

31st ANNUAL AAS GUIDANCE & CONTROL CONFERENCE

Breckenridge, Colorado
February 1 - 6, 2008

Sponsored by the AAS
Rocky Mountain Section



Please see our website: aas-rocky-mountain-section.org for additional information on the Conference, Beaver Run Resort, recreational activities, and the town of Breckenridge, CO.

CONFERENCE AGENDA

Registration

Room check-in at the Beaver Run Resort front desk 4:00 PM daily.
Conference registration 6:00 to 10:00 AM and 4:00 to 6:00 PM daily.

Friday, February 1

Evening: 6:00 – 9:00 PM “Wine and Cheese” Early Conference registration 6:00 to 8:00 PM

Saturday, February 2

Morning: 7:00 – 10:00 AM Session I – “Advances in G&C”

THEME: Some projects require innovative G&C solutions that are outside the realm of conventional thinking. The papers in this session will focus on the latest in theoretical developments, cutting-edge hardware, unique mission possibilities, system architecture, autonomous operations, and system modeling and testing.

Co-Chairperson: Stephen Airey, European Space Agency, +31 (0) 71 565 5295 – Stephen.Airey@esa.int

Co-Chairperson: CAPT. Dan Gahagan, Naval Research Lab, 202-767-3403 – dan.gahagan@nrl.navy.mil

Local Chairperson: Jim Chapel, Lockheed Martin Space Systems, 303-977-9462 – jim.d.chapel@lmco.com

Local Chairperson: Eric Lander, Advanced Solutions, 303-979-2417 – elander@go-asi.com

Afternoon: 5:00 – 8:00 PM Session II – “Technical Exhibits”

THEME: 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!

Local Chairperson: Kristen Terry, Lockheed Martin Space Systems, 303-971-7450 – kristen.terry@lmco.com

Local Chairperson: Vanessa Baez, Lockheed Martin Space Systems, 303-971-6481 – vanessa.baez@lmco.com

Local Chairperson: Tracy Copp, Ball Aerospace & Technologies, 303-939-6103 – tcopp@ball.com

Local Chairperson: Scott Francis, Lockheed Martin Space Systems, 303-977-8253, – scott.francis@lmco.com

Local Chairperson: Rick Jackson, Lockheed Martin Ret., 303-985-1972 – ricski_jackson@yahoo.com

Local Chairperson: Joe Vellinga, Lockheed Martin Space Systems, 303-971-9309 – joseph.m.vellinga@lmco.com

Sunday, February 3

Morning: 7:00 – 10:00 AM Session III – “Space Environment”

THEME: Space environments influence the design of missions on many levels. Space debris and radiation effects constrain the required shielding for spacecraft and GN&C components. Vehicle control performance is limited by the effect of disturbances, including aerodynamic, gravity gradient, solar radiation pressure and magnetic torques. Orbital perturbations impact mission planning to view various ground and celestial targets. This session will feature papers which discuss the effect of the space environment on the design of GN&C components, spacecraft control systems and mission designs.

(Conference Agenda Continued on Reverse Side)

Co-Chairperson: Darrell Zimbelman, NRO, 703-808-0939 – maryzimbelman@adelphia.net
Local Chairperson: Ian Gravseth, Ball Aerospace & Technologies, 303-939-5421 – igravseth@ball.com
Local Chairperson: Michael Osborne, Lockheed Martin Space Systems, 303-977-5867 – michael.l.osborne@lmco.com

Early Afternoon: 2:00 – 4:00 PM Session IV – “GN&C Fault Management”

THEME: The design of GN&C systems to be either single or multiple fault tolerant has many impacts on spacecraft complexity, V&V, and ultimately cost. As today's space missions become more complex, even incorporating various aspects of entry, rendezvous, docking and sample return – the tolerance for mission failure continues to decrease. Coupled with the increasing upset and latching susceptibility of commercial electronic parts, the need for innovative approaches to GN&C system fault tolerance is becoming paramount. This session explores the state-of-the-art system approaches to GN&C fault tolerance, and unique and innovative aspects of such design – including the use of functional redundancy and unconventional techniques.

