2016 Program

Maui Economic Development Board, Inc. Presents

17th

AMOS

Advanced Maui Optical and Space Surveillance Technologies Conference

September 20-23 | Maui, Hawai'i

Welina Mai Kakou | Welcome

Aloha!

On behalf of the people of Maui, we are pleased that you are participating in the **17th AMOS Conference**. Although we will be sitting in a darkened ballroom, intently listening to technical briefings throughout the week, we are, indeed, in a culturally rich and beautiful setting...

It is our pleasure to share with you a few of the things that make Maui unique. We have sprinkled elements throughout the week to remind us of our Hawaiian "Sense of Place."

Among them are the leis worn at the welcome reception, our traditional Native Hawaiian invocation opening the conference, and a private luau buffet and show on Wailea Beach.

If there is anything our Conference Team can do to make your week more productive and enjoyable, please let us know.

Warmest Aloha,
The AMOS Conference

Mahalo to our Sponsors

Po'okela | striving for the best

BOEING

Laulima | working together

agi "Official SW Provider"

LOCKHEED MARTIN

SAIC

Lokahi | collaboration and unity

County of Maui State of Hawaii

HARRIS

Secure World Foundation

University of Hawai'i System

Kupa'a | loyal and committed

Applied Defense Solutions

ASRC Federal

Ball

ExoAnalytic Solutions

Northrop Grumman

Orbital ATK

Raytheon

Space Foundation

SpaceNews

Malama | to care for

Applied Optimization

Braxton

Celestron

EIE Group

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HNU Photonics

JSF Japan Space Forum

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Materion | www.materion.com
Northrop Grumman | www.northropgrumman.com
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SAIC | www.saic.com
Software Bisque | www.bisque.com
Tyvak | www.tyvak.com
University of Hawai'i | www.hawaii.edu/research/

SEP 20 Tuesday | Po'alua

Exhibitor Load-in

8:00 am - 5:00 pm | Aulani Ballroom

Technical Short Course 1
(separate registration fee required)

8:00 am - 12:00 pm | Mauna Loa Room

Collision Avoidance Risk Management
Presented by Francois Laporte and Monique Moury, CNES; Matt Hejduk and Lauri Newman, NASA/GSFC

This course is now closed.

Technical Short Course 2
(separate registration fee required)

8:00 am - 12:00 pm | Ilima Room

ARCADE Programming 101
Presented by Chris Sabol, Air Force Research Laboratory; Simon Nunn, ISS Inc.; Jeremy Murray-Krezan, Air Force Research Laboratory

Technical Short Course 3
(separate registration fee required)

1:00 pm - 5:00 pm | Mauna Loa Room

Observing and Characterizing Space Debris
Presented by Thomas Schildknecht, Professor, Astronomical Institute of the University of Bern and Director, Swiss Optical Ground Station and Geodynamics Observatory Zimmerwald

This course is now closed.

Technical Short Course 4
(separate registration fee required)

1:00 pm - 5:00 pm | Ilima Room

Theory and Application of Multi-Objective Optimization Using Genetic Algorithms
Presented by Triet Tran, Cornerstone Consulting and Services LLC

Welcome Reception
Co-sponsored by BOEING

6:00 pm - 7:30 pm | Kaho'olawe Lawn

PATHWAYS TO OUR FUTURE
A BENEFIT FOR THE MEDB KE ALAHELE EDUCATION FUND

With Aloha,

BOEING

is donating to the
MEDB Ke Alahele Education Fund
in lieu of a floral lei at the
Welcome Reception.

For more information visit www.medb.org.

SEP 20 Tuesday | Po'alua

SEP 21

Breakfast at Leisure
6:00 am - 7:15 am | Mei Court

Conference Opening
7:30 am - 9:15 am | Aulani Ballroom

Jeanne Unemori Skog
President & CEO, Maui Economic Development Board, Inc.

