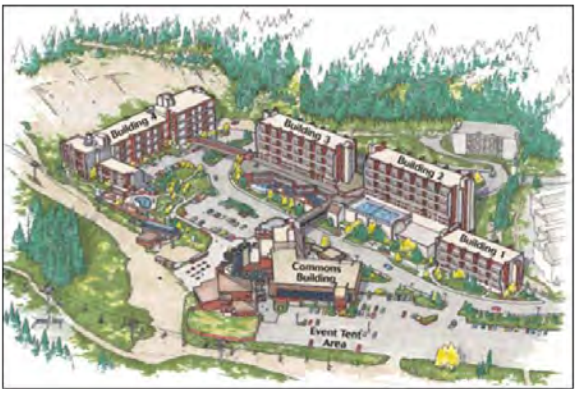
PROGRAM

38th ANNUAL AAS GUIDANCE, NAVIGATION & CONTROL (GN&C) CONFERENCE

January 30th to
February 4th, 2015

American Astronautical Society
Rocky Mountain Section

BEAVER RUN
RESORT & CONFERENCE CENTER



Friday, JANUARY 30th

Check in..... 7:00 a.m.

Session..... 8:00 a.m.

Classified Session
Classified Advances in GN&C and Classified Recent Experiences

Pre-registration by January 3, 2015 is required and will be controlled (walk-ins will NOT be admitted). Attendees must register for the entire AAS conference to be eligible to attend classified sessions. Contact a local chairperson for more information.

Location of Classified Session:

Ball Aerospace
10 Longs Peak Drive
Broomfield, CO 80021

Friday Evening
Wine and Cheese Reception
6:00 – 9:30 p.m.

Beaver Run Resort, Breckenridge, Colorado

Traditional Conference Located at:

Beaver Run
Conference Center
Breckenridge, Colorado

Room check-in at the Beaver Run Resort front desk 4:00 p.m. daily.

Conference Registration

Friday 5:00 to 8:00 p.m.
Daily 6:30 to 10:00 a.m. and 4:00 to 6:00 p.m.

Daily ..... 7:00-10:00 a.m.

Poster Session

Held in Break Room during Breakfast

The Poster Session offers a unique forum for authors and interested parties to discuss relevant topics. Posters do not require an accompanying written paper. However, authors who wish to have their work published in the proceedings can submit a written paper along with the poster. The Poster Session will be available for viewing every day in the main conference room.

Local Chairpersons

Alex May, Lockheed Martin Space Systems Company 303-977-6620
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15-001 Multi-spacecraft Autonomous Positioning System: Conceptual Architecture, Simulation Analysis, Hardware Testing, and Continued Development
Evan Anzalone (NASA MSFC)

15-002 Avoiding High-Gain Antenna Occlusions and Flops in Mars Science Laboratory Operations

Stephen F. Peters, C. Anthony Vanelli, William C. Allen, Steven M. Collins, James F. Montgomery, Evgeniy Sklyanskiy (NASA JPL)

15-003 An Error Budget for Pointing at Surface Features from Close Range

Stephen F. Peters (NASA JPL)

15-004 Methodology for the In-Flight Estimation of Collected Regolith Sample Mass on the OSIRIS-REx Mission

Michael Skeen, Alexander May, Ryan Olds, Timothy Linn (Lockheed Martin)

15-005 Two-Axis Fast Mirror Technology

Islam Shawki (Raytheon)

15-006 CubeSat Proximity Operations Demonstration (CPOD-Mission: Concept of Operations for Miniaturized Rendezvous, Proximity Operations, and Docking

Jason J. Westphal, Christopher W. T. Roscoe, Marco Villa, Ehson Mosleh, Dean R. Hawes (Applied Defense)

15-007 Generalized Covariance Minimization Algorithm for the Continuous Extended Kalman Filter for Nonlinear Plants and Sensor Models

Kevin Hernandez, James D. Turner (Texas A&M University)

15-008 State Transition Matrix Propagation for Perturbed Orbital Motion Using Modified Chebyshev Picard Iteration

Julie Read, John L. Junkins, Ahmad Bani-Younes (Texas A&M University)

15-009 Parallel Modified Chebyshev Picard Iteration for Orbit Catalog Propagation and Monte Carlo Analysis

Brent Macomber, Austin Probe, Robyn Woollands, John L. Junkins (Texas A&M University)

15-010 OSIRIS-REx Asteroid Contact Dynamics From First Principles

Will Hafer (Lockheed Martin)

SATURDAY, January 31st
7:00 a.m. Conference Opening
by Ian Gravseth

Session I..... 7:15-10:15 a.m.

