

AIAA Guidance, Navigation, and Control Conference 2013

**Boston, Massachusetts, USA
19-22 August 2013**

Volume 1 of 8

ISBN: 978-1-62993-151-7

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

The contents of this work are copyrighted and additional reproduction in whole or in part are expressly prohibited without the prior written permission of the Publisher or copyright holder. The resale of the entire proceeding as received from CURRAN is permitted.

For reprint permission, please contact AIAA's Business Manager, Technical Papers. Contact by phone at 703-264-7500; fax at 703-264-7551 or by mail at 1801 Alexander Bell Drive, Reston, VA 20191, USA.

TABLE OF CONTENTS

VOLUME 1

ADAPTIVE CONTROL METHODS IN FLIGHT CONTROL APPLICATIONS

Chebyshev Neural Noncertainty-Equivalent Adaptive Control of Wing Rock of Slender Delta Wings (AIAA 2013-4511)	1
<i>Keum Won Lee, Sahjendra N. Singh</i>	
Reference Model Modification for Robust Performance Conservation of Model Reference Adaptive Controllers (AIAA 2013-4512)	21
<i>Thomas Bierling, Maximilian Mühlegg, Florian Holzapfel, Rudolf Maier</i>	
What is L_1 Adaptive Control (AIAA 2013-4513)	46
<i>Saeid Jafari, Petros Ioannou, Lael E. Rudd</i>	
Adaptive Control of a Generic Hypersonic Vehicle (AIAA 2013-4514)	55
<i>Daniel P. Wiese, Anuradha M. Annaswamy, Jonathan A. Muse, Michael A. Bolender</i>	
Simple Adaptive Control for a Class of Mechanical Systems and its Application to a Quadrotor Helicopter (AIAA 2013-4515)	76
<i>Makoto Kumon, Yasuaki Oda, Ikuro Mizumoto</i>	

ADVANCES IN ADAPTIVE CONTROL: STABILITY, PERFORMANCE, AND ROBUSTNESS – DEDICATED TO THE CONTRIBUTIONS OF ANTHONY J. CALISE TO ADAPTIVE FLIGHT CONTROL I (INVITED)

Robustness of a Derivative-Free Adaptive Control Law in the Presence of Unmodeled Dynamics (AIAA 2013-4516)	92
<i>Tansel Yucelen, Anthony J. Calise</i>	
Output Feedback Adaptive Control in the Presence of Unmodeled Dynamics (AIAA 2013-4517)	114
<i>Rajeev Chandramohan, Anthony J. Calise</i>	
Distributed Parameter Direct Adaptive Control Using a New Version of the Barbalat-Lyapunov Stability Result in Hilbert Space (AIAA 2013-4518)	135
<i>Mark J. Balas, Susan A. Frost</i>	
Adaptive Optimal Control of Partially-unknown Constrained-input Systems using Policy Iteration with Experience Replay (AIAA 2013-4519)	144
<i>Hamidreza Modares, Frank Lewis, Mohammad-Bagher Naghibi-Siastani, Girish Chowdhary, Tansel Yucelen</i>	

AEROSPACE ROBOTICS AND UNMANNED/AUTONOMOUS SYSTEMS I

Modeling and Stability Analysis of a Hybrid Docking Simulator (AIAA 2013-4520)	155
<i>Melak M. Zebenay, Toralf Boge, Daniel Choukroun</i>	
Reactionless Path Planning Strategies for Capture of Tumbling Objects in Space Using a Dual-Arm Robotic System (AIAA 2013-4521)	191
<i>Suril V. Shah, Inna Sharf, Arun Misra</i>	
Optimal Control of a Space Robot to Approach a Tumbling Object for Capture with Uncertainties in the Boundary Conditions (AIAA 2013-4522)	203
<i>Angel Flores-Abad, Zheng Wei, Ou Ma, Khanh D. Pham</i>	
Nonlinear Adaptive Output Feedback Control of Flexible-Joint Space Robot Manipulators (AIAA 2013-4523)	216
<i>Steve Ulrich, Jurek Z. Sasiadek, Itzhak Barkana</i>	
Dynamic Modeling and Control of an Active Debris Removal Small Satellite (AIAA 2013-4524)	240
<i>Aaron Avery, David Geller</i>	

AIRCRAFT GNC: CONTROLS I

Discrete Control Dependent Constraints in Multiple Shooting Optimal Control Problems (AIAA 2013-4526)	257
<i>Matthias Rieck, Maximilian Richter, Florian Holzapfel</i>	
Autoland Controller Design Procedure based on Total System Error Concept for a Small UAV Aircraft (AIAA 2013-4527)	273
<i>Christian Eitner, Stanislav Braun, Florian Holzapfel</i>	
A Joint Sensor Based Backstepping Approach For Fault-Tolerant Flight Control of a Large Civil Aircraft (AIAA 2013-4528)	290
<i>Liguo Sun, Coen C. De Visser, Wouter Falkena, Q Ping Chu</i>	
Saturated RISE Tracking Control of Store-Induced Limit Cycle Oscillations (AIAA 2013-4529)	312
<i>Brendan Bialy, Lindsey Andrews, Jess W. Curtis, Warren Dixon</i>	

CONTROL OF ROTORCRAFT MICRO AIR VEHICLES

PD-Tunable H_∞ Control Design for a Quadrotor (AIAA 2013-4530)	326
<i>Tyler Ryan, H Jin Kim</i>	

Optimal Trajectory Generation and Tracking Control of a Single Coaxial Rotor UAV (AIAA 2013-4531)	337
<i>Masanori Harada, Hideyuki Nagata, Johan Simond, Kevin Bollino</i>	
Tracking Control of a Single Coaxial Rotor UAV Using Dynamic Inversion (AIAA 2013-4532)	350
<i>Masanori Harada, Hideyuki Nagata, Kevin Bollino</i>	
DR-SNAC Aided Dynamic Inversion Controller for Robust Trajectory Tracking of a Micro-Quadrotor (AIAA 2013-4533)	365
<i>Shivendra N. Tiwari, Radhakant Padhi</i>	
A Novel Parameter Varying Controller Synthesis Method for Quadrotor Control (AIAA 2013-4534)	393
<i>Fabien Niel, Yann Ameho, Jeanmarc Biannic, François Defajé, Caroline Bérard</i>	

EFFICIENT DESCENT ANALYSIS

Trajectory Prediction Accuracy and Error Sources for Regional Jet Descents (AIAA 2013-4535)	404
<i>Jeffrey M. Henderson, Robert A. Vivona, Steven Green</i>	
Reference Airspeed Setting for Time Constrained Descent at Idle Thrust (AIAA 2013-4536)	424
<i>Thierry Miquel</i>	
Flight-Deck Strategies and Outcomes When Flying Schedule-Matching Descents (AIAA 2013-4537)	436
<i>John Kaneshige, Shivanjli Sharma, Lynne Martin, Sandra Lozito, Victoria Dulchinos</i>	
Trajectory Generation for Optimized Profile Descent using Hybrid Optimal Control (AIAA 2013-4538)	448
<i>Sang Gyun Park, John-Paul Clarke</i>	
Fuel-Efficient Flight Optimization for ATC Operations During Descent and Approach Phases (AIAA 2013-4539)	462
<i>Yiming Zhao, Panagiotis Tsiotras</i>	

FORMATION CONTROL OF SATELLITE CONSTELLATIONS

Position and Attitude Control of Formation Flying Satellites for Restructuring Their Configurations by Electromagnetic Force at the Docking Phase (AIAA 2013-4540)	477
<i>Ayako Torisaka, Satoru Ozawa, Hiroshi Yamakawa, Nobuyuki Kobayashi</i>	
Error-Contracting Impulse Controller for Satellite Cluster Flight Formation (AIAA 2013-4541)	487
<i>Jeremy Schwartz, Tom Krenzke, Sun Hur-Diaz, Matthew Ruschmann, Jason Schmidt</i>	
A Comparison of Algorithms for Computing Differential Mean Orbital Elements in Formation Flying Missions (AIAA 2013-4542)	499
<i>Kai Wang, Tong Chen, Shijie Xu</i>	
The Flocking Controller: A Novel Cluster Control Strategy for Space Vehicles (AIAA 2013-4543)	520
<i>Jeremy Schwartz, Tom Krenzke, Sun Hur-Diaz, Matthew Ruschmann, Jason Schmidt</i>	

GNC AND MISSION DESIGN FOR PLANETARY DEFENSE (INVITED)

Conceptual Design of a Hypervelocity Asteroid Intercept Vehicle (HAIV) Flight Validation Mission (AIAA 2013-4544)	535
<i>Brent W. Barbee, Bong Wie, Mark Steiner, Kenneth Getzandanner</i>	
Target Selection for a Hypervelocity Asteroid Intercept Vehicle Flight Validation Mission (AIAA 2013-4545)	556
<i>Sam Wagner, Bong Wie</i>	
Using Small Asteroids to Deflect Larger Dangerous Asteroids (AIAA 2013-4546)	575
<i>David W. Dunham, Natan A. Eismont, Michael Boyarski, Anton Ledkov, Ravil Nazirov, Eugene Chumachenko, Konstantin Fedyayev</i>	
GNC Design for Asteroid Orbit Modification Missions (AIAA 2013-4547)	583
<i>Miguel Hagenfeldt, Juan Luis Cano, Luis F. Penin, Claudio Bombardelli, Jesús Peláez, Eleonora Luraschi, Andres Galvez</i>	
GPU Accelerated 3D Modeling and Simulation of a Blended Kinetic Impact and Nuclear Subsurface Explosion (AIAA 2013-4548)	601
<i>Brian D. Kaplinger, Christian Setzer, Bong Wie, Pavithra Premaratne</i>	