Invocation by Reverend Kealahou Alika, Keawala'i Congregational Church

7:45 am - 8:45 am

Opening Keynotes
Introduction by L. Kirk Lewis, Institute for Defense Analyses

Major General David D. Thompson
Vice Commander, Air Force Space Command

Douglas L. Loverro
Deputy Assistant Secretary of Defense for Space Policy, U.S. Department of Defense

8:45 am - 9:15 am

Discussion and Q&A with Major General Thompson and Mr. Loverro
Facilitated by Mike Gruss, SpaceNews

SPACENEWS

Wednesday | Po'akolu

SSA Policy Forum
Toward Space Traffic Management

9:15 am - 10:15 am | Aulani Ballroom

Stephen Earle, Space Traffic Lead & Air Force Interfaces Lead, FAA/AST

Doug Hendrix, CEO, ExoAnalytic Solutions

Josef Koller, Space Policy Advisor, OSD-P

Myland Pride, Director of Government Affairs, IntelSat

Brian Weeden, Technical Advisor, Secure World Foundation *(Moderator)*

Exhibits Open

10:15 am | Aulani Ballroom

Coffee Break
10:15 am - 10:45 am | Exhibit Room

Adaptive Optics & Imaging Session | 15-min presentations

Co-chaired by Lt Col Michael Martinez, Air Force Office of Scientific Research and Charles Matson, Air Force Office of Scientific Research

10:45 am - 11:45 am | Aulani Ballroom

All-Sky Image Fusion for a Synoptic Survey Telescope in Arctic and Antarctic Domains, *Mariusz Grotte, Georgia Institute of Technology*

Daylight Operation of a Sodium Laser Guide Star for Adaptive Optics Wave-Front Sensing, *Stuart Jefferies, Georgia State University*

A Comprehensive Approach to High-Resolution Daylight Imaging for SSA, *Michael Hart, University of Arizona*

Developing Geostationary Satellite Imaging at Lowell Observatory, *Gerard van Belle, Lowell Observatory*

Adaptive Optics & Imaging Session | 15-min presentations (continued)

11:45 am - 12:15 pm

High Time Resolution Photon Counting 3D Imaging Sensors, *Oswald Siegmund, University of California*

SPIDER: Next Generation Chip Scale Imaging Sensor Update, *Alan Duncan, Lockheed Martin Advanced Technology Center*

Lunch

12:15 pm - 1:15 pm | Mei Court

Space Situational Awareness Session | 20-min presentations

Co-chaired by Thomas Cooley, Air Force Research Laboratory and Stacie Williams, Air Force Office of Scientific Research

1:15 pm - 2:55 pm | Aulani Ballroom

Operational Implementation of a Pc Uncertainty Construct for Conjunction Assessment Risk Analysis, *Lauri Newman, NASA*

Assessing the UN IADC Space Debris Mitigation Guidelines: A Case for Ontology-Based Data Management, *Ramona Walls, CyVerse, University of Arizona*

JSpOC SSA: A Year in Review, *Scott Putnam, U.S. Air Force, 18th Space Control Squadron*

Coordination of Ground- and Space-Based Optical Systems: Lessons from the SKYNET Observation and Relocation Experiment, *Andrew Ash, Defence Science and Technology Laboratory*
(UNITED KINGDOM)

A Novel Method for Satellite Maneuver Prediction, *Charlotte Shabarekh, Aptima, Inc.*

Coffee Break

2:55 pm - 3:15 pm | Exhibit Room

Orbital Debris Session | 15-min presentations

Co-chaired by Tim Flohrer, ESA/ESOC Space Debris Office and Thomas Schildknecht, Astronomical Institute University of Bern

3:15 pm - 5:15 pm | Aulani Ballroom

NASA's Orbital Debris Optical and IR Ground-Based Observing Program Utilizing the MCAT, UKIRT, and Magellan Telescopes, *Susan Lederer, NASA Johnson Space Center*

The Population of Optically Faint GEO Debris, *Patrick Seitzer, University of Michigan Astronomy*

Optical Observations of Briz-M Fragments in GEO, *Thomas Schildknecht, Astronomical Institute University of Bern*
(SWITZERLAND)

Application of Satellite Laser Ranging Techniques for Space Situational Awareness Efforts, *Mark Shappirio, NASA/GSFC*

Optical Techniques for Space Environment Management, *Ben Greene, Space Environment Research Centre*
(AUSTRALIA)