Student Innovations in GN&C

This session embraces the wealth of research and innovative projects related to spacecraft GN&C being accomplished in the university setting. Papers in this session address hardware/software research as well as component, system or simulation advances. Papers submitted must have a student as the primary author and presenter. Papers will be adjudicated based on level of innovation, complexity of problem solved, perceived technical readiness level, applicability and fieldability to near-term systems, clarity of written and verbal delivery, number of completed years of schooling and adherence to delivery schedule.Prizes will be awarded to the top 3 papers sponsored by: **Space X, Blue Canyon Technologies** and **Intuitive Machines, LLC**.

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Jeff Bladt, Ball Aerospace & Technologies Corp.
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15-021 Attitude Control System Design for Multi-Mode Proximity Operations and Imaging with a 6U Cubesat

Francisco J. Franquiz, Bogdan Udrea, Luis A. Sanchez, Shane T. Stebler (Embry-Riddle)

15-022 Aerodynamic Passive Attitude Control: A New Approach to Attitude Propagation and a Nano-satellite Application

J. Micah Fry (Utah State University)

15-023 Performance Assessment of Horizon-Based Optical Navigation Techniques

Andrew J. Liounis, Josh D. Gerhard, John A. Christian (West Virginia University)

15-024 Small Body Gravity Field Estimation Using Liaison Supplemented Optical Navigation

Siamak Hesar, Jeffrey S. Parker, Jay McMahon, George H. Born (University of Colorado)

15-025 Hardware-in-the-Loop Validation of Sensing and Algorithms for Autonomous Decent and Landing

Austin Probe, Dylan Conway, Brent Macomber. Clark Moody, John L. Junkins (Texas A&M University)

15-026 Withdrawn

15-027 Experimental Validation of an Inertia-Free Controller and a Multiplicative EKF for Pose Tracking and Estimation Based on Dual Quaternions

Alfredo Valverde, Nuno Filipe, Michail Kontitsis, Panagiotis Tsiotras (Georgia Tech)

15-028 Analysis of Astrodynamic State Variable Formulations

Christopher Shelton (Utah State University)

10:30 a.m.- 4:00 p.m.

Inaugural AAS STEM-SCAPE Event

In 2015, we will be hosting an inaugural STEM event for one hundred high school students of diverse background from across the Denver metropolitan area. The event, called AAS STEM-SCAPE for "Student Career Arcs to Professional Engineers," will trace the elements of a successful career journey in aerospace including High School and University education, initial employment and ultimately a rewarding profession. Our keynote speaker is Dr. Neil Dennehy,

NASA Fellow, who will be followed by a STEM career panel. The event concludes with a short design project that will be co-led with student volunteers from the University of Colorado. If you are interested in volunteering at the event, please contact our Education Committee planning POCs:

Michael Drews (michael.e.drews@lmco.com)
Kristen Francis (kristen.francis@lmco.com)

Special Event for Children of Conference Attendees at 4:00 p.m.

NASA Astronaut, Joe Tanner

This presentation will inspire our next generation of engineers by offering kids the opportunity to interact with an astronaut who flew four STS missions!

Session II..... 5:00-8:00 p.m.

Technical Exhibits

The Technical Exhibits Session is a unique opportunity to observe displays and demonstrations of state-of-the-art hardware, design and analysis tools, and services applicable to advancement of guidance, navigation, and control technology. The latest commercial tools for GN&C simulations, analysis, and graphical displays are demonstrated in a hands-on, interactive environment, including lessons learned and undocumented features. Associated papers not presented in other sessions are also provided and can be discussed with the author. Come enjoy an excellent complimentary buffet and interact with the technical representatives and authors. This session takes place in a social setting and family members are welcome!