PATH PLANNING AND TRAJECTORY GENERATION

Sampling-Based Trajectory Generation for Autonomous Spacecraft Rendezvous and Docking (AIAA 2013-4549)	618
<i>Griffin Francis, Emmanuel Collins, Oscar Chuy, Aneesh Sharma</i>	
Algorithm for Generation of Optimal Flight Trajectories for Cooperative Motion of Two Aircraft in a Dynamically Changing Environment (AIAA 2013-4550)	629
<i>Inna Abramova, Simon Latyshev, Bingen Yang</i>	
Motion Planning for Optimal Information Gathering in Opportunistic Navigation Systems (AIAA 2013-4551)	649
<i>Zaher Kassas, Todd E. Humphreys</i>	
Energy Aware Aerial Surveillance for a Long Endurance Solar-Powered UAV (AIAA 2013-4552)	664
<i>Saghar Hosseiniianaki, Mehran Mesbahi</i>	
Determining Accurate Visual Slam Trajectories Using Sequential Monte Carlo Optimization (AIAA 2013-4553)	680
<i>Laurie N. Bose, Arthur G. Richards</i>	

POLYNOMIAL METHODS IN CONTROL THEORY I

Hybrid Jacobian Computation for Fast Optimal Trajectories Generation (AIAA 2013-4554)	690
<i>Marco Sagliano, Stephan Theil</i>	
An Automatic Mesh Refinement Method for Aircraft Trajectory Optimization Problems (AIAA 2013-4555)	710
<i>Matthias Bittner, Philip Bruhs, Maximilian Richter, Florian Holzapfel</i>	
Robust Noise Optimal Approach Trajectories (AIAA 2013-4556)	720
<i>Maximilian Richter, Florian Holzapfel</i>	
Analysis of Nonlinear Systems via Bernstein Expansions (AIAA 2013-4557)	735
<i>Amir Sadrpour, Luis G. Crespo, Sean P. Kenny</i>	
A Cascaded Approach to Optimal Aircraft Trajectories for Persistent Data Ferrying (AIAA 2013-4558)	748
<i>Anthony J. Carfang, Eric W. Frew, Derek Kingston</i>	

SPACECRAFT ATTITUDE CONTROL I

Large Angle Maneuvers of Spacecraft Based on Singularity Avoidance of SGCMGs (AIAA 2013-4559)	763
<i>Jiawei Zhang, Kemao Ma, Guizhi Meng</i>	
Pointing Architecture of SMAP's Large Spinning Antenna (AIAA 2013-4560)	776
<i>Oscar S. Alvarez-Salazar, Douglas Adams, Mark Milman, Reza Nayeri, Scott Ploen, Lisa Sievers, Eric Slimko, Robert Stephenson</i>	
Robust and Efficient Star Tracker Attitude Estimation Using the AIM Algorithm (AIAA 2013-4561)	795
<i>Tjorven Delabie</i>	
A Numerical Comparison of Inertia-Free Attitude Control Laws for a Spacecraft with a Discrete Flexible Mode (AIAA 2013-4562)	811
<i>Marc Cambor, Antai Xie, Gerardo Cruz, Sergio Esteban, Taeyoung Lee, Dennis Bernstein</i>	
Retrospective Cost Adaptive Control of Spacecraft Attitude Using Magnetic Actuators (AIAA 2013-4563)	836
<i>Gerardo E. Cruz, Dennis Bernstein</i>	

VOLUME 2

ADVANCES IN ADAPTIVE CONTROL: STABILITY, PERFORMANCE, AND ROBUSTNESS – DEDICATED TO THE CONTRIBUTIONS OF ANTHONY J. CALISE TO ADAPTIVE FLIGHT CONTROL II (INVITED)

Convergence Properties of Adaptive Systems with Open- and Closed-loop Reference Models (AIAA 2013-4610)	854
<i>Benjamin Jenkins, Travis Gibson, Anuradha M. Annaswamy, Eugene Lavretsky</i>	
Comparison of a New Frequency-Limited Adaptive Control Architecture with Standard and State Predictor-Based Adaptive Controllers (AIAA 2013-4611)	874
<i>Tansel Yucelen, Gerardo De La Torre, Eric N. Johnson</i>	
Output Feedback M-MRAC (AIAA 2013-4612)	888
<i>Vahram Stepanyan, Kalmanje S. Krishnakumar</i>	
Bi-Objective Optimal Control Modification Adaptive Law for Unmatched Uncertain Systems (AIAA 2013-4613)	898
<i>Nhan T. Nguyen</i>	

AIRCRAFT GNC: ESTIMATION/NAVIGATION I

An Improved, Turbulence Proof, Reset Mechanism for Parameter Identification after System Change (AIAA 2013-4614)	914
<i>Herman J. Koolstra, Herman J. Damveld, Jan Albert Mulder</i>	
Attitude Representation and Kinematic Propagation for Low-Cost UAVs (AIAA 2013-4615)	929
<i>Robert T. Casey, Mark Karpenko, Renwick Curry, Gabriel Elkaim</i>	
Improving Maneuver Performance in Unmanned Aerial Vehicles through Learning-Based Reference Management (AIAA 2013-4616)	954
<i>Fabio Almeida</i>	
UAV Analytical Redundancy based Fault Detection of the Airspeed Sensor via Generalized Likelihood Ratio Test (AIAA 2013-4617)	969
<i>Mario Fravolini, Srikanth Gururajan, Guido De Angelis, Antonio Moschitta, Haiyang Chao, Marcello Napolitano</i>	

AIRCRAFT GNC: GUIDANCE I

Safe Maneuvering Envelope Estimation based on a Physical Approach (AIAA 2013-4618)	986
<i>Thomas Lombaerts, Stefan Schuet, Kevin Wheeler, Diana M. Acosta, John Kaneshige</i>	
Optimal Collision Avoidance Trajectories for Unmanned/Remotely Piloted Aircraft (AIAA 2013-4619)	1006
<i>Nathan E. Smith, Richard Cobb, Scott Pierce, Vincent Raska</i>	
Flight Trajectories Optimization Under the Influence of Winds Using Genetic Algorithms (AIAA 2013-4620)	1031
<i>Roberto F. Patron, Aniss Kessaci, Ruxandra M. Botez, Dominique Labour</i>	
Design, Analysis and Evaluation of Aircraft Space Indexed Guidance (AIAA 2013-4621)	1042
<i>Hakim Bouadi, Mastoura Ab-Wahid, Felix Mora-Camino</i>	

CONFLICT DETECTION AND RESOLUTION I

A TCAS-II Resolution Advisory Detection Algorithm (AIAA 2013-4622)	1053
<i>Cesar Munoz, Anthony Narkawicz, James Chamberlain</i>	
Traffic Alert Optimization for Airborne Collision Avoidance Systems (AIAA 2013-4623)	1065
<i>Brendon Puntin, Mykel Kochenderfer</i>	
Collision Avoidance System Optimization for Closely Spaced Parallel Operations through Surrogate Modeling (AIAA 2013-4624)	1074
<i>Kyle A. Smith, Mykel Kochenderfer, Wesley A. Olson, Adan E. Vela</i>	
Application of Complexity Assessment for Conflict Resolution in Air Traffic Management Systems (AIAA 2013-4625)	1089
<i>Youkyung Hong, Youdan Kim, Keumjin Lee</i>	

CONTROL OF MULTIPLE AUTONOMOUS AIRCRAFT I

Vector Fields for UAV Guidance Using Potential Function Method for Formation Flight (AIAA 2013-4626)	1109
<i>Kento Nakai, Kenji Uchiyama</i>	
Selective Velocity Obstacle Method for Cooperative Autonomous Collision Avoidance System for Unmanned Aerial Vehicles (AIAA 2013-4627)	1122
<i>Yazdi I. Jenie, Erik-Jan Van Kampen, Coen C. De Visser, Q Ping Chu</i>	
Flocking of Multi-Agent System Using a Unified Optimal Control Approach (AIAA 2013-4628)	1142
<i>Jianan Wang, Ming Xin</i>	
Robust Formation and Reconfiguration Control for Nonholonomic UAVs with Dynamic Constraints (AIAA 2013-4629)	1158
<i>Fang Liao, Rodney Teo, Jian Liang Wang, Kemao Peng</i>	

FLIGHT EXPERIENCE OF CASSINI SPACECRAFT ATTITUDE CONTROL AT SATURN I (INVITED)

In-Flight Performance of the Cassini Hemispherical Quartz Resonator Gyro Inertial Reference Units (AIAA 2013-4630)	1174
<i>Todd S. Brown</i>	
Inflight Performance of Cassini Reaction Wheel Bearing Drag in 1997-2013 (AIAA 2013-4631)	1186
<i>Allan Y. Lee, Eric K. Wang</i>	
Fault Protection Design and Testing For the Cassini Spacecraft In A “Mixed” Thruster Configuration (AIAA 2013-4632)	1215
<i>David M. Bates, Peter Meakin, Raquel M. Weitzl, Allan Y. Lee</i>	

INTELLIGENT CONTROL IN AEROSPACE APPLICATIONS I

Optimal Cooperative Pursuit on a Manhattan Grid (AIAA 2013-4633)	1225
<i>Krishnamoorthy Kalyanam, Swaroop Darbha, Pramod Khargonekar, Meir Pachter, Phil R. Chandler</i>	
Inter-Sample Avoidance in Trajectory Optimizers using Mixed-Integer Linear Programming (AIAA 2013-4634)	1235
<i>Arthur G. Richards, Oliver Turnbull</i>	
Optimal Orbit Transfer with ON-OFF Actuators Using a Closed Form Optimal Switching Scheme (AIAA 2013-4635)	1244
<i>Ali Heydari, Sivasubramanya N. Balakrishnan</i>	
Interfacing Behavior Trees with the World Using Description Logic (AIAA 2013-4636)	1259
<i>Andreas Klöckner</i>	

LATEST AOCS CONCEPTS FOR FUTURE EARTH OBSERVATION MISSIONS I (INVITED)