Laser Remote Maneuver of Space Debris at the Space Environment Research Centre, *Matthew Bold, Lockheed Martin Space Systems*

Tracking Low Earth Orbit Small Debris with GPS Satellites as Bistatic Radar, *Craig Benson, UNSW Canberra*
(AUSTRALIA)

Sub-Millimeter Size Debris Monitoring System with IDEA OSG 1, *Masahiko Uetsuhara, Astroscale*
(SINGAPORE)

Exhibit and Poster Session

5:15 pm - 6:30 pm | Exhibit Room

Reception Sponsored by

SAIC

SEP 22 Thursday | Po'aha

Breakfast at Leisure
6:00 am - 7:15 am | Mei Court

Keynotes
7:30 am - 8:30 am | Aulani Ballroom

Frank Rose
Assistant Secretary of State for Arms Control, Verification, and Compliance, U.S. Department of State

Atsushi Saito
Director of Space Policy Division, Ministry of Foreign Affairs, Japan

SSA Policy Forum
International SSA Operator Exchange

8:30 am - 9:30 am

Lt Col Rafal Borek, Chief of Section, Defence Projects, Polish Space Agency

Lt Col Steffen Neumann, Deputy Director Operations, German Space Situational Awareness Center

Wg Cdr Rayna Owens, Commander, Royal Air Force Fylingdales

Lt Col Scott Putnam, U.S. Air Force, Commander, 18th Space Control Squadron

Mike Wasson, Senior Director Operations, Analytical Graphics Inc. *(Moderator)*

Exhibits Open
9:30 am | Aulani Ballroom

Coffee Break
9:30 am - 10:00 am | Exhibit Room

Instrumentation and Optical Surveillance Session | 15-min presentations

Co-chaired by Mark Ackermann, Sandia National Laboratories and Susan Lederer, NASA Johnson Space Center

10:00 am - 11:30 am | Aulani Ballroom

Combined Space-Based Observations of Geostationary Satellites, *Lauchie Scott, DRDC Ottawa*
(CANADA)

Mission Design and Simulation Considerations for ADReS-A, *Susanne Peters, Universität der Bundeswehr München*
(GERMANY)

Matched Template Signal Processing for Coherent, Continuous Wave Laser Tracking of Space Debris, *Shasidran Raj, Space Environmental Research Center*
(AUSTRALIA)

GEO Satellite Characterization Through Polarimetry Using Simultaneous Observations from Nearby Optical Sensors, *Manuel Cegarra Polo, UNSW Canberra*
(AUSTRALIA)

Multiple Observing Modes for Wide-Field Optical Surveillance of GEO Space, *John McGraw, J.T. McGraw and Associates, LLC*

Affordable Wide-Field Optical Space Surveillance using sCMOS and GPUs, *Peter Zimmer, J.T. McGraw and Associates, LLC*

Lunch
11:30 am - 12:30 pm | Mei Court

12:30 pm - 1:00 pm | Aulani Ballroom

Automated Astrometric Analysis of Satellite Observations Using Wide-Field Imaging, *Jovan Skuljan, Defence Technology Agency*
(NEW ZEALAND)

Catalogue Creation for SSA with Optical Sensors, *Mark Rutten, Defence Science and Technology Group*
(AUSTRALIA)

Instrumentation and Optical Surveillance Session | 15-min presentations (continued)

1:00 pm - 1:30 pm | Aulani Ballroom

Enabling GEODSS for Space Situational Awareness (SSA), *Sam Wootton, The MITRE Corporation*

Adapting a Planetary Science Observational Facility for Space Situational Awareness, *Phil Bland, Curtin University* (AUSTRALIA)

SSA Algorithms Session | 20-min presentations

Co-chaired by Randall Alliss, Northrop Grumman Corporation and Ryan Coder, Integrity Applications Incorporated-Pacific Defense Solutions (IAI-PDS)

1:30 pm - 2:50 pm | Aulani Ballroom

Uncued Low SNR Detection with Likelihood from Image Multi Bernoulli Filter, *Timothy Murphy, Georgia Tech*

