American Institute of Aeronautics and Astronautics
Houston Section
In Collaboration with INCOSE Presents

Annual Technical Symposium 2014

NASA/JSC Gilruth Center
Houston, Texas
Friday, May 9, 2014

PROGRAM

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Clay Stangle

Organizing Committee

Ellen Gillespie
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Laura Sarmiento
Douglas Yazell
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CONTENTS

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PROGRAM SUMMARY

7:45 AM – 4:30 PM	Registration Desk on First Floor	Alamo Ballroom
8:00 AM - 9:00 AM	*Speaker*: **Pete Hasbrook - State of the ISS**	Alamo Ballroom
Session A 9:00 AM – 10:15 AM	1. Climate Change 2. Safety and Mission Assurance (S&MA) 3. Space Commercialization 4. INCOSE	Discovery Rio Grande Longhorn Lone Star
Session B 10:30 AM – 11:45 AM	1. Climate Change 2. S&MA 3. GN&C 4. INCOSE	Discovery Rio Grande Longhorn Lone Star

12:00 NOON – 1:30 PM	Lunch	Alamo Ballroom

12:00 PM – 1:30 PM	*Space Commercialization Panel Speakers*: Former astronauts Chris Ferguson, Lee "Bru" Archambault, and Arturo Machuca from the Houston Airport Director's Office	Alamo Ballroom
Session C 1:45 PM – 3:00 PM	1. Robotics and History 2. Astrodynamics 3. EVA and Space Exploration 4. INCOSE	Discovery Rio Grande Longhorn Lone Star

Social at Perry's Steakhouse
487 Bay Area Blvd., Houston, TX 77058

Morning Program – Session A

8:00 - 9:00	Morning Key Note Speaker – Pete Hasbrook			
	Discovery (1)	**Rio Grande (2)**	**Longhorn (3)**	**Lone Star (4)**
	Session A-1: **Theme – Climate Change** **Chair: Douglas Yazell**	**Session A-2:** **Theme – S&MA** **Chair: Roger Kleinhammer**	**Session A-3:** **Theme – Space Commercialization** **Chair: Steve Everett**	**Session A-4:** **Theme – Systems Eng (INCOSE)**
9:00 - 9:25	**A-1.1** Climate Change Science and Public Policy **Douglas Yazell and Daniel Cohan**	**A-2.1** Building a Database for a Quantitative Model **Joseph Kahn**	**A-3.1** Technology Transfer and Commercialization **Kumar Krishen, Ph.D**	**INCOSE-1** Why Do I Need To Understand Systems Engineering? **Courtney Wright & Tony Williams**
9:25 – 9:50		**A-2.2** Data Used in Quantified Reliability Models **Roger Kleinhammer**	**A-3.2** Accelerating Space Commercialization **Alex Monchak**	**INCOSE-1.2** Systems Engineering Requirements **Ken Robinson**
9:50 - 10:15		**A-2.3** The "Best" Reliability Data for the Job **Roger Kleinhammer**	**A-3.3 INCOSE –** An Integrated Approach to Making Mars Exploration More Feasible and Cost Effective **Wayne McCandless**	
10:15 – 10:30	15 Minute Break			

Morning Program – Session B

	Discovery (1)		Rio Grande (2)		Longhorn (3)		Lone Star (4)
	Session B-1: **Theme – Climate Change** **Chair: Douglas Yazell**		**Session B-2:** **Theme – S&MA** **Chair: Roger Kleinhammer**		**Session B-3:** **Theme – GN&C** **Chair: Steve Everett**		**Session B-4:** **Theme – Systems Eng (INCOSE)**
10:30 – 10:55	**B-1.1** Climate Change Science and Public Policy **Douglas Yazell and Adrian Shelley**		**B-2.1** An Example of Risk-Informed Design **Richard Banke, Ph.D.**		**B-3.1** Model Based GN&C Simulation and Flight Software **Ryan Odegard**		**INCOSE-2** Virtual Black Boxes for Commercial Airliners: A Systems Engineering Approach **Wayne McCandless**
10:55 - 11:20			**B-2.2** What to Expect When Your Workplace is in Deep Space **Dianna DeMott**		**B-3.2** Savitzky-Golay-Filter Application to Moment Of Inertia Estimation **James Turner**		
11:20 – 11:45			**B-2.3** Using the Systems Engineering Life-Cycle to Develop and Agent-Based Model and Simulation **Ipek Bozkurt**		**B-3.3** Optimal Covariance Minimization Algorithm For The Continuous Kalman Filter **James Turner**		
12:00 - 1:30	*Lunch Key Note Space Commercialization Panel Speakers:* **Former astronauts Chris Ferguson, Lee "Bru" Archambault, and Arturo Machuca from the Houston Airport Director's Office**						