The ESA Earth Observation Programmes Activities for the Preparation of the Next Generation Gravity Mission (AIAA 2013-4637)	1270
<i>Luca Massotti, Davina Di Cara, Jose Del Amo, Roger Haegmans, Michael Jost, Christian Siemes, Pierluigi Silvestrin</i>	
Avionics/Control Co-design for Large Flexible Space Structures (AIAA 2013-4638)	1287
<i>Daniel Alazard, Thomas Loquen, Henry De Plinval, Christelle Cumer</i>	
The Control Challenges for the Next Generation Gravity Mission (AIAA 2013-4639)	1302
<i>Enrico Canuto, Marcello Buonocore, Stefano Cesare, Andrea Bacchetta, Benedicte Girouart, Luca Massotti, Andres Molano-Jimenez</i>	
Optimal Co-Design for Earth Observation Satellites with Flexible Appendages (AIAA 2013-4640)	1321
<i>Chiara Togli, Patrizio Pavia, Giovanni Campolo, Daniel Alazard, Thomas Loquen, Henry De Plinval, Christelle Cumer, Massimo Casasco, Luca Massotti</i>	

LIDAR SENSORS FOR SPACECRAFT NAVIGATION I (INVITED)

A Survey of LIDAR Technology and Its Use in Spacecraft Relative Navigation (AIAA 2013-4641)	1335
<i>John A. Christian, Scott Cryan</i>	

An Overview of Ball Flash LIDAR and Related Technology Development (AIAA 2013-4642)	1342
<i>Reuben Rohrschneider, James Masciarelli, Kevin L. Miller, Carl Weimer</i>	
Digital Pulse Processing Methods for Range Refinement of LADAR Systems (AIAA 2013-4644)	1355
<i>John Junkins, Manoranjan Majji, Bradley Sallee</i>	

SPACE EXPLORATION AND TRANSPORTATION I

Optimization-based Worst-case Analysis of a Launcher During the Atmospheric Ascent Phase (AIAA 2013-4645)	1369
<i>Andres Marcos, Hector Garcia De Marina, Valerio Mantini, Christophe Roux, Samir Bennani</i>	
Accurate Real-Time Prediction Guidance Using Numerical Integration for Reentry Spacecraft (AIAA 2013-4646)	1381
<i>Shuichi Matsumoto, Yoshinori Kondoh, Yusuke Suzuki, Hifumi Yamamoto, Satoshi Kobayashi, Noboru Motoyama, Takane Imada, Naoki Sato</i>	
A Range Safety Footprint Analysis for the Dream Chaser Engineering Test Article Using Trajectory Optimization (AIAA 2013-4647)	1394
<i>Ryan W. Carr, Ernest Lagimoniere</i>	
Gliding Guidance of High L/D Hypersonic Vehicles (AIAA 2013-4648)	1406
<i>Ping Lu, Stephen Forbes, Morgan Baldwin</i>	

SPACECRAFT DYNAMICS MODELING AND IDENTIFICATION

Implementation of Kane's Method for a Spacecraft Composed of Multiple Rigid Bodies (AIAA 2013-4649)	1428
<i>Eric Stoneking</i>	
In-Orbit Estimation of Time-Varying Residual Magnetic Moment for Small Satellite Applications (AIAA 2013-4650)	1441
<i>Halil E. Soken, Shin-Ichiro Sakai</i>	
Mechanical Slosh Models for Rocket-Propelled Spacecraft (AIAA 2013-4651)	1455
<i>Jiannwoei Jang, Abran Alaniz, Lee Yang, Joseph Powers, Charles Hall</i>	

ADVANCES IN ADAPTIVE CONTROL: STABILITY, PERFORMANCE, AND ROBUSTNESS – DEDICATED TO THE CONTRIBUTIONS OF ANTHONY J. CALISE TO ADAPTIVE FLIGHT CONTROL III (INVITED)

Improving Uniform Ultimate Boundedness Response of Neuroadaptive Control Approaches Using Command Governors (AIAA 2013-4691)	1470
<i>Daniel P. Magree, Tansel Yucelen, Eric N. Johnson</i>	
Bayesian Nonparametric Model Reference Adaptive Control using Gaussian Processes (AIAA 2013-4692)	1479
<i>Girish Chowdhary, Hassan Kingravi, Jonathan P. How, Patricio Vela, Robert Grande</i>	
Minimal Modeling Adaptive Control of the NASA Generic Transport Model with Unknown Control-Surface Faults (AIAA 2013-4693)	1496
<i>Ming-Jui Yu, Yousaf Rahman, Ella M. Atkins, Ilya Kolmanovsky, Dennis Bernstein</i>	

AIRCRAFT GNC: CONTROLS II

Disturbance Observer Based Sliding Mode Controller Design for Large Civil Aircraft (AIAA 2013-4694)	1517
<i>Zeng Chao, Antonios Tsourdos, Mohammad M. Lone</i>	
Bow Wave Effect in Probe and Drogue Aerial Refuelling (AIAA 2013-4695)	1527
<i>Ujjar Bhandari, Peter R. Thomas, Thomas S. Richardson, Steve Bullock, Jonathan Luke Du Bois</i>	

AIRCRAFT GNC: ESTIMATION/NAVIGATION II

Vision-only Terrain Referenced Navigation and Uncertainty Analysis for Unmanned Aircraft (AIAA 2013-4696)	1548
<i>Youngjoo Kim, Dongjin Lee, Hyochoong Bang</i>	
Fault Detection and Isolation for Inertial Reference Units (AIAA 2013-4697)	1559
<i>Laurens Van Eykeren, Q Ping Chu</i>	
Radar Odometry on Small Unmanned Aircraft (AIAA 2013-4698)	1569
<i>Eric B. Quist, Randal W. Beard</i>	
Performance of a Monocular Vision-aided Inertial Navigation System for a Small UAV (AIAA 2013-4699)	1587
<i>Daniel P. Magree, Eric N. Johnson</i>	

CONFLICT DETECTION AND RESOLUTION II

Analysis of Interactive Conflict Resolution Tool Usage in a Mixed Equipage Environment (AIAA 2013-4700)	1601
<i>Jeffrey Homola, Susan Morey, Christopher D. Cabrall, Lynne Martin, Joey Mercer, Thomas Prevot</i>	
Flight Testing a UAV in Simulated Controlled Airspace (AIAA 2013-4701)	1618
<i>Atray Dixit, Jaiye Falusi, Samuel Kim, Gabriel Savit, Robert Stengel</i>	

Time to Impact Estimations as a Measure for Relaxed Decision Making in Multi-UAV Deconfliction (AIAA 2013-4702)	1636
<i>Pietro Pierpaoli, Riccardo Zanforlin, Amir Rahmani</i>	

CONTROL OF MULTIPLE AUTONOMOUS AIRCRAFT II

Robustness Analysis of a Formation Flight Guidance Algorithm for Automated Aerial Refueling (AIAA 2013-4703)	1653
<i>Mehmet C. Kilic, Johann C. Dauer</i>	
Coordinated Control of Multiple UAVs : Theory and Flight Experiment (AIAA 2013-4704)	1666
<i>Yoko Watanabe</i>	
Wake Estimation and Optimal Control for Autonomous Aircraft in Formation Flight (AIAA 2013-4705)	1691
<i>Levi D. Devries, Derek A. Paley</i>	

VOLUME 3

Cooperative Sensor Resource Management to Aid Multi Target Geolocalization Using a Team of Small Fixed-wing Unmanned Aerial Vehicles (AIAA 2013-4706)	1711
<i>Rajnikant Sharma, Daniel Pack</i>	

FLIGHT EXPERIENCE OF CASSINI SPACECRAFT ATTITUDE CONTROL AT SATURN II (INVITED)

Reducing Pointing Errors During Cassini Reaction Control System Orbit Trim Maneuvers (AIAA 2013-4707)	1722
<i>Farheen Rizvi</i>	
Estimation of Gravitation Parameters of Saturnian Moons Using Cassini Attitude Control Flight Data (AIAA 2013-4708)	1731
<i>Samantha Krening</i>	
Evidence of Temporal Variation of Titan Atmospheric Density in 2005-2013 (AIAA 2013-4709)	1744
<i>Allan Y. Lee, Ryan S. Lim</i>	
Cassini at Saturn Proximal Orbits - Attitude Control Challenges (AIAA 2013-4710)	1760
<i>Thomas A. Burk</i>	

GNC AND MISSION DESIGN FOR ASTEROID EXPLORATION (INVITED)

Development of Non-Linear Guidance Algorithms for Asteroids Close-Proximity Operations (AIAA 2013-4711)	1772
<i>Roberto Furfaro, Brian Gaudet, Daniel R. Wibben, Jules Simo</i>	
Sliding Guidance Techniques for Close Proximity Operations at Multiple Asteroid Systems (AIAA 2013-4712)	1790
<i>Julie Bellerose, Roberto Furfaro, Dario O. Cersosimo</i>	
Planetary Defense Mission Design Using an Asteroid Mission Design Software Tool (AMiDST) (AIAA 2013-4713)	1806
<i>George Vardaxis, Bong Wie</i>	

LATEST AOCs CONCEPTS FOR FUTURE EARTH OBSERVATION MISSIONS II (INVITED)

Integrated Structure/Control Optimisation Applied to the BIOMASS Earth Observation Mission (AIAA 2013-4714)	1830
<i>Mark Watt, Michel Yu, Alexandre Falcoz, Aymeric Kron, Purushothama M. Prathyush, Finn Ankersen, Luca Massotti</i>	
Flight Results of In-Orbit Advanced Attitude Control Experiment using Large Flexible Satellite ETS-VIII and JAXA's Future Mission (AIAA 2013-4715)	1847
<i>Takashi Ohtani, Yoshiro Hamada, Tomoyuki Nagashio, Takashi Kida</i>	
A Dual-Spinning, Three-Axis-Stabilized CubeSat for Earth Observations (AIAA 2013-4716)	1862
<i>Evan D. Wise, Christopher M. Pong, David Miller, Kerri Cahoy, Tam T. Nguyen</i>	