Utilizing Novel Non-Traditional Sensor Tasking Approaches to Enhance the Space Situational Awareness Picture Maintained by the Space Surveillance Network, *Ken Center, Orbit Logic*

OrbitOultook Data Processing Algorithms: Multi-Modal Fusion for Autonomous Verification and Validation of Commercial and Crowdsourced Data, *Jeremy Raley, DARPA*

Evidence-Based Sensor Tasking for Space Domain Awareness, *Andris Jaunzemis, Georgia Institute of Technology*

Coffee Break

2:50 pm - 3:10 pm | Exhibit Room

Space Exploration Student Session
3:10 pm - 4:30 pm | Exhibit Room

Maui middle school students to participate in hands-on STEM activities

SSA Algorithms Session | 20-min presentations (continued)

3:10 pm - 4:50 pm | Aulani Ballroom

A Sensor Tasking Reward Function Incorporating Target Priorities, *Steven Gehly, RMIT University* (AUSTRALIA)

Resident Space Objects Characterization and Behavior Understanding via Machine Learning and Ontology-Based Bayesian Networks, *David Gaylor, University of Arizona*

Dynamic Sensor Tasking for Space Situational Awareness via Reinforcement Learning, *Richard Linares, University of Minnesota*

False-Object Identification for Space Surveillance Catalog Maintenance, *Mark Pittelkau, Solers, Inc.*

High Performance Orbital Propagation Using a Generic Software Architecture, *Marek Moeckel, Space Environment Research Centre* (AUSTRALIA)

Exhibit and Poster Session

4:50 pm - 6:30 pm | Exhibit Room

Reception Co-sponsored by

SpaceNav AMOS

Satellite Watching and Star Party

Sponsored by agi

8:00 pm - 10:00 pm | Pacific Terrace Rooftop

SEP 22 Thursday | Po'aha

SEP 23

Friday | Po'alima

Breakfast at Leisure
6:00 am - 7:15 am | Mei Court

Keynote
7:30 am - 8:00 am | Aulani Ballroom

Introduction by Pat Patterson, Space Dynamics Laboratory

Jordi Puig-Suari, Professor, CubeSat Program, Cal Poly State University; and CEO, Tyvak Nano-Satellite Systems, Inc.

SSA Policy Forum
SSA and Small Satellites

8:00 am - 9:00 am

Tim Flohrer, Space Debris Analyst, ESA/ESOC; and Co-Lead, SST

Bhavya Lal, Research Staff Member, IDA/Science and Technology Policy Institute

Diana McKissock, SSA Sharing Cell Lead, 18th Space Control Squadron

Jordi Puig-Suari, Professor, CubeSat Program, Cal Poly State University; and CEO, Tyvak Nano-Satellite Systems, Inc.

Pat Patterson, Director, Advanced Concepts, Space Dynamics Laboratory *(Moderator)*

Exhibits Open
9:00 am | Aulani Ballroom

Exhibitors in the ballroom may dismantle after 12:30 pm. Outdoor exhibitors must remain through the end of the conference.

Coffee Break
9:00 am - 9:30 am | Exhibit Room

Astrodynamics Session | 20-min presentations

Co-chaired by Moriba Jah, The University of Arizona and Paul Schumacher, Air Force Research Laboratory

9:30 am - 11:30 am | Aulani Ballroom

Ground-Based Tracking of Geosynchronous Space Objects with a GM-CPHD Filter, *Brandon Jones, The University of Texas at Austin*

Schmidt-Kalman Filter with Polynomial Chaos Expansion for Orbit Determination of Space Objects, *Yang Yang, RMIT University* (AUSTRALIA)

Homotopy Particle Filter for Ground-Based Tracking of Satellites at GEO, *Moses Chan, Lockheed Martin*

On the Confidence Region of Least Squares Solutions for Single-Arc Observations, *Gennaro Principe, University of Southampton* (UNITED KINGDOM)

Joint Target Detection and Tracking Filter for Chilbolton Advanced Meteorological Radar Data Processing, *Andrey Pak, University of Chile* (CHILE)

KRATOS: Kollision Risk Assessment Tool in Orbital Element Spaces, *Navraj Singh, Numerica Corporation*