Co-Chairperson: Gentry Lee, NASA Jet Propulsion Laboratory, 818-393-7041 – B.G.Lee@jpl.nasa.gov
Local Chairperson: Mary Klaus, Lockheed Martin Space Systems, 303-971-2724 – mary.a.klaus@lmco.com
Local Chairperson: Steve Jolly, Lockheed Martin Space Systems, 303-971-6758 – steven.d.jolly@lmco.com

Monday, February 4

Morning: 7:00 – 10:00 AM Session V – “Deep Space Navigation”

THEME: How do we get to destinations in deep space? This session seeks papers on the means. The Deep Space Network, radio and optical data types, and maneuver analysis and planning are the grist, down to arcana like B-planes and K-matrices. Papers cover history, current configurations, hardware and software, and future plans. Errors are especially important: tracking data, solar system modeling, disturbances, and maneuver execution; all culminating in the Pioneer problem.

Co-Chairperson: Stephen Lichten, NASA Jet Propulsion Laboratory, 818-354-1614, – Stephen.Lichten@jpl.nasa.gov
Local Chairperson: David Sonnabend, Analytical Engineering, 303-530-9641 – dsonnabend@worldnet.att.net
Local Chairperson: Shawn McQuerry, Lockheed Martin Space Systems, 303-971-5264 – shawn.c.mcquerry@lmco.com

Evening: 4:00 – 6:00 PM Session VI – GN&C Panel Session “2058: The Future of GN&C in 50 Years”

THEME: In 1957, the dawn of the Space Age began with the launch of Sputnik. Today, a mere 51 years later, we are still learning and growing as an industry with new technologies and methodologies to accomplish the Guidance and Navigation needs of our missions. Step forward to 2058 and there will be even more possibilities for GN&C. The question to our panelists: What will GN&C look like 50 years from now? This lively new session will draw on industry experts from around the world to discuss their individual perspectives on the future.

Local Chairperson: Christine Mollenkopf, Ball Aerospace & Technologies, 303-939-5444 – cmollenk@ball.com
Local Chairperson: Jay Speed, Ball Aerospace & Technologies, 303-939-5322 – jspeed@ball.com

Evening: Banquet

6:00 – 7:00 PM Social Hour

7:00 – 9:00 PM Banquet with guest speaker (speaker and subject to be announced)

Tuesday, February 5

Morning: 7:00 – 10:00 AM Session VII – “Human Exploration GN&C Challenges”

THEME: This session focuses on the recent work to provide humans improved access to earth orbit and beyond. Papers will include recent work for the Orion spacecraft and Ares launch vehicle projects, Commercial Orbital Transportation System (COTS), Automated Transfer Vehicle (ATV), H2 Transfer Vehicle (HTV), Progress, and other related programs that are supporting human exploration. In addition to programs, key technologies are addressed such as ascent, rendezvous, proximity operations, docking, transit and return beyond earth orbit, entry, autonomy, and aspects of human rating.

Co-Chairperson: Tim Crain, NASA Johnson Space Center, 281-244-5077 – tim.crain@nasa.gov
Local Chairperson: Dave Chart, Lockheed Martin Space Systems, 303-977-6875 – david.a.chart@lmco.com
Local Chairperson: Rob Chambers, Lockheed Martin Space Systems, 303-977-9912 – robert.p.chambers@lmco.com

Afternoon: 4:00 – 7:00 PM Session VIII – “Recent Experiences”

THEME: Lessons learned through experience prove most valuable when shared with others in the GN&C community. This session, which is a traditional part of the conference, provides a forum for candid sharing of insights gained through successes and failures. Past conferences have shown this session to be most interesting and informative.

Co-Chairperson: Darryll Pines, University of Maryland, 301-405-0263, – pines@umd.edu
Co-Chairperson: Sam Thurman, NASA Jet Propulsion Laboratory, 818-393-7819, – sam.w.thurman@jpl.nasa.gov
Local Chairperson: Heidi Hallowell, Ball Aerospace & Technologies, 303-939-6131 – hhallowe@ball.com
Local Chairperson: Zach Wilson, Lockheed Martin Space Systems, 303-971-4799 – zachary.s.wilson@lmco.com

Wednesday, February 6

Morning: 7:00 – 10:00 AM Session IX – “Space Situational Awareness (US Only)”

THEME: Recent events have underscored the current and near-term vulnerability of critical space assets to numerous types of attacks. Fundamental to preventing or responding to such attacks is simply the awareness that the event is in progress, and distinguishing it from natural events. This session surveys the GN&C concepts underlying Space Situational Awareness, and explores key driving issues and developments.