LIDAR SENSORS FOR SPACECRAFT NAVIGATION II (INVITED)

Field Demonstration of a Precision Navigation Lidar System for Space Vehicles (AIAA 2013-4717)	1886
<i>Diego F. Pierrotet, Farzin Amzajerdian, Larry B. Petway, Glenn D. Hines, Bruce Barnes</i>	

POLYNOMIAL METHODS IN CONTROL THEORY II

Stability of Uncertain LTI Systems and Application of Interval Analysis (AIAA 2013-4718)	1906
<i>Haiyang Hu, Erik-Jan Van Kampen, Coen C. De Visser, Q Ping Chu</i>	
Optimal Attitude Motion Planner for Large Slew Maneuvers Using a Shape-Based Method (AIAA 2013-4719)	1925
<i>Albert Caubet, James Biggs</i>	

RENDEZVOUS AND PROXIMITY OPERATIONS I

Robust Trajectory Optimization for Highly Constrained Rendezvous and Proximity Operations (AIAA 2013-4720)	1934
<i>Xinfu Liu, Ping Lu</i>	
Robust Controller for Constrained Relative Motion Maneuvering with Disturbance Rejection (AIAA 2013-4721)	1952
<i>Morgan Baldwin, Richard S. Erwin, Ilya Kolmanovsky</i>	

SPACECRAFT GUIDANCE AND CONTROL I

Optimal Impulsive Control in a Powered Swing-By (AIAA 2013-4722)	1966
<i>Alessandra Ferraz, Antonio F. Prado, Othon Winter</i>	
Simple Control Strategies for Low-Thrust Spacecraft (AIAA 2013-4723)	1989
<i>Rosemary Huang, Martin Corless, Inseok Hwang</i>	
Can Tuning Really Get Your Design Back Into the Acceptable Pointing Knowledge Requirement Region? (AIAA 2013-4724)	2012
<i>Quang M. Lam, Michael Jacox</i>	
Solving Non-Convex Optimal Control Problems by Convex Optimization (AIAA 2013-4725)	2031
<i>Xinfu Liu, Ping Lu</i>	

ADVANCES IN ADAPTIVE CONTROL: STABILITY, PERFORMANCE, AND ROBUSTNESS – DEDICATED TO THE CONTRIBUTIONS OF ANTONY J. CALISE TO ADAPTIVE FLIGHT CONTROL IV (INVITED)

Robust Adaptive Control in the Presence of Unmodeled Dynamics: A Counter to Rohrs's Counterexample (AIAA 2013-4753)	2061
<i>Heather S. Hussain, Anuradha M. Annaswamy, Eugene Lavretsky</i>	
Artificial Basis Functions in Adaptive Control for Transient Performance Improvement (AIAA 2013-4754)	2080
<i>Tansel Yucelen, Eric N. Johnson</i>	
Time Delay Margin Analysis of Modified State Observer Based Adaptive Control (AIAA 2013-4755)	2094
<i>Karthikeyan Rajagopal, Sivasubramanya N. Balakrishnan, Nhan T. Nguyen, Kalmanje S. Krishnakumar</i>	
Concurrent Learning Adaptive Control in Presence of Uncertain Control Allocation Matrix (AIAA 2013-4756)	2115
<i>Girish Chowdhary, Jonathan P. How, Ben Reish, Kemal Ure</i>	

AEROSPACE ROBOTICS AND UNMANNED/AUTONOMOUS SYSTEMS II

Continuing Results on Norm Based Nonlinear Observers With Examples (AIAA 2013-4757)	2134
<i>Monty Smith</i>	
Experimental Evaluation of a Machine Vision Based Pose Estimation System for Autonomous Capture of Satellites with Interface Rings (AIAA 2013-4758)	2140
<i>Andres F. Velasquez, Jeremy Luckett, Marcello Napolitano, Giacomo Marani, Thomas Evans, Mario Fravolini</i>	
Vision-Based Relative Navigation and Control for Autonomous Spacecraft Inspection of an Unknown Object (AIAA 2013-4759)	2157
<i>Dehann Fourie, Brent Tweddle, Steve Ulrich, Alvar Saenz Otero</i>	
Nonlinear, Deterministic Sampling Based State Estimation for Highly-Maneuverable Small Unmanned Aerial Vehicles: A Comparative Development (AIAA 2013-4760)	2174
<i>Dimitrios Pylorof, Kostas J. Kyriakopoulos</i>	
Qualitative Failure Analysis for a Small Quadrotor Unmanned Aircraft System (AIAA 2013-4761)	2188
<i>Isaac Olson, Ella M. Atkins</i>	

AIRCRAFT GNC: GUIDANCE II

A Constrained Inverse Modeling Approach for Trajectory Optimization (AIAA 2013-4762)	2199
<i>Reiko Mueller, Gertjan Looye</i>	
Novel Flight Management System for Real-Time 4-Dimensional Trajectory Based Operations (AIAA 2013-4763)	2214
<i>Subramanian Ramasamy, Alessandro Gardi, Roberto Sabatini, Kathryn De Ridder</i>	
Micro Air Vehicle's 3D Trajectory Planning and Parametric Estimation (AIAA 2013-4764)	2230
<i>Ni Li, Yunjun Xu, Khanh D. Pham</i>	
Flatness Based Trajectory Generation For A Helicopter UAV (AIAA 2013-4765)	2242
<i>Skander Taamallah</i>	

APPLIED PREDICTION AND ESTIMATION

Road Network Estimation Using Implicit Curves (AIAA 2013-4766)	2261
<i>Manoranjana Majji, Tarunraj Singh, Puneet Singla, Adnan Bubalo, Maria Scalzo, Mark Alford, Eric Jones</i>	
Kriged Kalman Filtering for Predicting the Spatio-Temporal Wildfire Temperature Process Evolution (AIAA 2013-4767)	2269
<i>Connie Phan, Hugh H. Liu</i>	

Nonlinear Parameter Estimation of Unmanned Aerial Vehicle in Wind Shear Using Artificial Neural Networks (AIAA 2013-4768)	2283
<i>Thomas J. Stastny, Ryan Lykins, Shahriar Keshmiri</i>	
Dual Estimation for the Path Tracking Control of a Four Track Wheel Skid-Steered Mobile Robot (AIAA 2013-4769)	2292
<i>Xuan Vinh Ha, Cheolkeun Ha, Jewon Lee</i>	
A Robust and Adaptive Framework for Localization under Varying Sensor Modalities (AIAA 2013-4770)	2305
<i>Shaunak D. Bopardikar, Shuo Zhang, Alberto Speranzon</i>	

ATMOSPHERIC SPACECRAFT GNC

Reconfigurable Control Laws for Re-entry Vehicles in Presence of Sensor Failures (AIAA 2013-4771)	2321
<i>Mariana Poderico, Gianfranco Morani</i>	
Flying at the Edge - Extremely Low Altitude Operations for ESA's Drag-Free Gravity Mission GOCE (AIAA 2013-4772)	2329
<i>Christoph Steiger, Massimo Romanazzo, Pier Paolo Emanuelli, Rune Floberghagen, Michael Fehringier</i>	
Fly-by Guidance Problem of a Flight Vehicle: Analysis and Design (AIAA 2013-4773)	2346
<i>Jiawei Wang, Fenghua He, Baoqing Yang, Yu Yao</i>	
The European Re-entry Program, from IXV to ISV - GNC / Avionics Development Status and Challenges (AIAA 2013-4774)	2358
<i>Stephane Dussy, Jean-Philippe Preaud, Giovanni Malucchi, Elio Zaccagnino, A. Drocco</i>	
Rendezvous Using Differential Drag and Feedback Control (AIAA 2013-4775)	2372
<i>Matthew W. Harris, Behcet A. Acikmese, Andrew W. Berning Jr.</i>	

FAULT DETECTION, RECOVERY AND ROBUST, FAULT-TOLERANT CONTROL

Non-Redundant Sensor Fault Detection for Autonomous Rotorcraft using an Improved Dynamic Model (AIAA 2013-4776)	2386
<i>Brandon Cannon, Robert Leishman, Tim W. McLain, Joseph A. Jackson, Jovan Boskovic</i>	
A Hybrid Sensor Based Backstepping Control Approach with its application to Fault-Tolerant Flight Control (AIAA 2013-4777)	2397
<i>Liguo Sun, Coen C. De Visser, Q Ping Chu, Wouter Falkena</i>	
Delta Operator Eigenstructure Assignment for Fault Detection and Control of a Tailless Aircraft (AIAA 2013-4778)	2418
<i>Clara Nieto-Wire, Kenneth Sobel</i>	

MERGING AND SPACING

Modeling and Simulation Study on Airborne-based Energy Saving Arrivals to Tokyo International Airport (AIAA 2013-4779)	2442
<i>Eri Itoh, Kazuhiko Uejima, Yuki Kakichi, Shinji Suzuki</i>	
Investigating the Performance of Two Interval Management Algorithms in a Fast-Time Simulation Environment (AIAA 2013-4780)	2454
<i>Lesley A. Weitz, Ganghuai Wang, Hans Stassen</i>	
Separation-compliant Speed Control in Terminal Airspace (AIAA 2013-4781)	2474
<i>Ali Rezaei, Alexander V. Sadovsky, Jason L. Speyer, Doug R. Isaacson</i>	
A Machine Learning Approach to Trajectory Prediction (AIAA 2013-4782)	2492
<i>Arjen De Leege, Marinus Van Paassen, Max Mulder</i>	
Separation-Compliant Time Advance in Terminal Area Arrivals: Tradeoff between Makespan and Fuel Burn (AIAA 2013-4783)	2506
<i>Alexander V. Sadovsky, Brian Fabien</i>	