Lunch
11:30 am - 12:30 pm | Mei Court

12:30 pm - 1:10 pm | Aulani Ballroom

Spatial Density Maps from a Debris Cloud, *Liam Healy, Naval Research Laboratory*

When Does the Uncertainty Become Non-Gaussian?, *Kyle Alfriend, Texas A&M University*

Astrodynamics Session | 20-min presentations (continued)

1:10 pm - 2:30 pm | Aulani Ballroom

Unexplained Momentum Impulse Transfer Events (MITEs), *Doug Hendrix, ExoAnalytic Solutions Inc.*

Synthesis of Disparate Optical Imaging Data for Space Domain Awareness, *William Dawson, Lawrence Livermore National Laboratory*

Towards Relaxing the Spherical Solar Radiation Pressure Model for Accurate Orbit Predictions, *Michael Lachut, Space Environment Research Centre Ltd* (AUSTRALIA)

Reconstructing Close Proximity Events in Geosynchronous Orbit Using Sparse, Multi-Aspect Observations, *Patrick Loerch, Orbital ATK*

Coffee Break

2:30 pm - 2:50 pm | Ballroom Foyer

Non-Resolved Object Characterization Session | 15-min presentations

Co-chaired by Michael Duggin, Air Force Research Laboratory and Matthew Hejduk, Astrorum Consulting

2:50 pm - 3:50 | Aulani Ballroom

Standardized Photometric Calibrations for Panchromatic SSA Sensors, *Philip Castro, Applied Optimization Inc.*

Open-Filter Optical SSA Analysis Considerations, *John Lambert, Cornerstone Defense*

A Discrimination Analysis of Sloan and Johnson Photometric Systems for Non-Resolved Object Characterization, *Tamara Payne, Applied Optimization Inc.*

Comparison of ENVISAT's Attitude Simulation and Real Optical and SLR Observations in Order to Refine the Satellite Attitude Model , *Jiri Silha, Astronomical Institute University of Bern* (SWITZERLAND)

Non-Resolved Object Characterization Session | 15-min presentations (continued)

3:50 pm - 4:35 pm | Aulani Ballroom

Non-Imaging Characterization Assessment of Shedding Events from Derelict Satellites in Near Geosynchronous Orbit, *Tom Kelecy, Applied Defense Solutions*

Shape Estimation from Lightcurves including Constraints from Orbit Determination, *Jay McMahon, University of Colorado*

A High Fidelity Approach to Data Simulation for Space Situational Awareness Missions,*Susan Hagerty, Ball Aerospace & Technologies Corp.*

4:35 pm | Conference Adjourns

Closing Luau Dinner & Show

5:30 pm - 8:30 pm | Kaho'olawe Lawn

Experience lavish celebration as Te Au Moana brings to life the fascinating skills of our island people through vibrant songs and dances of the Pacific.

Save the Date

AMOS

Sep 19-22

2017

Poster Presenters

Lens and Camera Arrays for Sky Surveys and Space Surveillance, *Mark Ackermann, Sandia National Laboratories*

21st Century Atmospheric Forecasting for Space Based Applications, *Randall Alliss, Northrop Grumman Corporation*

The Critical Role of Experimentation to Further SSA Understanding, *Andrew Ash, Defence Science and Technology Laboratory* (UNITED KINGDOM)

In-Situ Vis/NIR Measurements of Space Environment Effects on Spacecraft Surfaces, *Donald Bedard, Royal Military College of Canada*
(CANADA)

Satellite Imaging with Adaptive Optics on a 1 m Telescope, *Francis Bennet, The Australian National University*
(AUSTRALIA)

Site Testing for Space Situational Awareness with Single Detector Stereo-SCIDAR, *Francis Bennet, The Australian National University*
(AUSTRALIA)

Elucidating More Orbital Information from Passive Optical Tracking Observations for Reliable Orbital Element Generation, *James Bennett, Space Environment Research Centre Ltd.; and EOS Space Systems*
(AUSTRALIA)

i1WFT: An Integrated 1-M Class Wide-Field Telescope, *Gino Bucciol, Officina Stellare*
(ITALY)