Afternoon program – Session C

	Discovery (1)		Rio Grande (2)	Longhorn (3)	Lone Star (4)
	Session C-1: Theme – Robotics and History Chair: Dr. Zafar Taqvi		**Session C-2:** Theme –Astrodynamics Chair: Dr. Al Jackson	**Session C-3:** Theme – EVA and Space Exploration Chair: Larry Friesen	**Session C-4** Theme – Systems Eng (INCOSE)
1:45 - 2:10	**C-1.1** NOAA and the ARCs **Dr. Paul Frenger, MD**		**C-2.1** Gravity Losses, the Rocket Equation and "U" **Wes Kelly**	**C-3.1** Integration of Optimized Leading Edges onto Wave Rider Configurations **Patrick Rodi, Ph.D.**	**INCOSE-3** Railroad Accident Investigation **Smokey Culver**
2:10 - 2:35	**C-1.2** Design and Implementation of a Semi-Autonomous Mobile Robot Prototype **Fatih Karabacak**		**C-2.2** Stability of Lunar Distant Retrograde Orbits **Gary Turner, Ph.D.**	**C-3.2 INCOSE** – Look Ahead and Listen Now **Terry Hill**	
2:35 - 3:00	**C-1.3** Suddenly Tomorrow Came – The Audiobook Project **Ted Kenny**		**C-2.3** The Casimir Effect: Traveling Faster than Light **John M. Dilorio**	**C-3.3** MAJIC: A Gyroscopically Actuated Astronaut Mobility Unit for Future EVA Missions **Michele Carpenter, Ph.D.**	
3:00 - ???	**Social at Perry's Steakhouse** 487 Bay Area Blvd., Houston, TX 77058				

SYMPOSIUM LOCATION

The American Institute of Aeronautics and Astronautics (AIAA), Houston Section, welcomes you to the 2014 Annual Technical Symposium at NASA/JSC Gilruth Center on May 9, 2014.

Enter Gilruth Center using JSC Public Access Gate 5 on Space Center Boulevard if you do not have a JSC badge. The morning and afternoon technical presentations are in the Lone Star, Longhorn, and Coronado rooms on the second floor, and the Discovery Room on the first floor. The morning keynote speech and the luncheon are on the first floor in the Alamo Ballroom.

The Gilruth Center will offer free internet for ATS.

Guest Credentials
User: group1430
Password: 20grp143014

How to connect:

1. Turn on the wireless card and ensure you are near a Wireless Access Point
2. In your wireless client utility, specify the SSID to "nasaguest" to connect to the guest network. Alternatively, you can scan for wireless networks and select the network labeled "nasaguest" from the list of networks your wireless card finds.
3. Open a Web Browser (IE, Firefox, etc.). You will then be re-directed to the JSC Guest Captive Portal Access Login page.
4. At the Captive Portal Login page, enter the user ID and password enclosed in this email and click connect.
5. You will then be connected to the guest network.