MISSILE SYSTEMS GUIDANCE I

An Adaptive, Optimal Proportional-Integral Guidance For Missiles (AIAA 2013-4784)	2522
<i>Çagdas Evcimen, Kemal Leblebicioglu</i>	
Optimal Feedback Guidance for Nonlinear Missile Model with Impact Time and Angle Constraints (AIAA 2013-4785)	2529
<i>Shunsaku Arita, Seiya Ueno</i>	
Lead Angle Constrained Optimal Midcourse Guidance (AIAA 2013-4786)	2541
<i>P. N. Dwivedi, P. Kumar, A. Bhattacharya, P. Padhi</i>	

VOLUME 4

Optimal Control Framework for Impulsive Missile Interception Guidance (AIAA 2013-4787)	2560
<i>Leif Walter, Gunther Schöffel, Florian Holzapfel</i>	

MOTION PLANNING FOR MICRO AIR VEHICLES

Spline and OBB-based Path-Planning for Small UAVs with the Finite Receding-Horizon Incremental-Sampling Tree Algorithm (AIAA 2013-4788)	2574
<i>Michael Gros, Alfred Schoettl, Walter Fichter</i>	
A Radar-Based, Tree-Branching Sense and Avoid System for Small Unmanned Aircraft (AIAA 2013-4789)	2591
<i>Robert A. Klaus, Tim W. McLain</i>	
Implementation of Fast MPC with a Quadrotor for Obstacle Avoidance (AIAA 2013-4790)	2603
<i>Colin M. Greatwood, Arthur G. Richards</i>	
Multi-query Path Planning for an Unmanned Fixed-Wing Aircraft (AIAA 2013-4791)	2614
<i>Moritz Niendorf, Fabian Schmitt, Florian Adolf</i>	
3-D Implicit Terrain Mapping and Path Planning for Autonomous MAV Flight in Urban Environments (AIAA 2013-4792)	2630
<i>Richard J. Prazenica, Matthew Hielsberg, Robert Sharpley, Andrew Kurdila</i>	

SPACECRAFT ATTITUDE CONTROL II

Spacecraft Attitude Control using Nonlinear H^∞ Output-Feedback (AIAA 2013-4793)	2653
<i>Alon Capua, Amir Shapiro, Daniel Choukroun</i>	
Attitude Stabilization of a Spacecraft by Two Skew Single-Gimbal Control Moment Gyros (AIAA 2013-4794)	2667
<i>Haichao Gui, Lei Jin, Shijie Xu, Quan Hu</i>	
Magneto Coulombic Attitude Control of Earth Pointing Satellites (AIAA 2013-4795)	2690
<i>Manoranjan Sinha, Dipak K. Giri</i>	
Gain-scheduled Steering Control Law for Variable Speed Control Moment Gyros (AIAA 2013-4796)	2712
<i>Shinya Kasai, Hirohisa Kojima</i>	
An Attitude Control Methodology for Large Solar Sails (AIAA 2013-4797)	2724
<i>Bo Fu, Fidelis Eke</i>	

TASK PLANNING FOR MULTI-VEHICLE SYSTEMS I

The Task Agent Resource Function Application in UAV Domain (AIAA 2013-4798)	2739
<i>Tan Viet Anh Truong, Petr Benda, Jiri Vokrinek</i>	
Market-Based Decentralized Task Assignment for Cooperative UAV Mission Including Rendezvous (AIAA 2013-4799)	2751
<i>Gyeongtaek Oh, Youdan Kim, Jaemyung Ahn</i>	
Optimization and Adaptation of Consensus Penalty Terms for the Attitude Synchronization of Spacecraft Formation (AIAA 2013-4800)	2769
<i>Kewen Zhang, Michael A. Demetriou</i>	
Consensus Protocols in Networked Multiagent Systems for Cluttered and Hostile Environments (AIAA 2013-4801)	2780
<i>Gerardo De La Torre, Tansel Yucelen, Eric N. Johnson</i>	

NONLINEAR CONTROL DESIGN AND ANALYSIS

Input Shaping-based Impedance Control for Flexible Joint Robotic Manipulator (AIAA 2013-4849)	2791
<i>Gangqi Dong, Zheng Zhu</i>	
Structured Adaptive Attitude Control Applied on a Myriade Simulation Benchmark (AIAA 2013-4850)	2800
<i>Alexandru R. Luzzi, Jean Mignot, Jeanmarc Biannic, Dimitri Peaucelle</i>	
Retrospective Cost Adaptive NARMAX Control of Hammerstein Systems with Ersatz Nonlinearities (AIAA 2013-4851)	2818
<i>Jin Yan, Dennis Bernstein</i>	

ADVANCES IN ADAPTIVE CONTROL: STABILITY, PERFORMANCE, AND ROBUSTNESS – DEDICATED TO THE CONTRIBUTIONS OF ANTHONY J. CALISE TO ADAPTIVE FLIGHT CONTROL V (INVITED)

Adaptive RISE Feedback Control Strategies for Systems with Structured and Unstructured Uncertainties (AIAA 2013-4852)	2832
<i>Rushikesh Kamalapurkar, Brendan Bialy, Lindsey Andrews, Warren Dixon</i>	
Constraint Enforcement Methods for Command Governor based Adaptive Control of Uncertain Dynamical Systems (AIAA 2013-4853)	2843
<i>Simon P. Schatz, Tansel Yucelen, Eric N. Johnson, Florian Holzapfel</i>	
An Adaptive Controller for Very Flexible Aircraft (AIAA 2013-4854)	2863
<i>Zheng Qu, Eugene Lavretsky, Anuradha M. Annaswamy</i>	
L_1 Adaptive Augmentation of a Helicopter Baseline Controller (AIAA 2013-4855)	2874
<i>Magnus Bichlmeier, Florian Holzapfel, Enric Xargay, Naira Hovakimyan</i>	

AIRCRAFT GNC: CONTROLS III

Peak-Seeking Optimization of Trim for Reduced Fuel Consumption: Architecture and Performance Predictions (AIAA 2013-4856)	2884
<i>Jacob R. Schaefer, Nelson A. Brown</i>	
Robustness Analysis Related to the Control Design of the SHEFEX-II Hypersonic Canard Control Experiment (AIAA 2013-4857)	2899
<i>Sven Lorenz, Andreas Bierig</i>	
Modeling and Design Considerations for Robust Control of Aircraft in Tight Cruise Formation (AIAA 2013-4858)	2913
<i>Karl H. Kienitz, André Kaden, Robert Luckner</i>	

APPLICATIONS OF DISTRIBUTED PARAMETER CONTROL I (INVITED)

Distributed Parameter Optimal Control by Adjoint Aeroelastic Differential Operators for Mode Suppression Control (AIAA 2013-4859)	2926
<i>Nhan T. Nguyen, Eric B. Ting, Sean Shan-Min Swei, Abraham K. Ishihara</i>	
Distributed Parameter Control for an Aeroelastic Wing-Engine Model (AIAA 2013-4860)	2951
<i>Abraham K. Ishihara, Nhan T. Nguyen, Mark J. Balas</i>	
Fuzzy-Logic Attitude Control of Spacecraft with Retargeting Flexible Antennas (AIAA 2013-4861)	2965
<i>Chokri Sendi, Mohammad A. Ayoubi</i>	
Integrated Model Reduction and Control of Aircraft with Flexible Wings (AIAA 2013-4862)	2986
<i>Sean Shan-Min Swei, Guoming G. Zhu, Nhan T. Nguyen</i>	

CONTROL OF MICRO AIR VEHICLES I

Dynamic Soaring Surveillance in a Gradient Wind Field (AIAA 2013-4863)	3008
<i>Chen Gao, Hugh H. Liu</i>	
Evaluation of Longitudinal Control Algorithms for Small Unmanned Aerial Systems for Robustness to Throttle Saturation and Wind Disturbances (AIAA 2013-4864)	3023
<i>Douglas Weibel, Dale Lawrence</i>	
Impact of Wind Disturbances on Vehicle Station Keeping and Trajectory Following (AIAA 2013-4865)	3037
<i>Kenan Cole, Adam Wickenheiser</i>	

ESTIMATION THEORY I

Sigma Point Modified State Observer for Nonlinear Uncertainty Estimation (AIAA 2013-4866)	3057
<i>Jacob Darling, Sivasubramanya N. Balakrishnan, Christopher N. D'Souza</i>	
Bounding Integrity Risk for Sequential State Estimators in the Presence of Stochastic Modeling Uncertainty (AIAA 2013-4867)	3067
<i>Steven E. Langel, Samer Khanafseh, Boris S. Pervan</i>	
Comparisons Between the Extended Kalman Filter and the State-Dependent Riccati Estimator (AIAA 2013-4868)	3092
<i>Andrew Berman, Paul Zarchan, Brian Lewis</i>	
Nonlinear State Estimation Using an Invariant Unscented Kalman Filter (AIAA 2013-4869)	3119
<i>Jean-Philippe Condomines, Cédric Seren, Gautier Hattenberger</i>	

FLEXIBLE AND ARTICULATED SPACECRAFT DYNAMICS AND CONTROL

Needs Assessment of Gossamer Structures in Communications Platform End-of-Life Disposal (AIAA 2013-4870)	3134
<i>Malcolm Macdonald, Colin McInnes, Charlotte Bewick, Lourens Visagie, Vaios Lappas, Sven Erb</i>	
Simple Adaptive Control for Vibration Suppression of Space Structures Using Control Moment Gyroscopes as Actuators (AIAA 2013-4871)	3155
<i>Quan Hu, Yinghong Jia, Shijie Xu</i>	
Modeling and Control of Tensegrity Systems Under LEO Gravitational Effects (AIAA 2013-4872)	3175
<i>Maria C. Rye, Cornel Sultan</i>	
Optimal Appendage Articulation Control of BepiColombo for Efficient Thruster Operation during Mercury Orbit Insertion Phase (AIAA 2013-4873)	3193
<i>Kaname Sasaki, Andrei Kornienko, Rob S. Harris</i>	

ORION GNC DESIGN AND ANALYSIS I (INVITED)