Towards a Network of Small Aperture Telescopes with Adaptive Optics Correction Capability, *Manuel Cegarra Polo, UNSW Canberra*
(AUSTRALIA)

Orbit Determination with Angle-Only Data from the First Korean Optical Satellite Tracking System, OWL-Net, *Jin Choi, Korea Astronomy and Space Science Institute*
(KOREA)

Adaptive Optics for Satellite and Debris Imaging at LEO and GEO, *Michael Copeland, The Australian National University*
(AUSTRALIA)

Implementing Operational Analytics Using Big Data Technologies to Detect and Predict Sensor Anomalies, *Joseph Coughlin, Stinger Ghaffarian Technologies, Inc.*

LEDsat: LEO Cubesats with LEDs for Optical Tracking, *Heather Cowardin, Jacobs Technology*

Orbit Outlook Data Archive, *Michael Czajkowski, Lockheed Martin*

Synthesis and Analysis of Custom Bi-Directional Reflectivity Distribution Functions in DIRSIG, *Jeff Dank, Integrity Applications Incorporated*

Further Development of Automated Algorithms to Identify Geostationary Satellites, and to Detect Configuration Changes and Mistagging, *Phan Dao, Air Force Research Laboratory*

Blind Detection of Ultra-Faint Streaks with a Maximum Likelihood Method, *William Dawson, Lawrence Livermore National Lab*

Recent Developments in Shadow Imaging of Geosynchronous Satellites, *Dennis Douglas, Integrity Applications Incorporated*

Satellite Type Estimation from Ground-Based Photometric Observation, *Takao Endo, Mitsubishi Electric Corporation*
(JAPAN)

Optical and Chemical Characterization of Polyimide in a GEO-Like Environment, *Daniel Engelhart, Air Force Research Laboratory*

Realistic Sensor Tasking Strategies, *Carolin Frueh, Purdue University*

~~*Population Statistics for PHD Filter SSA Tracking, Carolin Frueh, Purdue University* CXLD~~

Time-Resolved CubeSat Photometry with a Low Cost Electro-Optics System, *Forrest Gasdia, Embry-Riddle Aeronautical University*

Real Time Phase Fluctuation Correction Using a Phased Array of Widely Separated Antennas, *Barry Geldzahler, NASA*

~~Autonomous Processing of Satellite Streaks in Electro-Optic Imagery, *Simon George, Defence Science & Technology Laboratory* (UNITED KINGDOM)~~ CXLD

Assessment for Operator Confidence in Automated Space Situational Awareness and Satellite Control Systems, *Joe Gorman, Charles River Analytics*

Automated Space Surveillance Using the AN/FSY-3 Space Fence System, *Peter Hack, Lockheed Martin*

Commercial SSA Catalog Performance, *Robert Hall, Analytical Graphics, Inc.*

Fast Optimization Schemes for Phase Recovery in Bispectral Imaging, *James Herring, Emory University*

Optimal Scheduling for Geosynchronous Space Object Follow-Up Observations Using a Genetic Algorithm, *Andreas Hinze, Munich Aerospace / DLR (German Aerospace Center)* (GERMANY)

Charged Geosynchronous Debris Perturbation Using Rapid Electromagnetic Force and Torque Evaluation, *Joseph Hughes, University of Colorado*

A High Performance Computing Study of a Scalable FISST-Based Approach to Multi-Target, Multi-Sensor Tracking, *Islam Hussein, Applied Defense Solutions*

Optimal SSN Tasking to Enhance Real-Time Space Situational Awareness, *Islam Hussein, Applied Defense Solutions*

~~All-Sky Camera Calibration, *Kevin Jim, Oceanit*~~ CXLD

Automated RSO Stability Analysis, *Thomas Johnson, Analytical Graphics, Inc.*

Analysis of Specular Reflections off Geostationary Satellites, *Andrew Jolley, Australian Defence Space Coordinating Office* (AUSTRALIA)

Ionospheric Impacts on UHF Space Surveillance, *James Jones, Northrop Grumman Corporation*

~~Season-Controlled Assimilated Thermospheric Mass Density Profiles for Solar Minimum and Solar Maximum Conditions, *Timothy Kodikara, RMIT University* (AUSTRALIA)~~ CXLD