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BEI Precision Systems & Space Company
Blue Canyon Technologies
Cayuga Astronautics
Jena-Optronik GmbH
Left Hand Design Corp./Southwest Research Institute
Lockheed Martin Space Systems Company
Monarch High School
Moog CSA Engineering
Sierra Nevada Corporation
SODERN
Surrey Satellite Technology
Terma
University of Colorado Aerospace Engineering Sciences
Utah State University Space Dynamics Laboratory
Texas A&M University
ZARM Technik AG

SUNDAY, FEBRUARY 1st

Session III..... 7:00-10:00 a.m.

Roadmaps and Future Mission Concepts

As part of their individual strategic planning efforts NASA, DoD, ESA and other worldwide civilian and national defense space agencies have created, or are in the process of creating roadmaps, for both their advanced GN&C technologies and for their future payload (e.g. sensors and instruments), missions and systems. These international civilian and military space agencies are devoting energy to systematically and strategically plan their GN&C technology

also performing studies and analyses to assess their future system objectives, from both the perspectives of technological readiness and programmatic feasibility, as part of the process of formulating ambitious future mission concepts. While many of these future mission concepts are notional it is clear that several will require significant innovation and the first-time infusion of emerging technologies to satisfy challenging GN&C system engineering requirements. In this session the authors will present papers on GN&C technology roadmaps, future mission concepts and their inter-relationship.

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Local Chairperson

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15-041 APNM spacecraft: An EP-based versatile mission concept with a single integrated GNC solution for active multi-debris removal and satellite commercial servicing

Guillame Pionnier, P-N. Gineste (AIRBUS Defence and Space)

15-042 Looking Back and Looking Forward: Reprising the Promise and Predicting the Future of Formation Flying and Spaceborne GPS Navigation Systems

Frank Bauer, Neil Dennehy (Emergent/NASA Engineering & Safety Center)

15-043 Industry Perspective on Space Universal Modular Architecture (SUMO-concepts applied to Momentum Control Components

Ted Bonk, Tim Hindle,Tim Hintz (Honeywell)

15-044 Future Micro-PNT Technology Applications in GPS/IMU Integration

Walter E. Lillo, Scot L. Osburn, Manorama Gollakota (Aerospace Corp.)

15-045 A Miniature, Low-Power Star Tracker for Precision Pointing Nanosatellites

Darren W. Rowen , Alexander C. Utter, Richard M. Dolphus, Eddson M. Alcid (Aerospace Corp.)

15-046 An Overview of the NASA Space Communications and Navigation (SCAN-Roadmap)

Jim Schiers (NASA HQ HEOMD SCaN Office)

15-047 Agilitoid-Based Design Analysis of Next Generation Attitude Control Systems

Mark Karpenko, Jeffery T. King, Steven R. Crews, I. Michael Ross (Naval Postgraduate School)

15-048 A Survey of Guidance, Navigation, and Control Technologies for Future Planetary Science Missions

Ed Riedel, Mimi Aung (JPL)

Session IV ..... 2:00-4:00 p.m.

Space Debris

Although many methods of monitoring and detecting debris for avoidance purposes are already in place, space debris continues to be a growing issue within the aerospace community. This session will focus on characterization of the current debris environment and will also discuss ongoing or future efforts for debris mitigation that may be underway or are proposed.

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15-051 Trajectory Optimization for a Solar Electric Propulsion Orbital Debris Removal Ferry
M. Duchek (Analytical Mechanics Associates)

15-052 Falco: An Affordable Orbital Debris Removal Mission Simplified by Use of a Passive Despin Device
R. Rohrschneider, R. Arentz, I. Gravseth, B. Landin, L. Guy, R.Schweickart, S. Mitchell (Ball Aerospace)

15-053 Performance Optimization Study for Touchless Electrostatic Spacecraft De-Spin Operations
D. Stevenson, H. Schaub (University of Colorado)

15-054 Evolutionary Optimization of a Rendezvous Trajectory for a Satellite Formation with an Orbital Debris Hazard
D. Hinckley Jr., D.Hitt (University of Vermont)

15-055 The ADCS of a Rendezvous and Docking Technology Demonstrator Mission Target Satellite with Unusual Requirements
Nicolai, et al (Astrofeine)

MONDAY, FEBRUARY 2nd
Dual Morning Sessions

Session V ..... 7:00-10:00 a.m.

