AAS/AIAA ASTRODYNAMICS SPECIALIST CONFERENCE CONFERENCE INFORMATION

GENERAL INFORMATION

Welcome to the Astrodynamics Specialist Conference, hosted by the American Astronautical Society (AAS) and co-hosted by the American Institute of Aeronautics and Astronautics (AIAA), August 11 – 15, 2013. This meeting is organized by the AAS Space Flight Mechanics Committee and the AIAA Astrodynamics Technical Committee, and held at the Hilton Head Marriott Resort & Spa, 1 Hotel Circle, Hilton Head, South Carolina 29928. Phone: 843-686-8400.

REGISTRATION

Registration Site (https://www.xcdsystem.com/aas/index.cfm)

In order to encourage early registration, we have implemented the following conference registration rate structure: **Register by July 21, 2013 and save \$50!**

Category	Early Registration	Registration
	(through July 21, 2013)	(after July 21, 2103)
Full - AAS or AIAA Member	\$530	\$580
Full - Non-member	\$630	\$680
Retired*	\$165	\$165
Student*	\$165	\$165

^{*}does not include proceedings CD or buffet dinner

The "Flavors of the Low Country" dinner on Tuesday evening is included with all registrations. Guest tickets for the dinner may be purchased for \$75. Tickets for children ages 5 to 11 are \$35 and children under 5 eat free. More information about the "Flavors of the Low Country" dinner is included below.

A conference registration and check-in table will be located on the Lobby Level of the Hilton Head Marriott Resort & Spa and will be staffed according to the following schedule:

Sunday Aug. 11	3:00 PM - 6:00 PM
Monday Aug. 12	7:30 AM - 2:00 PM
Tuesday Aug. 13	8:00 AM - 2:00 PM
Wednesday Aug. 14	8:00 AM – 2:00 PM
Thursday Aug. 15	8:00 AM - 10:00 AM

We will accept registration and payment on-site for those who have not pre-registered online, but we strongly recommend online registration before the conference in order to avoid delays (see URL above). Pre-registration also gives you free access to pre-print technical papers. On-site payment by credit card will be only through the AAS website using a computer at the registration table. Any checks should be made payable to the "American Astronautical Society."

SCHEDULE OF EVENTS

Day	Start	End	Function	Room
day I	3pm	6pm	Registration	East registration
Sund 11 Augi	брт	9pm	Early Bird Reception	Sabal Palm Room

Day	Start	End	Function	Room
	7am	8am	Speakers Breakfast	Sabal Palm Room
	7:30am	2pm	Registration	East registration
	8am	11:45am	Session 1: SSA I: Detection and Estimation	Ballroom A
	8am	11:45am	Session 2: Mission Operations	Ballroom B
	8am	11:45am	Session 3: Nonlinear Modeling and Analysis Methods	Ballroom C
4	8am	11:45am	Session 4: Spacecraft Autonomy and Rendezvous	Ballroom D
day gus	9:40am	10:05am	Morning Break	East registration
Monday 12 August	12:00	1:30pm	Joint Technical Committee Lunch	Conroy's
M 12	1:30pm	3:10pm	Session 5: Solar Sails, Tethers, and Large Space Structures I	Ballroom A
	1:30pm	3:10pm	Session 6: Earth Orbiters	Ballroom B
	1:30pm	3:10pm	Session 7: Maneuver Design	Ballroom C
	1:30pm	3:10pm	Session 8: Attitude Determination and Dynamics I	Ballroom D
	3:10pm	3:35pm	Afternoon Break	Prefunction
	4:00pm	5:30pm	Plenary Session	Ballroom A & B
	5:30pm	7:00 pm	CAS/TAS/WAS committee meetings	Ballroom A, B, C

Day	Start	End	Function	Room
	7am	8am	Speakers Breakfast	Sabal Palm Room
	8am	2pm	Registration	East registration
	8am	11:55am	Session 9: SSA II: Prediction and Uncertainty	Ballroom A
	8am	11:45am	Session 10: Orbit Determination and Estimation I	Ballroom B
	8am	11:45am	Session 11: Dynamical Systems Theory	Ballroom C
	8am	11:45am	Session 12: Formation Flying and Relative Motion I	Ballroom D
, t	9:40am	10:05am	Morning Break	East registration
Tuesday 13 August	Noon	1:30pm	AIAA Astrodynamics Technical Committee Lunch	Conroy's
Tn 13	1:30pm	5:15pm	Session 13: Interplanetary Mission Design and Concepts	Ballroom A
	1:30pm	5:15pm	Session 14: Close-proximity Operations near Primitive Bodies	Ballroom B
	1:30pm	5:15pm	Session 15: Orbit Determination and Estimation II	Ballroom C
	1:30pm	5:15pm	Session 16: Attitude Guidance and Control	Ballroom D
	3:10pm	3:35pm	Afternoon Break	East registration
	5:30pm	6:30pm	Social hour	Basshead Deck
	6:30pm	9:00pm	"Flavors of the Low Country" buffet dinner	Basshead Deck