Space Fence System Support of Conjunction Assessment, *Michael Koltiska, U.S. Air Force*

Polish and European SST Assets: The Solaris-Panoptes Global Network of Robotic Telescopes and the Borowiec Satellite Laser Ranging System, *Maciej Konacki, Nicolaus Copernicus Astronomical Center, Polish Academy of Sciences* (POLAND)

Laser De-Spin Maneuvers for an Active Debris Removal Mission – A Realistic Scenario for Envisat, *Daniel Kucharski, Space Environment Research Centre Ltd.* (AUSTRALIA)

Comparison of Behavioral and Physical Ontologies for RSOs, *Ben Lane, ExoAnalytic Solutions Inc.*

~~Using Machine Learning for Advanced Anomaly Detection and Classification, *Ben Lane, ExoAnalytic Solutions Inc.*~~ CXLD

Infrared Photometry of GEO Spacecraft with WISE, *Chris Lee, University of Michigan*

Creating Situational Awareness in Spacecraft Operations with the Machine Learning Approach, *Zhenping Li, ASRC Federal*

Reconstruction of the 1801 Discovery Orbit of Ceres via Contemporary Angles-Only Algorithms, *Roger Mansfield, Astronomical Data Service*

Laser Guidestar Satellite for Ground-Based Adaptive Optics Imaging of Geosynchronous Satellites, *Weston Marlow, MIT Lincoln Laboratory*

Pilot Production of Large Area Microchannel Plates and Picosecond Photodetectors, *Michael Minot, Incom Inc.*

Feasibility Study for a Near Term Demonstration of Laser-Sail Propulsion from the Ground to Low Earth Orbit, *Edward Montgomery, MontTech, LLC*

Global Precipitation Measurement (GPM) and International Space Station (ISS) Coordination for CubeSat Deployments to Minimize Collision Risk, *James Pawloski, NASA - GSFC*

Synthetic-Aperture Silhouette Imaging (SASI), *Richard Paxman, MDA*

Improved Orbit Determination and Forecasts with an Assimilative Tool for Satellite Drag Specification, *Marcin Pilinski, ASTRA LLC.*

Space Object Maneuver Detection Algorithms Using TLE Data, *Mark Pittelkau, Solers, Inc.*

Optical Estimation of the 3D Shape of a Solar Illuminated, Reflecting Satellite Surface, *Sudhakar Prasad, University of New Mexico*

Poster Presenters

Optimization of Observation Strategy to Improve Reentry Prediction of Objects in HEO, *Mirco Rasotto, Dinamica* (ITALY)

Challenges in Physical Characterization of Dim Space Objects: What can we learn from NEOs, *Vishnu Reddy, Planetary Science Institute*

Comparison of Phenomenology for Satellite Characterization, *David Richmond, Lockheed Martin*

Performance Analysis and Control Design for a Small Robotic Telescope System, *Thomas Riel, Vienna University of Technology* (AUSTRIA)

d Amplifier Compatible Internally Sensed Optical Phased Array for Space Debris Tracking and Maneuvering, *Lyle Roberts, Australian National University* (AUSTRALIA)

~~Satellite Catalog Renumbering Project, *Timothy Roberts, HQ AFSPC/A5S*~~ CXLD

The Orbital Space Environment and Space Situational Awareness Domain Ontology--Towards an International Information System for Space Data, *Robert Rovetto*

Conjunction Risks of Near-Earth Objects to Artificial Satellites: The Case of Asteroid 2016 VY105, *William Ryan, New Mexico Institute of Mining and Technology*

Multicolor Observations of Geostationary Satellites, *Henrique Schmitt, Naval Research Laboratory*

Upgrades and Current SSA Activities at the Navy Precision Optical Interferometer, *Henrique Schmitt, Naval Research Laboratory*

Influence of Observations on the Accuracy of the Semi-Analytical Least Squares Orbit Determination Process, *Srinivas Setty, German Aerospace Center* (GERMANY)

Pixel-Remapping Waveguide and Microlens Array Additions to Internally Sensed Optical Phased Array, *Paul Sibley, Space Environment Research Centre Ltd; and Australian National University* (AUSTRALIA)

