journal of Astronautical Sciences' AMOS Special Topic Issue

2018
EMER-GEN™ Launches
The young space professionals program welcomes 36 participants to the inaugral cohort

2018
Technical Paper Awards
The AMOS Conference Best Paper and Student Awards are introduced in partnership with AAS to recognize outstanding technical advancements

2019
Mahalo for 20 Years!
We look forward to 20 more years of sharing AMOS achievements and aloha with you

A PROGRAM OF
the maui economic DEVELOPMENT BOARD