In Space Propulsion Innovations

Technology innovations in the area of space propulsion have become prominent recently with notable DOD, NASA, and industry investment in green propellant thrusters, cryogenic propellant storage, high-power electric propulsion systems, and propellantless propulsion. Additionally, trends toward employing small spacecraft for an increasing range of applications are driving demand for efficient propulsion technologies for high-mobility micro/nano/picosatellites. This session will highlight emerging propulsion hardware and systems and their GN&C implications that address diverse implementations such as fine pointing for science spacecraft, low-thrust cargo transfer, high-thrust Earth and Mars departure, and descent to / ascent from planetary bodies.

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15-061 New Developments in Conventional Propulsion
Olwen M. Morgan, Fred C. Wilson (Aerojet Rocketdyne)

15-062 The Air Force Research Laboratory's In-Space Propulsion Program
Brian E. Beal (AFRL)

15-063 Green Propellant Infusion Mission Program Development and Technology Maturation

Chris McLean, Brian Marotta (Ball Aerospace)

15-064 Advances in Propellantless In-Space Propulsion Technologies

Les Johnson (NASA MSFC)

15-065 System Implications for GN&C and High Power SEP Spacecraft

Steven Overton, Joe Cassady, Kevin Kelleher (Aerojet Rocketdyne)

15-066 Guidance, Navigation, and Control Considerations for Nuclear Thermal Propulsion

Michael Houts (NASA MSFC)

15-067 On the Implementation of Microelectrospray Propulsion Systems in CubeSat-Class Spacecraft

Matt Sorgenfrei, Matt Nehrenz (NASA ARC), Rob Thomas (NASA GRC)

15-068 Development and Characterization of a Monopropellant Microthruster with CubeSat Attitude Control Applications

M. Ryan McDevitt (GreenScale Technologies), Darren L. Hitt (University of Vermont)

Session VI ..... 7:00-10:00 a.m.

Advances in GN&C Hardware

Many programs depend on heritage, but the future is advanced by those willing to design and implement new and novel architectures and technologies to solve the GN&C problems. This session is open to papers with topics concerning GN&C hardware ranging from theoretical formulations to innovative systems and intelligent sensors that will advance the state of the art, reduce the cost of applications, and speed the convergence to hardware, numerical, or design trade solutions. *Note: Advances in GN&C software are covered in Session IX.*

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15-071 GOES-R Dual Isolation
Doug Freesland (Various)

15-072 ASTRO APS Star Tracker Operations on AlphaSat
Uwe Schmidt,Boris Pradarutti (Jena-Optronik GmbH)

15-073 HYDRA JUICE Star Tracker
Benoit Gelin (Sodern)

15-074 ESTADIUS: A Daytime Accurate Attitude Estimation System for Stratospheric Balloons, Based on Gyro-stellar Measurement
Johan Montel (CNES, Thales-Services)

15-075 USAFA's EyasSat3 and Hamster Ball: Innovative Tools for Practical, Hands-on Attitude Dynamics and Control Education
Dave Richie (USAFA)

15-076 XACT – A New Generation of Nano GN&C Technology
Daniel Hegel (Blue Canyon Technologies)

15-077 CryoSat-2 : In-Orbit Star Tracker Improvements
Nic Mardle (ESA)

Dual Evening Sessions

Session VII ..... 4:00-6:00 p.m.

Recent Experiences I

This session focuses on recent experiences in space-flight GN&C, providing a forum to share insights gained through successes and failures. Discussions typically include GN&C experiences ranging from Earth orbiters to interplanetary spacecraft. This session is a traditional part of the conference and has shown to be most interesting and informative.

National Chairpersons

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15-081 Thermally Constrained Fuel-Optimal ISS Maneuvers
S. Bhatt (Draper Lab), A. Svecz, (Rice University), A. Alaniz, Jiann-Woei Jang (Draper Lab), L. Nguyen (NASA JSC), P. Spanos (Rice University),

15-082 Withdrawn

15-083 Global Precipitation Measurement Mission Launch and Commissioning
N. R. Davis, K. D. DeWeese, J. R. O'Donnell, Jr., M. F. Vess, G. L. Welter (NASA GSFC), Hao Ton (ASRC Federal)

15-084 NEOSSat: Microsatellite Based Space Situational Awareness

S. Thorsteinson, (Royal Military College of Canada), R. Scott, B. Wallace (Defence R&D Canada)

15-085 Three Mid-Mission Improvements to Mars Science Laboratory Surface Attitude Estimation Accuracy

S. F. Peters, S. M. Collins, C. A. Vanelli, M. L. Robinson, J. F. Montgomery, S. C. Johnson (NASA JPL)

Session VIII ..... 4:00-6:00 p.m.