Low Power Reflective Optical Communication System for Pico- and Nano-Satellites, *Andreas Sinn, Vienna University of Technology* (AUSTRIA)

Parametric Excitation of Very Low Frequency (VLF) Waves and Wave-Particle Interaction in Radiation Belt, *Vladimir Sotnikov, Air Force Research Laboratory*

Satellite-Based EMI Detection, Identification, and Mitigation, *Richard Stottler, Stottler Henke Associates, Inc.*

Automated Terrestrial EMI Emitter Detection, Classification, and Localization, *Richard Stottler, Stottler Henke Associates, Inc.*

System Design and Implementation of the Virginia Tech Optical Satellite Tracking Telescope, *Kristen Tetreault, Virginia Tech*

Performance Comparison of Optimization Methods for Blind Deconvolution, *Daniel Thompson, Boeing*

Sensor Network Scheduling Under Uncertainty: Models and Benefits, *Christopher Valicka, Sandia National Laboratories*

Paving the Bridge between Academia and Operations for Orbital Debris Risk Mitigation, *Mark Vincent, Raytheon*

Slitless Spectroscopy of Geosynchronous Satellites, *Daniel Weisz, U.S. Air Force Academy*

Harnessing Adaptive Optics for Space Debris Collision Mitigation, *Anna Zovaro, The Research School of Astronomy and Astrophysics; Australian National University; and Space Environment Research Centre Ltd* (AUSTRALIA)

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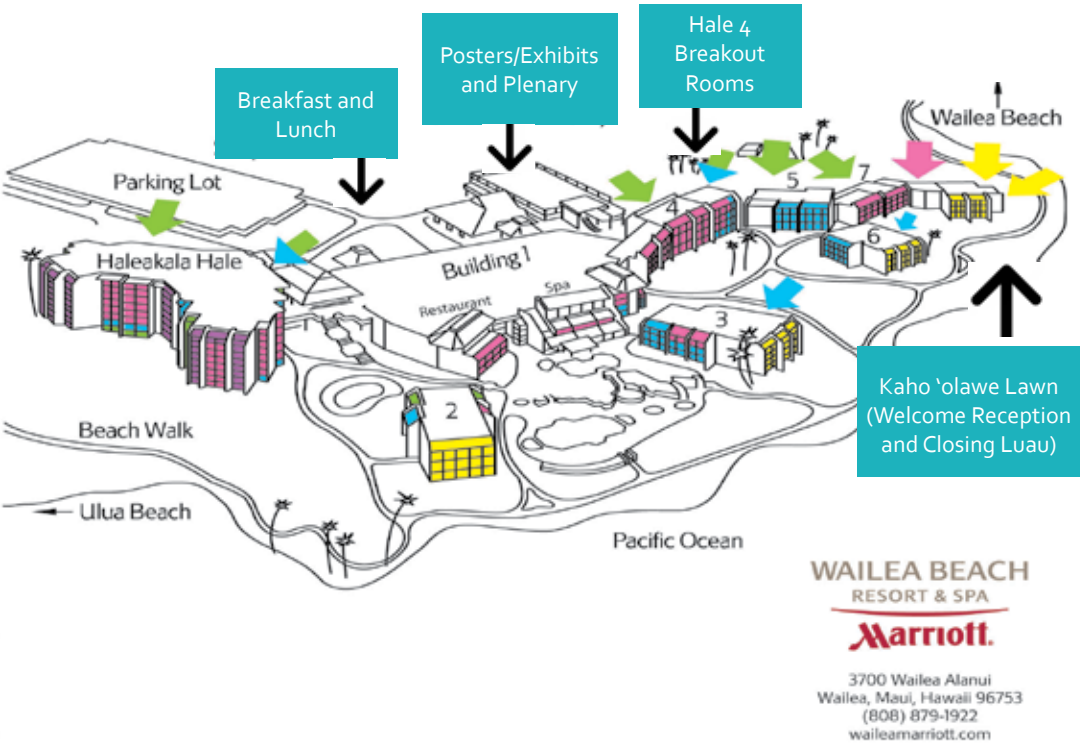
Conference Map



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