Day	Start	End	Function	Room
	7am	8am	Speakers Breakfast	Sabal Palm Room
	8am	2pm	Registration	East registration
	8am	11:45am	Session 17: SSA III: Orbit Debris Modeling and Mitigation	Ballroom A
	8am	11:45am	Session 18: Spacecraft Guidance, Navigation, and Control	Ballroom B
	8am	11:45am	Session 19: Orbit Dynamics	Ballroom C
	8am	11:45am	Session 20: Atmospheric Flight and Entry, Descent, and Landing	Ballroom D
day ust	9:40am	10:05am	Morning Break	East registration
Wednesday 14 August	Noon	1:30pm	AAS Space Flight Mechanics Committee Lunch	Conroy's
W	1:30pm	3:30pm	Session 21: Lunar Mission Design and Concepts	Ballroom A
	1:30pm	3:30pm	Session 22: Attitude Determination and Dynamics II	Ballroom B
	1:30pm	3:30pm	Session 23: Solar Sails, Tethers, and Large Space Structures II	Ballroom C
	1:30pm	3:30pm	Session 24: Special Session: High-performance and On-board Computing Architectures	Ballroom D
	3:30pm	3:55pm	Afternoon Break	East registration
	4:00pm	5:30pm	Asteroid talk	Ballroom A

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Day	Start	End	Function	Room
	7am	8am	Speakers Breakfast	Sabal Palm Room
	8am	10am	Registration	East registration
ay ust	8am	11:20am	Session 25: SSA IV: Collisions and Conjunctions	Ballroom A
Thursday 15 August	8am	10:55am	Session 26: Formation Flying and Relative Motion II	Ballroom B
T I:	8am	10:55am	Session 27: Low-thrust Trajectory Design	Ballroom C
	8am	10:55am	Session 28: Primitive-body Mission Design and Concepts	Ballroom D
	9:40am	10:05am	Morning Break	East registration

SPECIAL EVENTS

EARLY BIRD RECEPTION

Sunday, 11 August 6:30 – 8:30 pm Location: Sabal Palm Room

PLENARY SESSION – DAVID BARNHART (DARPA)

Monday, 12 August 4:00 – 5:30 pm Location: Ballroom A & B

"Mambo dogfish to the banana patch":

Bridging the gap between technology and policy to unleash a dramatic surge in space capabilities

Democratization in technology is enabling surges in areas that benefit individual lives, society and the world in general. This same trend is beginning to occur in one medium that has eluded all but the very few well-funded organizations, that of space. Space may hold the greatest potential for expansion of markets and capabilities into the future, yet it is adjudicated by a set of policies and regulations that are typically decades old. Technology democratization in space is occurring at such a rapid pace, there may well be a clash between those policies and the true capabilities that technology may enable. The presentation will focus on understanding the natural struggle between technology advances versus possible risks they engender in the unique environment of space, and postulate ways technologists could incorporate this into every day developments to truly unleash the same surge in space currently enjoyed on Earth.

FLAVORS OF THE LOW COUNTRY - BASSHEAD DECK

Tuesday, 13 August 5:30 – 6:30 pm Social Hour (cash bar)

6:30 - 9:00 pm Buffet dinner

Location Basshead Deck

<u>Menu</u>

Cornbread, Biscuits and Hush Puppies Charleston She Crab Soup

Salads

Tossed Mixed Green Salad Red Pear Tomatoes, Homemade Croutons and Shredded Parmesan Cheese Ranch, Blue Cheese, Lemon Balsamic Vinaigrette and Low-Fat Honey Dijon Dressing

> Jalapeño Coleslaw Cucumber Salad New Red Potato Salad with Bacon

Shrimp Boil
Peel and Eat Shrimp Simmered in Cajun Spices
with Sausage, Corn and Potatoes

Entrées

The Best Fried Chicken Anywhere Carolina Barbecue Chopped BBQ Pork Seasoned with Cider Vinegar

Fried Potato Wedges
Fried Green Tomatoes and Tomato Chutney

Desserts

Sour Cream Pound Cake with Strawberry Sauce Georgia Peach Crisp with Whipped Cream Chocolate Peanut Butter Pie with Chocolate Sauce

Guests with any dietary restrictions should contact <u>Felix.Hoots@aero.org</u> by August 6 so the caterer can be informed.