Low-Thrust Mission Planning

The Low-Thrust Trajectories Mission Planning session offers an exciting opportunity to examine the state of the art in low-thrust mission design. The session focuses on the applications of low-thrust technology to enable new classes of missions, such as Dawn's mission to Vesta and Ceres, Hayabusa II's mission to asteroid 1999 JU3, the Asteroid Redirect Mission (ARM) concepts, and even GOCE's mission in a very low Earth orbit. Low-thrust missions involve new and different challenges, compared to conventional missions, due to the extended burn durations and the interactions of the spacecraft with the propulsion system. Solar electric propulsion technology is advancing rapidly and the mission design community is working to discover the new opportunities it provides.

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15-091 Mission Design for a Crewed Earth-Venus-Mars Flyby Mission Using Solar Electric Propulsion

Stijn De Smet, Jeffrey S. Parker, Jonathan F.C. Herman (University of Colorado), Ron Noomen (TU Delft)

15-092 Optimal Continuous Thrust Maneuvers for Solving 3D Orbit Transfer Problems

Robyn M. Woollands, Ahmad Bani Younes, Brent Macomber, Xiaoli Bai, John L. Junkins (Texas A&M)

15-093 Low-energy, Low-thrust Transfers Between Earth and Distant Retrograde Orbits about the Moon

Jonathan F.C. Herman, Jeffrey S. Parker (University of Colorado)

15-094 Linear Covariance Analysis for Proximity Operations Around Asteroid 2008 EV5

Cinnamon A. Wright (NASA GFC), Sagar Bhatt, David Woffinden, Matthew Strube, Chris D' Souza, Keith DeWeese (NASA JSC)

15-095 SEP-Enabled ESPA-Class Satellite for Near-Earth Applications

William D Deininger, Scott Mitchell, Scott Enger, Bryce Unruh (Ball Aerospace), Waldy K. Sjauwenwa, and Melissa L. McGuire (NASA GRC)

NETWORKING EVENT

6:00-7:30 p.m.

In lieu of the traditional banquet, a generous appetizer buffet will be provided on Monday evening. This will be an opportunity for conference attendees and guests to network with each other, and the event will also include the presentation of the student paper.

TUESDAY, FEBRUARY 3rd
Dual Morning Sessions

Session IX ..... 7:00-10:00 a.m.

Advances in GN&C Software

The GN&C hardware is often dependent on successful and innovative GN&C software. This session is open to all GN&C software ranging from on orbit software used to drive or process data, ground software used for operations or simulation software used to test, validate or develop GN&C systems. This session aims to highlight GN&C software from all aspects. *Note: Advances in GN&C hardware applications are covered in Session VI.*

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Michael Osborne, Lockheed Martin Space Systems Company
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15-101 Lattice Boltzmann Method for Spacecraft Propellant Slosh Simulation

Jeb Orr (Draper), Joseph Powers (NASA MSFC), Hong Yang (CFD Research Corp)

15-102 TARANIS: AOCS Overview and Flexible Mode Issues During Orbit Maneuver

J. Lefebve, E. Bellouard, L. Boissier, S. Tremolieres, S. Mary, C. Bastien-Thiry (CNES)

15-103 A Study of Optical Navigation Measurements for Cislunar Navigation

Shane Robinson, Christopher D'Souza (NASA JSC), John Christian (West Virginia University)

15-104 Piloting and Guidance Algorithms for Autonomous Landing

Carlos Norberto Pérez Montenegro, Enrico Canuto (Politecnico di Torino)

15-105 Attitude Determination and Control Approach to Achieve Co-Located Microwave Radiometer and GPS Radio Occultation Measurements on a Nanosatellite

Weston Marlow, Anne Marinan, Kathleen Riesing, Tam Nguyen, Kerri Cahoy, James Byrne, Andrew Kennedy, Ryan Kingsbury, Zachary Decker, Timothy Cordeiro, Stephen Shea (MIT), Rebecca Bishop, James Bardeen, David Ping, Susan Lui, Tamitha Mulligan (Aerospace Corp)

15-106 Advances in ORION's On-Orbit Guidance and Targeting System Architecture

Sara Scarritt, Shane Robinson (NASA JSC)

15-107 Airborne Simulation of Launch Vehicle Dynamics

Jeb Orr (Draper), Christopher Miller, Curtis Hanson (NASA Dryden), Eric Gilligan (NASA MSFC)

15-108 High Angular Rate Determination Algorithm Based on Star Sensing

F. Curti, D. Spiller (DIAEE-ARCAlab), S. Bucucci, F. Boldrini (Selex ES), G. Sechi (ESA)

Session X ..... 7:00-10:00 a.m.