An Alternative Flight Software Trigger Paradigm: Applying Multivariate Logistic Regression to Sense Trigger Conditions using Inaccurate or Scarce Information (AIAA 2013-4874)	3201
<i>Kelly M. Smith, Robert Gay, Susan Stachowiak</i>	
Orion GN&C Mitigation Efforts for Van Allen Radiation (AIAA 2013-4875)	3216
<i>Ellis King, Mark C. Jackson</i>	
Tuning and Robustness Analysis for the Orion Absolute Navigation System (AIAA 2013-4876)	3237
<i>Greg N. Holt, Renato Zanetti, Christopher N. D'Souza</i>	

Orion MPCV Touchdown Detection Threshold Development and Testing (AIAA 2013-4877)	3249
<i>Jared Daum, Robert Gay</i>	
OTDOA/GPS Fusion for Urban UAS Navigation using Particle Filtering Techniques (AIAA 2013-4878)	3260
<i>Justin R. Rufa, Ella M. Atkins</i>	

SOLAR PROBE PLUS ATTITUDE CONTROL (INVITED)

Solar Probe Plus Mission Overview (AIAA 2013-4879)	3278
<i>Edward L. Reynolds, Andrew Driesman, James Kinnison, Mary Kae Lockwood, Patrick Hill</i>	
A First Look at the Guidance and Control System for the Solar Probe Plus Mission (AIAA 2013-4880)	3289
<i>Robin M. Vaughan, Hongxing Shapiro, John H. Wirzburger</i>	
Modeling the Near-Sun Environment for the Solar Probe Plus Guidance and Control System (AIAA 2013-4881)	3303
<i>John H. Wirzburger, Robin M. Vaughan, John Ray, Hongxing Shapiro</i>	
Avoiding the Burn: Maintaining a Sun-Safe Attitude for the Solar Probe Plus Spacecraft (AIAA 2013-4882)	3315
<i>Robin M. Vaughan, Sanae Kubota, Hongxing Shapiro, Mike Kagan, John Vesel</i>	

SURFACE, ARRIVAL, AND DEPARTURE PLANNING

Optimal Arrival and Departure Sequencing on a Runway System (AIAA 2013-4883)	3332
<i>S. Chandrasekar, Inseok Hwang</i>	
Robot Experiment Analysis of Airport Ramp Area Time Constraints (AIAA 2013-4884)	3349
<i>William J. Coupe, Dejan Milutinovic, Waqar A. Malik, Gautam Gupta, Yoon C. Jung</i>	
Modified Mixed Integer Linear Program for Airport Departure Scheduling (AIAA 2013-4885)	3362
<i>Su W. Bae, Jong Park, John-Paul Clarke</i>	

TASK PLANNING FOR MULTI-VEHICLE SYSTEMS II

Maintaining Connectivity for Networked Mobile Systems in the Presence of Agent Loss (AIAA 2013-4886)	3375
<i>Derya Aksaray, Dimitri N. Mavris</i>	
Dynamic Replanning for Multi-UAV Persistent Surveillance (AIAA 2013-4887)	3385
<i>Nikhil Nigam</i>	
Hybrid Information and Plan Consensus in Distributed Task Allocation (AIAA 2013-4888)	3405
<i>Luke B. Johnson, Han-Lim Choi, Jonathan P. How</i>	

VOLUME 5

On Optimal Routing For Commercial Formation Flight (AIAA 2013-4889)	3414
<i>Thomas E. Kent, Arthur G. Richards</i>	

TRAJECTORY BASED OPERATIONS

Impact of Aircraft Guidance and Navigation on 4D Contracts Generation and Execution - Example of the 4DCo- GC Project (AIAA 2013-4890)	3425
<i>Antoine Joulia, Thomas Riviere, Claude Le Tallec</i>	
Tactical Re-planning within the 4D Contracts ATC Concept (AIAA 2013-4891)	3436
<i>Daphna Gekht, Moshe Idan</i>	
Automatic Guidance through 4D Waypoints with Time and Spatial Margins (AIAA 2013-4892)	3463
<i>Gianfranco Morani, Vittorio Di Vito, Federico Corrado, Nikolai Grevtsov, Andrey Dymchenko</i>	
4-Dimensional Trajectory Negotiation and Validation System for the Next Generation Air Traffic Management (AIAA 2013-4893)	3482
<i>Alessandro Gardi, Subramanian Ramasamy, Roberto Sabatini, Kathryn De Ridder</i>	

AIRCRAFT GNC: CONTROLS IV

Characterization of Aircraft Trim Points Using Continuation Methods and Bifurcation Analysis (AIAA 2013- 4924)	3496
<i>Praveen Shankar</i>	
Multivariate Simplex Spline Based Nonlinear Dynamic Inversion Control of High Performance Aircraft (AIAA 2013-4925)	3508
<i>Henry J. Tol, Coen C. De Visser, Erik-Jan Van Kampen, Q Ping Chu</i>	
Motion-Based Piloted Simulation Evaluation of a Control Allocation Technique to Recover from Pilot Induced Oscillations (AIAA 2013-4926)	3531
<i>Robert Craun, Diana M. Acosta, Steven D. Beard, Michael W. Leonard, Gordon Hardy, Michael J. Weinstein, Yildiray Yildiz</i>	
Variance Constrained Flying Qualities Metrics for Conceptual Design Feasibility Studies (AIAA 2013-4927)	3555
<i>Craig Morris, Cornel Sultan, Joseph A. Schetz, Rakesh K. Kapania</i>	

NONLINEAR CONTROL AND SYSTEM ANALYSIS

Heterogeneous Model-Based Event-Triggered Receding Horizon Control for Nonlinear Systems (AIAA 2013-4928)	3571
<i>Chunhe Hu, Zongji Chen</i>	
Time Delayed Incremental Nonlinear Control (AIAA 2013-4929)	3581
<i>Johann Koschorke, Wouter Falkena, Erik-Jan Van Kampen, Q Ping Chu</i>	
The Terminal Guidance System Performance Analysis: A Finite-time Gain Measurement Approach (AIAA 2013-4930)	3599
<i>Fenghua He, Long Wang, Yu Yao, Peng Zhang, Weishan Chen</i>	
Exact Decomposition and Contraction Analysis of Nonlinear Hamiltonian Systems (AIAA 2013-4931)	3611
<i>Winfried Lohmiller, Jean-Jacques Slotine</i>	

ADVANCES IN ADAPTIVE CONTROL: STABILITY, PERFORMANCE, AND ROBUSTNESS – DEDICATED TO THE CONTRIBUTIONS OF ANTHONY J. CALISE TO ADAPTIVE FLIGHT CONTROL VI (INVITED)

Optimizing Reference Commands for Concurrent Learning Adaptive-Optimal Control of Uncertain Dynamical Systems (AIAA 2013-4932)	3621
<i>Maximilian Mühlegg, Girish Chowdhary, Florian Holzapfel</i>	
Flight and HIL Testing of a Longitudinal Model Reference Adaptive Controller on a High-Lag General Aviation Aircraft (AIAA 2013-4933)	3634
<i>Phillip J. Meikel, Bryan S. Steele, Kimberly Lemon, James E. Steck, Kamran Rokhsaz</i>	
Adaptive Spacecraft Control: Stability, Performance, and Robustness (AIAA 2013-4934)	3662
<i>Tansel Yucelen</i>	

APPLICATIONS OF DISTRIBUTED PARAMETER CONTROL II (INVITED)

Parameter Identification Technique based on Lyapunov Stability (AIAA 2013-4935)	3674
<i>Manoj Kumar, S. N. Balakrishnan</i>	
Adaptive Model Tracking for Distributed Parameter Control of Linear Infinite-Dimensional Systems in Hilbert Space (AIAA 2013-4936)	3687
<i>Mark J. Balas, Susan A. Frost</i>	
Stability of State-Dependent Delay Systems using Sum-of-Squares (AIAA 2013-4937)	3701
<i>Bin Li, Matthew Peet</i>	

CONTROL OF MICRO AIR VEHICLES II

A Torus Based Three Dimensional Motion Planning Model for Very Maneuverable Micro Air Vehicles (AIAA 2013-4938)	3708
<i>Ryan D. Hurley, Richard C. Lind, Joseph Kehoe</i>	
Aerodynamic Stability Modes of Low Aspect Ratio Wings (AIAA 2013-4939)	3723
<i>Matthew C. Shields, Kamran Mohseni</i>	
Lyapunov-Based Switching Control for a Road Estimation and Tracking Applied on a Convertible MAV (AIAA 2013-4940)	3737
<i>Gerardo F. Flores, Rogelio Lozano Leal, Guillaume Sanahuja</i>	
Optimum Spatially Constrained Turns for Agile Micro Aerial Vehicles (AIAA 2013-4941)	3750
<i>Aditya A. Paranjape, Soon-Jo Chung, Seth Hutchinson, Kevin Meier</i>	

CUBESAT/NANOSAT/PICOSAT GNC

CubeSat Attitude Control Testbed Design: Merritt 4-Coil per axis Helmholtz Cage and Spherical Air Bearing (AIAA 2013-4942)	3761
<i>Meghan Prinkey, David W. Miller, Paul Bauer, Kerri Cahoy, Evan D. Wise, Christopher M. Pong, Ryan W. Kingsbury, Anne D. Marinan, Hang Woon Lee, Erin L. Main</i>	
Attitude Dynamics and Control of a 3U CubeSat with Electrolysis Propulsion (AIAA 2013-4943)	3773
<i>Rodrigo Zeledon, Mason Peck</i>	
Propagation of CubeSats in LEO using NORAD Two Line Element Sets: Accuracy and Update Frequency (AIAA 2013-4944)	3783
<i>Brian Coffee, Rebecca Bishop, Kerri Cahoy</i>	
A Simple and Robust Staged Control Architecture for Nanometric Optical Path-Length Control (AIAA 2013-4945)	3798
<i>Francesco Capolupo, Alvar Saenz Otero, Kerri Cahoy</i>	