All conference registrations will receive an event ticket. Adult guest tickets will be available for \$75 each. Tickets for children from 5-11 are available for \$35. Children under 5 are free. Please contact the conference chairs if interested in guest tickets prior to August 6, 2013.

SPECIAL INTEREST SESSION – NATHAN STRANGE (JET PROPULSION LABORATORY)

Wednesday, 14 August 4:00 – 5:30 pm Location: Ballroom A

Overview of Mission Design for NASA Asteroid Redirection Mission Concept

Part of NASA's new asteroid initiative is a robotic mission to capture a roughly six to eight meter asteroid and redirect its orbit to place it in trans-lunar space. Once in a stable storage orbit at the Moon, astronauts will then visit the asteroid for science investigations, to test in space resource extraction, and to develop experience with human deep space missions. This talk will discuss the mission design techniques that enable the redirection of a 100-1000 metric ton asteroid into lunar orbit with a 40-50 kW Solar Electric Propulsion (SEP) system. The mission design is still in the early stages, and we welcome any comments from the astrodynamics community on our methodology or suggestions of alternate approaches.

CONFERENCE LOCATION

HILTON HEAD MARRIOTT RESORT & SPA



1 Hotel Circle

Hilton Head, South Carolina 29928 USA

Phone: 1-843-686-8400 Fax: 1-843-686-8450

Toll-free: 1-888-511-5086

http://www.marriott.com/hhhgr

Ranked by CONDE NAST as one of the top 10 best islands and family beaches in the country, Hilton Head Island http://www.hiltonheadisland.org will provide a superb family vacation opportunity to accompany your conference experience. Kids and teens will especially enjoy the myriad of activities tailored especially for them www.wheretogohiltonhead.com/teens.htm.

The Hilton Head Marriott Resort & Spa, situated on the historic Palmetto Dunes Plantation, provides a central base for exploration of all the island has to offer. **Recreation** opportunities abound with an 11 mile canoe and kayak lagoon network interlaced across the island, the Palmetto Bay Marina (sailing, fishing, parasailing, ocean kayaking), 20 golf courses on the island and surrounding low country, plus loads of kids activities including crafts, pool games, scavenger hunts, boat excursions to watch for dolphins, crabbing and kayaking. Interested in the local History and Culture? The Coastal Discovery Museum showcases the history, culture and ecology of Hilton Head Island area, while the Parris Island Museum addresses the Spanish colonization, Tarawa WWII Exhibit, Iron Mike (acclaimed statue of WWI marine), and the Beaufort Historic District ("Forrest Gump" filming) offers carriage rides, walking tours, and biking. How about *Shopping*? The Mall at Shelter Cove houses every conceivable outdoor recreation, shopping, and restaurant choice including the world's largest sundial. Waterfront evening entertainment is especially oriented for the children. Harbour Town with its iconic lighthouse, shops, galleries, and cafés provides a picturesque setting for activities. If you prefer more choices, visit the Tanger Outlets (1 and 2) or the Coligny Plaza with 60 stores. And you should not miss an opportunity to enjoy the unique Nature experiences on Hilton Head Island. Pinckney Island National Wildlife Refuge is a 4,000 acre preserve with bird watching of shore birds, wading birds, waterfowl, and migratory flocks. 10 miles of trails for hiking and cycling offer glimpses of white ibis, herons, ospreys, egrets, bald eagles and a visit to the butterfly garden.

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The Conference rate for the conference is \$123 (current government per diem) plus applicable taxes. Currently, the tax rate is 11% plus a \$1.00 per room, per night destination fee. Please request the AAS/AIAA Space Flight Mechanics Meeting rate. The deadline for securing the conference rate at the hotel is July 21, 2013. The conference rate is valid for 3 nights before and after the conference dates, subject to availability.

Complimentary internet access in guest rooms and meeting space is available to all conference attendees. Complimentary parking is included for all guests.