Proximity Operations

Proximity operations imply maneuvering of a vehicle near another body. This session aims to explore the GN&C aspects of spacecraft operations in the vicinity of other spacecraft, including maneuvering, rendezvousing, and docking, and landers maneuvering near planetary surfaces. Papers may include GN&C algorithms, system studies, space and test flight experience, and sensors that provide the necessary data for proximity operations.

National Chairpersons

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15-111 RAVEN: An On-Orbit Relative Navigation Demonstration Using International Space Station Visiting Vehicles

Matthew Strube, John Van Eepoel (NASA GSFC), Eugene Skelton (Lockheed Martin), Ross Henry (NASA GSFC), Christopher D'Souza (NASA JSC)

15-112 A 6-DOF Pose Initialization Strategy for LIDAR-Based Non-Cooperative Navigation

John O. Woods, John A. Christian, Thomas Evans (West Virginia University)

15-113 Guidance, Navigation, and Control Algorithms for Cubesat Formation Flying

Christopher W.T. Roscoe, Jason J. Westphal, Stephen Lutz (Applied Defense Solutions, Inc.), Trevor Bennett (University of Colorado)

15-114 Comparison of Approaches to Relative Navigation Using Global Positioning During Flight of the Cygnus Spacecraft

Alex Manka (Orbital Sciences Corp.)

15-115 A New Peripheral Docking Target for the International Space Station

Chris Foster (Jacobs)

15-116 A Sampling-Based Approach to Spacecraft Autonomous Maneuvering with Safety Specifications

Joseph A. Starek (Stanford University), Brent Barbee (NASA GSFC), Marco Pavone (Stanford University)

15-117 Angles-Only Navigation Range Observability During Orbital Rendezvous and Proximity Operations

David K. Geller (Utah State University), T. Alan Lovell (Air Force Research Lab)

15-118 Nonlinear Representations of Satellite Relative Motion Equations Using Spherical Transformations

Alex Perez (Utah State University), T. Alan Lovell (Air Force Research Lab)

Session XI ..... 4:00-7:00 p.m.

Small Body Proximity Operations

GN&C operations in weak gravitational environments are mission-enabling for innovative science missions to small bodies such as asteroids and comets. GN&C in this environment is challenging due to the unusual navigation data types, non-conservative

force modeling for guidance and trajectory prediction and the precision required for hyperbolic flyby, hovering, landing, and sample return operations. This session explores the GN&C challenges, designs, predicted performance and recent experiences for a variety of current and planned missions to small bodies.

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15-121 Flyby-only science operations for an asteroid exploration mission

Dan Scheeres, S. Van wal, (University of Colorado), S. Tardivel, (NASA JPL)

15-122 Rosetta Navigation at Comet Churyamov-Gerasimenko

Shyamkumar Bhaskaran, Stephen Broschart, Don Han, Bill Owen, Nick Mastrodemos, Ian Roundhill, Brian Rush, Jonathon Smith (JPL), David Surovik (University of Colorado)

15-123 Optical Navigation for the Rosetta mission

Nickolaos Mastrodemos, William Owen Jr., Brian Rush (JPL)

15-124 The Application of Optical Based Natural Feature Tracking to OSIRIS-REx Asteroid Sample Collection

Ryan Olds, Alex May, Reid Hamilton (Lockheed Martin SSC), Courtney Mario (Draper Laboratories), Chris Debrunner (Lockheed Martin MFC)

15-125 Updated OSIRIS-Rex Touch-And-Go (TAG-Analysis with Expected Performance

Kevin Berry (NASA), Michael C. Moreau, (NASA GSFC) Peter Antreasian (KinetX, Inc.) Alex May, Brian Sutter (Lockheed Martin SSC)