ESTIMATION THEORY II

Sparse-Grid Quadrature H-infinity Filter for Discrete-time Systems with Uncertain Noise Statistics (AIAA 2013-4947)	3815
<i>Bin Jia, Ming Xin</i>	

Distributed Fault Detection and Isolation for Kalman Consensus Filter (AIAA 2013-4948)	3828
<i>Kartavya Neema, Daniel A. Delaurentis</i>	
Novel Measurement Update Method for Quadrature-Based Gaussian Filters (AIAA 2013-4949)	3840
<i>Yang Tian, Yang Cheng</i>	

MISSILE SYSTEMS GUIDANCE II

Advances in Highly Constrained Multi-Phase Trajectory Generation using the General Pseudospectral Optimization Software (GPOPS) (AIAA 2013-4950)	3855
<i>Shawn L. Rexius, Tiffany Rexius, Timothy R. Jorris, Anil V. Rao</i>	
Shaping Guidance Law with Impact Angle Constraint for Alleviating Guidance Command at Terminal Phase (AIAA 2013-4951)	3871
<i>Jin-Ik Lee</i>	
Inscribed Angle Guidance (AIAA 2013-4952)	3881
<i>Ronny Tsalik, Tal Y. Shima</i>	
Blind Range Influence on Guidance Loop Performance: An Adjoint-Based Analysis (AIAA 2013-4953)	3906
<i>Domenic Bucco, Martin Weiss</i>	

ORION GNC DESIGN AND ANALYSIS II (INVITED)

Simple Sensitivity Analysis for Orion GNC (AIAA 2013-4954)	3922
<i>Tom Pressburger, Brian Hoelscher, Rodney Martin, Kumar Sricharan</i>	

SENSOR SYSTEMS FOR GNC I

Vision Based Feedback Control of a Carpal Wrist Joint (AIAA 2013-4955)	3938
<i>Manoranjana Majji, Martin Diz</i>	
Prototype Optical Sensor for CubeSat Attitude Determination with Air Bearing Validation (AIAA 2013-4956)	3956
<i>Matthew W. Knutson, Sungyung Lim, Christopher M. Pong, Timothy C. Henderson, David W. Miller</i>	
Low-Cost Loosely-Coupled Dual GPS/INS for Attitude Estimation with Application to a Small UAV (AIAA 2013-4957)	3979
<i>Matthew B. Rhudy, Yu Gu, Marcello Napolitano</i>	
Attitude Estimation for High Performance Aircraft (AIAA 2013-4958)	3988
<i>C. Kamali, Abhay A Pashilkar, Girish S. Deodhare, Amitabh Saraf</i>	

SPACECRAFT ATTITUDE CONTROL III

Passivity-Based Adaptive Attitude Control with Explicit Gravity-Gradient Torque Compensation (AIAA 2013-4959)	4000
<i>Julian P. Stellini, James R. Forbes, Chris J. Damaren</i>	
Gimbal Angle Reorientation for Nonredundant Single Gimbal Control Moment Gyros (AIAA 2013-4960)	4010
<i>Donghun Lee, Chan Gook Park, Hyochang Bang</i>	
Integration of Low G Sloshing Models with Spacecraft Attitude Control Simulators (AIAA 2013-4961)	4031
<i>Damien Theureau, Jean Mignot, Sebastien Tanguy, Barbara Busset, Henri Bavestrello, Louis Dandaleix</i>	
Optimal Momentum Unloading of Reaction Wheels in the Presence of Attitude Control Errors (AIAA 2013-4962)	4038
<i>Yusuf Acar, Nadjim M. Horri</i>	

SPACECRAFT NAVIGATION

A Distributed, Redundant Navigation and Fault Detection System for DARPA System F6 (AIAA 2013-4963)	4054
<i>Jason Schmidt, Michael R. Phillips</i>	
Automated Derivation and Verification of Navigation Requirements for On-Orbit Rendezvous (AIAA 2013-4964)	4079
<i>David Woffinden, Louis S. Breger</i>	
Smoothed Real-Time Navigation of Geostationary Satellites in Formation using Regional Navigation Satellites Differential Carrier Phase Measurements (AIAA 2013-4965)	4099
<i>Vinod Kumar, Hari Hablani, Pandiyan Ramalingam</i>	
GPU-Based Optical Navigation and Guidance for a Hypervelocity Asteroid Intercept Vehicle (HAIV) (AIAA 2013-4966)	4118
<i>Joshua R. Lyzhoft, Brian D. Kaplinger, Bong Wie, Matthew J. Hawkins</i>	

TRAJECTORY PLANNING AND OPTIMIZATION

A Cockpit-based Application for Traffic Aware Trajectory Optimization (AIAA 2013-4967)	4133
<i>Sharon Woods, Robert A. Vivona, David Roscoe, Brendan C. Lefebvre, David J. Wing, Mark G. Ballin</i>	
Costs of Limiting Route Optimization to Published Waypoints in the Traffic Aware Planner (AIAA 2013-4968)	4147
<i>David A. Karr, Robert A. Vivona, David J. Wing</i>	

Dynamic Programming Application to Airliner Four Dimensional Optimal Flight Trajectory (AIAA 2013-4969)	4162
<i>Yoshikazu Miyazawa, Navinda K. Wickramasinghe, Akinori Harada, Yuto Miyamoto</i>	
City-Pair Trajectory Optimization in the Presence of Winds using the GATAC Framework (AIAA 2013-4970)	4178
<i>Daniel Pisani, David Zammit Mangion, Roberto Sabatini</i>	

ADVANCES IN ADAPTIVE CONTROL: STABILITY, PERFORMANCE, AND ROBUSTNESS – DEDICATED TO THE CONTRIBUTIONS OF ANTHONY J. CALISE TO ADAPTIVE FLIGHT CONTROL VII (INVITED)

Application of a Robust Adaptive Control Architecture to a Spacecraft with Flexible Dynamics (AIAA 2013-4987)	4194
<i>Tansel Yucelen, Wassim Haddad, Eric N. Johnson, Gerardo De La Torre</i>	
Adaptive Control for Linear Uncertain Systems with Unmodeled Dynamics Revisited via Optimal Control Modification (AIAA 2013-4988)	4212
<i>Nhan T. Nguyen</i>	

AEROSPACE ROBOTICS AND UNMANNED/AUTONOMOUS SYSTEMS III

Indoor GPS-denied Context Based SLAM Aided Guidance for Autonomous Unmanned Aerial Systems (AIAA 2013-4989)	4229
<i>Dmitry Bershadsky, Eric N. Johnson</i>	

VOLUME 6

Camera Pan-Tilt Gimbals Robust Control Law for Target Tracking with Fixed Wing UAV (AIAA 2013-4990)	4251
<i>Niki Regina, Matteo Zanzi</i>	
Tracking a Moving Target by a Fixed-wing UAV Based on Sliding Mode Control (AIAA 2013-4991)	4272
<i>Mingfeng Zhang, Hugh H. Liu</i>	
A Comprehensive Flight Control Design and Experiment of a Tail-Sitter UAV (AIAA 2013-4992)	4282
<i>Yeondeuk Jung, Sungwook Cho, David Hyunchul Shim</i>	
Effect of Span-morphing on the Flight Modes, Stability & Control (AIAA 2013-4993)	4305
<i>Christopher S. Beaverstock, Rafic Ajaj, Michael I. Friswell, Wulf Dettmer</i>	

AEROSPACE ROBOTICS AND UNMANNED/AUTONOMOUS SYSTEMS IV

Obstacle Detection and Collision Avoidance of Quadrotor UAV Using Depth Map of Stereo Vision (AIAA 2013-4994)	4329
<i>Jongho Park, Youdan Kim</i>	
Chain-based Collision Avoidance for UAS Sense-and-Avoid Systems (AIAA 2013-4995)	4346
<i>Laith Sahawneh, Randal W. Beard, Sharath Avadhanam, He Bai</i>	
Multi-Agent Coordination with Arbitrarily Shaped Descriptor Functions (AIAA 2013-4996)	4361
<i>Andrea Ferrari Braga, Lorenzo Pollini, Mario Innocenti</i>	
Value-of Information Aware Active Task Assignment (AIAA 2013-4997)	4372
<i>Beipeng Mu, Girish Chowdhary, Jonathan P. How</i>	
Distributed Learning for Large-scale Planning Under Uncertainty Problems with Heterogeneous Teams (AIAA 2013-4998)	4386
<i>Nazim Kemal Üre, Girish Chowdhary, Yu Fan Chen, Jonathan P. How, John L. Vian</i>	

AIRCRAFT GNC: ADAPTIVE CONTROLS

Aerodynamic-Free Adaptive Control of the NASA Generic Transport Model (AIAA 2013-4999)	4403
<i>Frantisek Sobolic, Dennis Bernstein</i>	
Trim-Commanded Adaptive Control for Waypoint-Defined Trajectory Following (AIAA 2013-5000)	4416
<i>Ming-Jui Yu, Ella M. Atkins, Ilya Kolmanovsky, Dennis Bernstein, Jiapeng Zhong</i>	
Nonlinear Feedforward and Reference Systems for Adaptive Flight Control (AIAA 2013-5001)	4435
<i>Anders Peterson, Karl Johan Åström, Anders Robertsson, Rolf Johansson</i>	
Optimization-based Feedforward Path Following for Model Reference Adaptive Control of an Unmanned Helicopter (AIAA 2013-5002)	4454
<i>Johann C. Dauer, Timm Faulwasser, Sven Lorenz, Rolf Findeisen</i>	
Single Network Adaptive Critic (SNAC) Architecture for Optimal Tracking Control of a Morphing Aircraft during a Pull-up Maneuver (AIAA 2013-5003)	4467
<i>Wilfred G. Nobleheart, S. L. Geethalakshmi, Animesh Chakravarthy, James Steck</i>	