Co-Chairperson: Lt. Col Erik Bowman, AF/SMC, 310-416-1649 – Erik.Bowman@losangeles.af.mil
Co-Chairperson: Curt Von Braun, MIT/Lincoln Lab, 781-981-7907 – braun@ll.mit.edu
Local Chairperson: Bill Frazier, Ball Aerospace & Technologies, 303-939-4986 – wfrazier@ball.com
Local Chairperson: Alex May, Lockheed Martin Space Systems, 303-977-6620 – alexander.j.may@lmco.com

2008 AAS Guidance & Control Conference, Feb 1-6 Beaver Run Resort and Conference Center, Breckenridge, Colorado

For more information, visit our website at <http://www.aas-rocky-mountain-section.org>

ADVANCE REGISTRATION

We encourage Advance Registration to help the Committee in advanced planning and to minimize congestion at the conference registration desk.

The conference fee is \$420.00 for AAS members, \$465.00 for nonmembers, and \$210.00 for students. A special offer of \$40.00 added to the nonmember registration (\$505.00 total) will include a one-year membership to the National AAS. All registration fees include continental breakfast each day, Technical Exhibit buffet, banquet, lecture notes, and a CD of the proceedings at publication. Additional banquet tickets for guests are available for an additional \$40.00 each. Paper copies of the 2008 Conference Proceedings, which may be ordered below, will be available in mid-2008. For further information, contact Marv Odefey at 719-547-0268, modefey@MSN.com or Deb Wright at 303-971-6962, deborah.l.wright@lmco.com.

Reservations for lodging must be made directly with Beaver Run Resort in Breckenridge, 800-525-2253 or 970-453-6000 (see enclosed registration form). Or book on-line at http://www.beaverrun.com/resort.php/BEAVER_RUN click on Groups and Conventions, then enter the password AAS3573 (case sensitive) to make a reservation.

The block of rooms reserved for AAS fills up fast—to assure availability, make your reservations by early **October**. Please mention you are attending the AAS Conference (Booking #AAS3573) when making your hotel reservation.

Online Registration is available at <http://www.aas-rocky-mountain-section.org>

2008 ANNUAL AAS GUIDANCE & CONTROL CONFERENCE ADVANCE REGISTRATION FORM

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|--|-------|----------|------------|
| <input type="checkbox"/> Current member and want to register for the conference only | Fee | \$ _____ | (\$420.00) |
| <input type="checkbox"/> Current AAS member registering for the conference and renewing membership | Fee | \$ _____ | (\$505.00) |
| <input type="checkbox"/> Non-Member registering for the conference and one year membership to AAS | Fee | \$ _____ | (\$505.00) |
| <input type="checkbox"/> Non-Member and wish to register for the conference only | Fee | \$ _____ | (\$465.00) |
| <input type="checkbox"/> Citizen of Foreign country (does not include National membership) | Fee | \$ _____ | (\$380.00) |
| <input type="checkbox"/> College student (does not include National membership) | Fee | \$ _____ | (\$210.00) |
| <input type="checkbox"/> Technical Exhibitors wishing to pay the voluntary contribution in addition to the Conference registration fee | Fee | \$ _____ | (\$350.00) |
| <input type="checkbox"/> I plan to bring <input type="checkbox"/> banquet guests at \$40.00 each. | Total | \$ _____ | |
| <input type="checkbox"/> I want to order the 2008 Conference Proceedings at the special discount rate \$75.00 each for hard cover and/or \$65.00 each for soft cover | Total | \$ _____ | |

TOTAL PAYMENT \$ _____

MAKE CHECKS PAYABLE TO:
American Astronautical Society

RETURN TO: Marv Odefey
AAS G&C Conference
957 S. Charlo Dr.
Pueblo West, CO 81007-3221

OR FAX TO: Acteva 415-276-2399
OR: Marv Odefey 719-547-0971

Name _____

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TO REGISTER USING A CREDIT CARD (Visa or MasterCard): Credit Card: VISA ___ MasterCard ___

No. _____ Exp. Date _____ Signature: _____

2008 CONFERENCE COMMITTEE and ROCKY MOUNTAIN SECTION OFFICERS

Michael Drews, 2008 Conference Chairperson Lockheed Martin Space Systems	303-971-3622	michael.e.drews@lmco.com
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Jay Brownfield, Rocky Mtn AAS Secretary Honeywell	303-681-3316	jay.brownfield@honeywell.com

Additional Conference Committee Members Not Listed in the Agenda

Lockheed Martin Space Systems Company

Timothy Linn
Shawn McQuerry
Michael Osborne
Steve Price
Jon Teneyck

Ball Aerospace & Technologies Corp.

Lis Garratt
Christopher Robb
Charlie Schira
Becky Jones

Honeywell

Brett Abbott

Left Hand Design

Larry Germann

L-3 Communications, Titan Group

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