TRANSPORTATION INFO

The Savannah/Hilton Head International Airport, <u>www.savannahairport.com</u>, is 47 miles from the Hilton Head Marriott Resort & Spa. The airport is served by multiple major carriers, and has direct flights from 17 locations.

K-Shuttle is the official provider of scheduled shuttle service from Savannah/Hilton Head International to the resorts of Hilton Head Island. Shuttles run throughout the day from the Airport to the Island beginning at 10:00 a.m. Service from the Island to the Airport can be scheduled as early as 3:45 a.m. with advance reservations. Cost is \$45 one way or \$80 round trip. For more information and shuttle schedules call (877) 243-2050. A private taxi costs approximately \$85 to the hotel.

DRIVING DIRECTIONS

From the Savannah/Hilton Head Intl Airport:

• Turn onto Interstate 95 N. Take Exit 8 in SC to Hwy 278 East. Follow 278E (approximately 18 miles to the bridge) to Hilton Head. Stay right on 278 Business for another 8 miles to Palmetto Dunes. Turn left at Queens Folly Rd. (Palmetto Dunes traffic light). The Hilton Head Marriott Resort and Spa is one mile into Palmetto Dunes; turn left before the guard gate

From the Hilton Head Airport:

• Turn left onto Beach City Road. At the traffic light, turn left onto Hwy 278E. Follow 278E to Queens Folly Rd. at the Palmetto Dunes. The Hilton Head Marriott Resort and Spa is located one mile into Palmetto Dunes, turn left before the guard gate.

From the North:

- I-95 South to Exit 8, Hwy 278 East
- Follow Driving directions from Savannah/Hilton Head Intl Airport

From the South:

- I-95 North to Exit 8, Hwy 278 East
- Follow Driving directions from Savannah/Hilton Head Intl Airport

ARRIVAL INFORMATION

Check-In and Checkout

• Check-in: 4:00 PM

• Check-out: 11:00 PM

Parking

Valet parking is available at a rate of \$18.00 plus tax per night, automatically billed to your room. Self-parking is complimentary.

HOTEL RESTAURANTS AND LOUNGES

- The Cafe. Modern American cuisine. Unique sunlit dining open for breakfast and lunch.
- Conroy's Fine Dining. Take in views of the Atlantic Ocean while enjoying fresh seafood or classic American cuisine. Large wine selection, kid's menu and early bird dining.
- **The Lounge.** Open for early smack or late night meal. Enjoy ocean views as large screen televisions.
- The Ocean Blu Café and Liquid Bar. Ultimate ocean front dining experience. Open for lunch and dinner as well as liquid refreshments.

HOTEL RECREATION AND LEISURE

- Fitness Center
- Atlantic Ocean
- Indoor Pool
- Outdoor Pool
- Whirlpool
- Spa Soliel (appointment required)
- Palmetto Dunes Golf Club: Three championship golf courses, including our true oceanfront Robert Trent Jones course, multiple pro-shops, eateries, and clubhouses.
- Tennis Complex
- State-of-the-art Game Room
- Sport Court
- Volleyball
- Sea Pines Golf Club (3 miles)
- Palmetto Hall Golf Club (5 miles)
- Biking trail
- Horseback riding (5 miles)
- Jet-skiing (1 mile)
- Jogging / fitness trail
- Kavaking
- Minature golf (1 mile)
- Nature preserve, trail
- Sailing (1 mile)
- Water skiing (1 mile)

AREA ATTRACTIONS

The suggestions below are a partial list of the many things to do and see on Hilton Head Island. For more information and suggestions visit the concierge desk. The Hilton Head Island visitor's bureau also has a very informative website: www.hiltonheadchamber.org.

Bluffton Historical Preservation Society/ Heyward House. (843)757-6293.

Step back in time and experience Historic Bluffton, developed as a retreat for the rice and cotton plantation owners in the early 19th century, the town provided relief from the heat and mosquitoes on the bluff high above the May River. The winds of secession began to blow here in 1844 with the birth of the "Bluffton Movement". Burned after the war, Heyward House, 14 homes and 2 churches survived. Begin your tour at the restored Hayward House and discover the laid-back "Bluffton state of mind". www.heywardhouse.org

Coastal Discovery Museum at Honey Horn. (843)689-6767.

The mission of this outdoor museum is to "Teach the public about the cultural heritage and natural history of the Lowcountry". Take in 300 years of history while enjoying the 68 acres of live oaks, salt marshes, and historic buildings on the Honey Horn property. www.coastaldiscovery.org.

Gullah Museum of Hilton Head Island. (843) 681-3254.