Encryption
The JSC Guest Network does not require the configuration of any type of encryption to connect. Furthermore, all traffic on the Guest Network will not be encrypted.
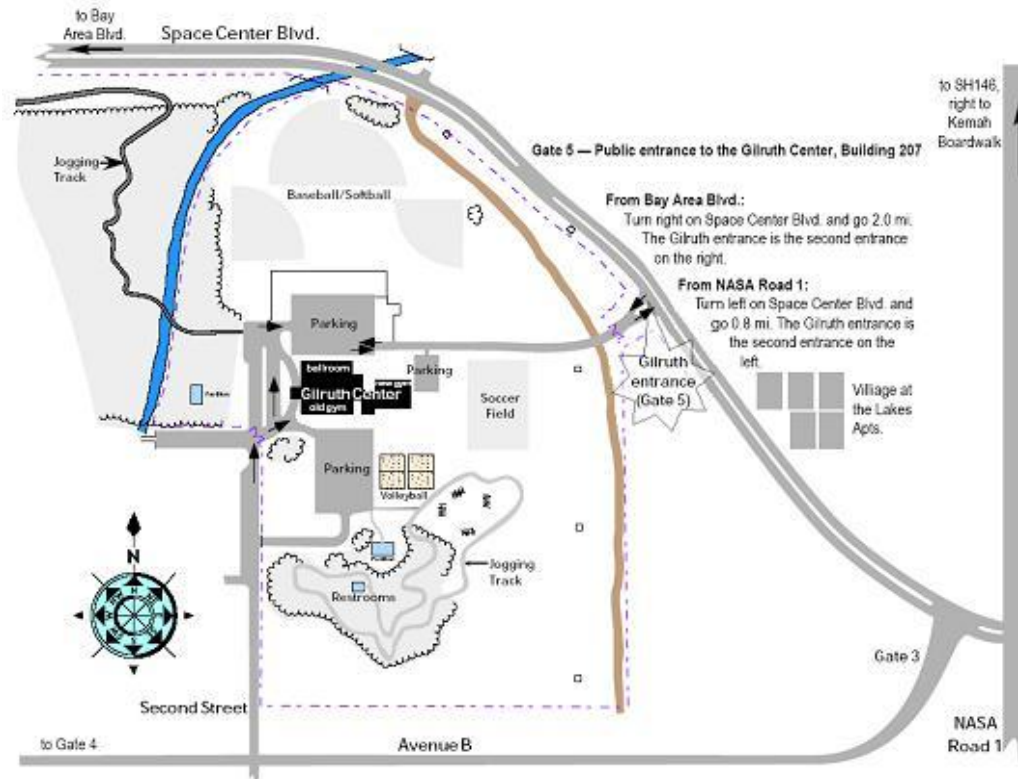
Figure 1. JSC Gate 5 Public Entrance Map
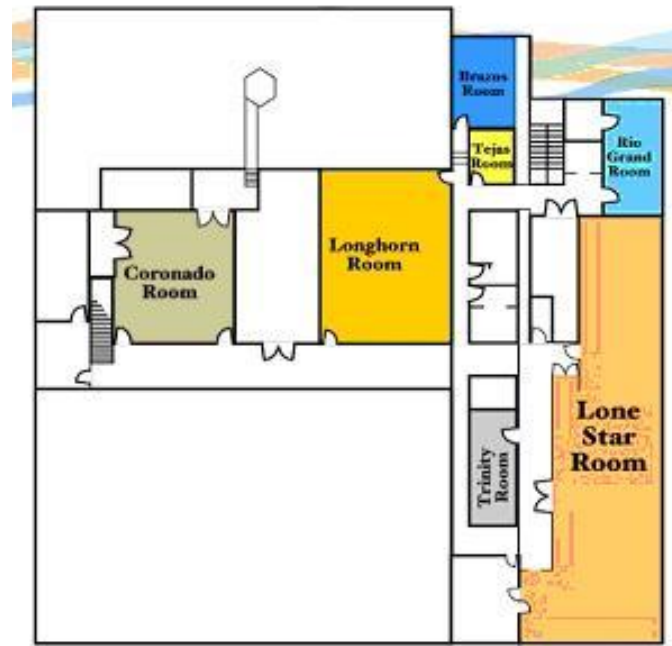
Figure 2. Gilruth Center First Floor

Figure 3. Gilruth Center Second Floor

SYMPOSIUM INFORMATION

REGISTRATION

Registration is free for presenters, $15 AIAA Student Members, $20 for AIAA and INCOSE Members, and $25 for non-members. All registrations include a light breakfast and lunch for all attendees and is open all day beginning at 7:45 AM. Advance reservations are recommended but not required. Advance registration is easy to do on the web at www.aiaahouston.org. The registration desk is located in the hallway leading to the Alamo Ballroom. Registration is paid online. There is no additional fee for the buffet lunch – the cost is included in the registration fee.

Morning, 8:00-9:00 AM, Alamo Ballroom

Keynote Speakers: Pete Hasbrook
"State of the ISS"

Complimentary coffee, bottled water, assorted juices, and breakfast food provided

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Lunch, Noon–1:30 PM, Alamo Ballroom

Space Commercialization Keynote Speaker Panel: Chris Ferguson, Lee "Bru" Archambault, and Arturo Machuca.

Blue's Town BBQ Buffet, baked beans, potato salad, Texas toast, fruit cobbler
Fresh Brewed Starbucks Coffee, Iced Tea

TECHNICAL PROGRAM

TECHNICAL SESSIONS

Three sessions will run in parallel in the morning and afternoon. Morning sessions start at 9:00 AM and end by noon. Lunch program begins at 12 noon and lasts for about an hour and fifteen minutes. Afternoon sessions start at 1:30 PM and end by 3:00 PM.

The sessions are held in one meeting room on the first floor and three meeting rooms on the second floor of the Gilruth Center.

PRESENTATIONS

Each presentation is allocated 30 minutes total time, including questions and any initial setup. Session chairs will maintain this pace to ensure that attendees can see presentations according to the posted schedule. Each room will be equipped with a laptop computer supplied by the Session Chair.