15-126 Flash LIDAR Based Ranging and Surface Contact Time Prediction for the OSIRIS-REx Mission

Oliver Walthall, Keith Mahoney (Lockheed Martin SSC)

15-127 The Small-Body Dynamics Toolkit and associated close-proximity navigation analysis tools at JPL

Stephen Broschart (JPL), Matthew Abrahamson, Shyam Bhaskaran, Eugene G. Fahnestock, Reza Karimi, Gregory Lantoine, Thomas A. Pavlak, (JPL), Loic Chappaz (Purdue University)

15-128 Real-Time Mapping and Localization under Dynamic Lighting for Small-Body Landings

Dylan Conway, John Junkins (TAMU)

WEDNESDAY, FEBRUARY 4th

Session XII ..... 7:00-10:00 a.m.

Recent Experiences II

This session focuses on recent experiences in space-flight GN&C, providing a forum to share insights gained through successes and failures. Discussions typically include GN&C experiences ranging from Earth orbiters to interplanetary spacecraft. This session is a traditional part of the conference and has shown to be most interesting and informative.

National Chairpersons

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Kristen Francis, Lockheed Martin Space Systems 303-971-7450
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15-131 Recent Experiences of the Kepler K2 Mission

D. Putnam, D. Wiemer, J. Troeltzsch (Ball Aerospace)

15-132 Initial On-Orbit Performance of the MAVEN Spacecraft

P. Good, W. Pisano (Infinity Engineering), D. Howell , M. Johnson (Lockheed Martin SSC), J. Wynn (Advanced Solutions)

15-133 Gaia: First in Flight Operations Experience

D. Milligan, A. Rudolph, F. di Marco, J. Marie (ESA)

15-134 Post-flight analysis of the Guidance and Control Performance During Orion Exploration Flight Test 1

A. Barth (Lockheed Martin IS&GS)

15-135 GLN-MAC Initialization Approach & Navigation Solution as Applied to LDSD

B. Tibbetts, J. Benton (Orbital Sciences), E. Blood, S. Sell (NASA JPL)

15-136 MSL Cruise Attitude Control Flight Experience and Implications for Mars 2020

Steven M. Collins, John C. Essmiller, Erisa K. Hines, A. Miguel San Martin, Frederick Serricchio (NASA JPL)

15-137 Messenger's Maneuvers During the Mission's Low Altitude Campaign

S. Flanigan, M. Kirk, D. O'Shaughnessy, S. Bushman, P. Rosendall (Johns Hopkins/APL)

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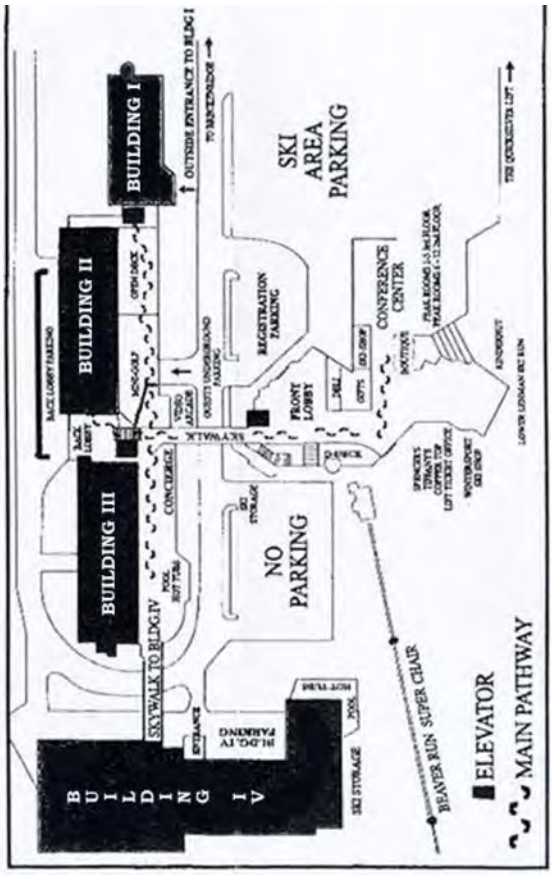

39th ANNUAL AAS GUIDANCE, NAVIGATION & CONTROL (GN&C) CONFERENCE

will be held at Beaver Run in Breckenridge, CO
February 5 - 10, 2016

Chairperson

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