Take a cultural tour and experience the history, stories, songs and customs of the Gullah culture. Consider a visit to the "Little House" and learn about the efforts to preserve the history of this important cultural group and its influence on Hilton Head Island. www.gullahmuseumhhi.org.

The Sandbox: An Interactive Children's Museum. (843) 842-7645.

Ready for a break from the sun and fun with the little ones? The Sandbox is the perfect place for the kids....and you! Interactive exhibits include the Builders of Tomorrow, the Rhythm and Hues Room, the Loggerhead Sandcastle, the No Swim Aquarium, and Track the T-Rex. All of the exhibits are designed to stimulate various types of experiential learning with an island flavor. www.thesandbox.org.

Shopping

Beach Market Located on the South end of the island, the market has offered "premier shopping, dining and entertainment for the last 20 years". Traditionally open 9am-5pm daily, this shopping area has a good variety of Gift Shops, Souvenir Shops, Eateries, and Bars.

Coligny Circle / Plaza. This quaint shopping area on the beach offers over 60 Upscale Boutique Shops and Restaurants along with local entertainment. For more information visit www.colgnyplaza.com.

Main Street Village. Visit this unique shopping area complete with popular Chain Stores, Small Boutiques, and Local Eateries. Centrally located at 1500 Main Street just outside the gates of Hilton Head Plantation this area is easily assessable. www.mainstreetvillagehhi.com

Shelter Cove Harbour Shops & Restaurants at Palmetto Dunes. This authentic harbor venue offers "year-round waterfront dining, shopping and entertainment, plus spectacular views of Broad Creek. This laid-back Mediterranean-style village combines the Island's best shops, restaurants and

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waterfront activities." Visit http://www.palmettodunes.com/shelter-cove-harbour-shops.php for more information.

NOTE: Families and Adults alike, DO NOT miss the experience of Shannon Tanner performing live at Shelter Cove. Daily show schedule and Pirate Tours are posted on www.shannontanner.com. This is a memory that will last for a lifetime! Just ask our grown kids!

Tanger Outlet Center Hilton Head. The Tanger Outlets bring you a selection of your favorite brands at outlet prices. Visit the outdoor shopping area at 1414 Fording Island Road in Bluffton. Regular hours Monday through Saturday are 10 am to 9 pm. Sunday hours are 11 am to 6 pm. www.tangeroutlet.com

Village at Wexford. This island destination offers elegant shopping, relaxation and pampering, and evenings filled with exceptional dining, the sounds of jazz, and dancing. Located near the pristine beaches on William Hilton Parkway, this is an island experience that should not be missed. www.villageatwexford.com

Golf

Barony Golf Course. (843)681-1750, www.hiltonheadgolf.net.

Crescent Pointe Golf Club. (843)706-2600, www.crescentpointegolf.com.

Eagle's Pointe Golf Club. (843) 757-5500, www.eaglespointegolf.com.

Harbour Town Golf Links. (843) 886-2164, www.seapines.com.

Heron Point by Pete Dye. (843) 886-2164, www.seapines.com.

Hilton Head National Golf Club. (843) 886-2164, www.golfhiltonheadnational.com.

Ocean Course. (843) 886-2164, www.seapines.com.

Old South Golf Links. (843) 886-2164, www.oldsouthgolf.com.

Oyster Reef. (843) 886-2164, www.hiltonheadgolf.net.

Palmetto Hall Golf Club. (843) 886-2164, www.palmettohallgolfcom.

Planter's Row Golf Course. (843) 886-2164, www.hiltonheadgolf.net.

Port Royal Golf Club. (843) 886-2164, www.heritagegolfgroup.com.

Robber's Row Golf Course. (843) 886-2164, www.hiltonheadgolf.net.

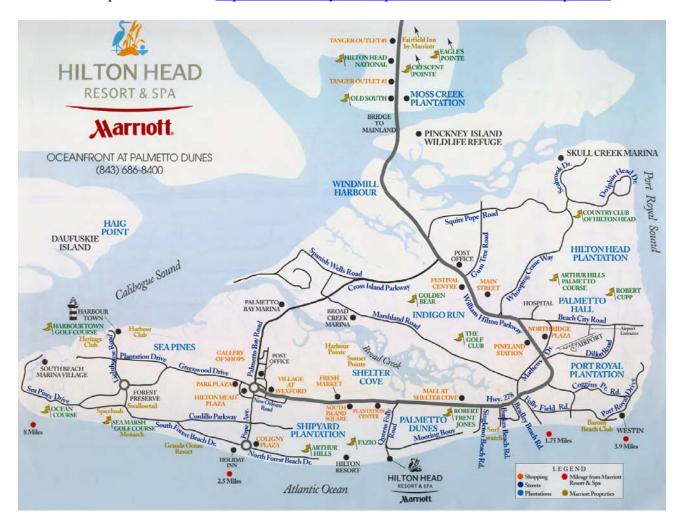
Rose Hill Golf Club. (843) 886-2164, www.golfrosehill.com.

Shipyard Golf Club. (843) 886-2164, www.hiltonheadgolf.net.

Area Map

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Additional maps are located at http://www.sciway.net/maps/hilton-head-island-sc-maps.html



ADDITIONAL INFORMATION

SPEAKER ORIENTATION

On the day of their sessions, authors making presentations meet with their session chairs at 7:00 am. Breakfast will be served. Check the schedule at the beginning of the program for the location of the speaker's breakfast each morning. Speaker attendance is mandatory.

VOLUNTEERS

Volunteers that would like to staff the registration table may sign up at the registration table.

PRESENTATIONS

Each presentation is limited to 16 minutes. An additional four minutes is allotted between presentations for audience participation and transition. Session chairs shall maintain the posted schedule to allow attendees the option of joining a parallel session. Each room is equipped with a laser pointer, an electrical outlet, and a video projector that can be driven by a computer. Presenters shall coordinate with their Session Chairs regarding the computing equipment, software, and media requirements for the session; however, each presenter is ultimately responsible for having the necessary computer and software available to drive the presentation. Microsoft PowerPoint and PDF are the most common formats.

"No-Paper, No-Podium" Policy Completed manuscripts shall be electronically uploaded to the submission site before the conference, limited to 20 pages in length, and conform to the AAS conference paper format. If the completed manuscript is not contributed on time, it will not be presented at the conference. If there is no conference presentation by an author, the contributed manuscript shall be withdrawn.

PREPRINTED MANUSCRIPTS

Physical copies of preprinted manuscripts are no longer available or required for the Space Flight Mechanics Meetings or the Astrodynamics Specialist Conferences. Electronic preprints are available for download at least 72 hours before the conference at https://aas.pxi.com/registration/reg/ for registrants who use the online registration system. The hotel provides conference guests with complimentary wireless internet access in guest rooms and the conference meeting space. Registrants without an internet-capable portable computer, or those desiring traditional paper copies should download and print preprint manuscripts before arriving at the conference.

CONFERENCE PROCEEDINGS

All full registrants will receive a CD of the proceedings mailed to them after the conference (extra copies are available for \$50 during the conference). However, the hardbound volume of *Advances in the Astronautical Sciences* covering this conference will be available to attendees at a reduced prepublication cost, if ordered at the registration desk. After the conference, the hardbound proceedings will more than double in price, although authors will still receive a special 50% discount off the post-conference rate even if they delay their order until after the conference. Cost of Proceedings:

Conference Rate \$290 domestic (\$380 international)

Post-Conference Rate
 Authors (post-conference)
 \$600 (approx.)
 \$300 (approx.)

Although the availability of hardcopy proceedings enhances the longevity of your work and elevates the importance of your conference contribution, please note that conference proceedings are not considered an archival publication. Authors are encouraged to submit their manuscripts after the meeting to one of the relevant journals, such as:

Journal of the Astronautical Sciences
Editor-in-Chief: Kathleen C. Howell
School of Aeronautics and Astronautics
3233 Armstrong Hall
Purdue University
West Lafayette, IN 47907
(765) 494-5786
howell@purdue.edu

Journal of Guidance, Control and Dynamics

Editor-in-Chief: George T. Schmidt, Massachusetts Institute of Technology

Manuscripts can be submitted via: www.writetrack.net/aiaa/

Journal of Spacecraft and Rockets

Editor-in-Chief: E. Vincent Zoby, NASA Langley Research Center

Manuscripts can be submitted via: www.writetrack.net/aiaa/

SATISFACTION SURVEY

Registrants are highly encouraged to record their level of satisfaction and conference preferences in an anonymous survey taken throughout the time of the conference. Please return the survey form included in this program to the registration table before departing from the conference.

COMMITTEE MEETINGS

Committee seating is limited to committee members and invited guests. Committee and subcommittee meetings will be held according to the schedule at the beginning of the program.