ATTITUDE ESTIMATION

Steady-state Invariant Kalman Filter for Attitude and Imbalance Estimation of a Neutrally-buoyant Airship (AIAA 2013-5004)	4485
<i>Mikael S. Persson, Inna Sharf</i>	

Attitude Observability from Light Curve Measurements (AIAA 2013-5005)	4504
<i>Joanna C. Hinks, Richard Linares, John L. Crassidis</i>	
Covariance Analysis of Maximum Likelihood Attitude Estimation (AIAA 2013-5006)	4513
<i>Joanna C. Hinks, John L. Crassidis</i>	

HUMAN AND AUTONOMOUS/UNMANNED SYSTEMS I

Development of an iPhone-controlled UAV (AIAA 2013-5007)	4531
<i>Atray Dixit, Jaiye Falusi, Samuel Kim, Gabriel Savit, Robert Stengel</i>	
Design, Simulation, and Flight Test Validation of a UAV Ground Control Station for Aviation Safety Research and Pilot Modeling (AIAA 2013-5008)	4547
<i>Trenton Larrabee, Haiyang Chao, Tanmay Mandal, Srikanth Gururajan, Yu Gu, Marcello Napolitano</i>	
Development and Flight Testing of a Model Based Autopilot Library for a Low Cost Unmanned Aerial System (AIAA 2013-5009)	4564
<i>Robert F. Hartley, Francois Hugon, Pat Anderson, Hever Moncayo</i>	
Flight Data Analysis of Pilot-Induced-Oscillations of a Remotely Controlled Aircraft (AIAA 2013-5010)	4589
<i>Tanmay Kumar, Yu Gu, Haiyang Chao, Matthew B. Rhudy</i>	
Contrails: Crowd-Sourced Learning of Human Models in an Aircraft Landing Game (AIAA 2013-5011)	4604
<i>Victor Huang, Haomiao Huang, Sridatta Thatipamala, Claire Tomlin</i>	

MISSILE SYSTEMS AND CONTROL AND AUTOPILOTS

Single vs. Two-Loop Full-State Multi-Input Multi-Output Missile Guidance (AIAA 2013-5012)	4615
<i>Maital Levy, Tal Y. Shima, Shaul Gutman</i>	
Anti-Windup Command Filtered Adaptive Backstepping Autopilot Design for a Tail-Controlled Air-Defense Missile (AIAA 2013-5013)	4638
<i>Florian Peter, Florian Holzapfel, Fabian Hellmundt, Farhana Chew</i>	
A Variable Structure Controller And Semi-Physical Simulation For Re-entry Hypersonic Missile (AIAA 2013-5014)	4657
<i>Zhaohua Yang, Ao Tian, Zhenqiang Qi</i>	
Rapid Turnover Maneuver Optimization of a Vertical Launch Surface to Air Missile via Genetic Algorithms (AIAA 2013-5015)	4669
<i>Raziye Tekin, O. Atesoglu, K. Leblebicioglu</i>	
Predictive Flow Control to Minimize Convective Time Delays (AIAA 2013-5016)	4678
<i>Casey P. Fagley, Christopher O. Porter, Thomas E. McLaughlin</i>	

SPACE EXPLORATION AND TRANSPORTATION II

ESA Lunar Lander: Approach Phase Concept and G&C Performance (AIAA 2013-5018)	4689
<i>Murray L. Kerr, Miguel Hagenfeldt, Jose A. Ospina, Jose Miguel Ramon, Luis F. Penin, Marco Mammarella, Ambroise Bidaux, Pablo Colmenarejo</i>	
Probabilistic Hazard Detection for Autonomous Safe Landing (AIAA 2013-5019)	4704
<i>Tonislav Ivanov, Andres Huertas, John M. Carson</i>	
Hazard Detection and Avoidance in ESA Lunar Lander: Concept and Performance (AIAA 2013-5020)	4717
<i>Baltazar Parreira, José F. Vasconcelos, Javier Montaña, Jose Ramón, Luis F. Penin</i>	
High-precision Landing Guidance for Mars: Design and System MDO (AIAA 2013-5021)	4729
<i>Davide Bonetti, Gabriele De Zaiacomo, Rodrigo Haya Ramos</i>	

SPACECRAFT ATTITUDE CONTROL/ESTIMATION AND SENSOR TECHNOLOGY (INVITED)

Spacecraft Attitude and Rate Determination using Numerical Gyros (AIAA 2013-5022)	4741
<i>Yeong-Wei A. Wu, Hao-Chi Chang, Chen-Tsung Lin, Wen-Ling Chiang</i>	
Star Tracker Rate Estimation with Kalman Filter Enhancement (AIAA 2013-5024)	4755
<i>Richard Y. Chiang, Tom Tsao</i>	
Gyroless 3-Axis Sun Acquisition via Sun Sensors Only Unscented Kalman Filter Estimation (AIAA 2013-5025)	4768
<i>Richard Y. Chiang, Tom Tsao</i>	

SPACECRAFT GUIDANCE AND CONTROL II

Analytical, Circle-to-Circle Low-Thrust Transfer Trajectories with Plane Change (AIAA 2013-5026)	4780
<i>Malcolm Macdonald</i>	
Optimal Propellant Maneuver Flight Demonstrations on ISS (AIAA 2013-5027)	4804
<i>Sagar Bhatt, Nazareth Bedrossian, Louis Nguyen, Kenneth Longacre</i>	
Model Predictive Control Guidance with Extended Command Governor Inner-Loop Flight Control for Hypersonic Vehicles (AIAA 2013-5028)	4816
<i>Christopher Petersen, Morgan Baldwin, Ilya Kolmanovsky</i>	

On the Performance of a Genetic Algorithm for Spacecraft Controller Gain Optimization (AIAA 2013-5029)	4836
<i>Matt Sorgenfrei, Sanjay S. Joshi, Amit K. Sanyal</i>	

TRAFFIC FLOW MANAGEMENT

An Enhancement to the Linear Dynamic System Model for Air Traffic Forecasting (AIAA 2013-5030)	4847
<i>Yi Cao, Dengfeng Sun, Lingsong Zhang</i>	
Tradeoff between Airspace Capacity and Risk Mitigation (AIAA 2013-5031)	4857
<i>Husni R. Idris, Ni Shen</i>	
An Aggregate Air Traffic Forecasting Model Subject to Stochastic Inputs (AIAA 2013-5032)	4871
<i>Christabelle Bosson, Dengfeng Sun</i>	
Risk-Hedged Traffic Flow Management under Airspace Capacity Uncertainties (AIAA 2013-5033)	4886
<i>Prasenjit Sengupta, Monish D. Tandale, Padmanabhan K. Menon</i>	
Optimal Terminal Area Flow Control using Eulerian Traffic Flow Model (AIAA 2013-5034)	4903
<i>Xiaoli Bai, Padmanabhan K. Menon</i>	

VISION-BASED NAVIGATION AND ESTIMATION

Iterative Scheme for Estimating Airplane Trajectory and G-Forces Using Video Analysis and Simulation Models (AIAA 2013-5035)	4919
<i>Dan T. Horak, Kevin Renze</i>	
Vision based Target Tracking/ Following and Estimation of Target Motion (AIAA 2013-5036)	4933
<i>Kemao Peng, Shiyu Zhao, Feng Lin, Ben Chen</i>	
Qualitative Relational Mapping for Planetary Rover Exploration (AIAA 2013-5037)	4951
<i>Mark McClelland, Mark E. Campbell, Tara Estlin</i>	
Experimental Evaluation of a Visual-Inertial Navigation System with Guaranteed Convergence (AIAA 2013-5038)	4961
<i>Francesco Di Corato, Mario Innocenti, Lorenzo Pollini</i>	
Robust Vision-Aided Navigation in Urban Environments (AIAA 2013-5039)	4978
<i>Matthew Graham, Theodore Steiner, Jonathan P. How</i>	

ADVANCES IN ADAPTIVE CONTROL: STABILITY, PERFORMANCE, AND ROBUSTNESS – DEDICATED TO THE CONTRIBUTIONS OF ANTHONY J. CALISE TO ADAPTIVE FLIGHT CONTROL VIII (INVITED)

Performance and Robustness Metrics for Adaptive Flight Control - Available Approaches (AIAA 2013-5090)	4990
<i>Christian D. Heise, Miguel Leitao, Florian Holzapfel</i>	
Adaptive-Optimal Control of Constrained Nonlinear Uncertain Dynamical Systems using Concurrent Learning Model Predictive Control (AIAA 2013-5091)	5014
<i>Maximilian Mühlegg, Girish Chowdhary, Jonathan P. How, Florian Holzapfel</i>	
Magnetic Momentum Control of a Satellite Augmented with an L_1 Adaptive Controller (AIAA 2013-5092)	5024
<i>Helena Vogel, Walter Fichter, Ronald Choe, Enric Xargay, Naira Hovakimyan</i>	
Performance Improvement in the Unfalsified Switching Adaptive Control of a General Nonlinear Plant (AIAA 2013-5093)	5041
<i>Margareta Stefanovic</i>	

AEROSPACE ROBOTICS AND UNMANNED/AUTONOMOUS SYSTEMS V

Efficient Aerial Coverage Search in Road Networks (AIAA 2013-5094)	5048
<i>Michael Dille, Sanjiv Singh</i>	
Guidance of an Autonomous Agent for Coverage Applications using Range Only Measurement (AIAA 2013-5095)	5068
<i>Twinkle Tripathy, Arpita Sinha</i>	
Mapping for Path Planning Using Maximal Empty Rectangles (AIAA 2013-5096)	5080
<i>Jinyoung Park, Andrew J. Sinclair</i>	
Robust Sampling-based Motion Planning with Asymptotic Optimality Guarantees (AIAA 2013-5097)	5091
<i>Brandon D. Luders, Sertac Karaman, Jonathan P. How</i>	

VOLUME 7

AIRCRAFT GNC: FLIGHT TEST I

Online PID Self-Tuning using an Evolutionary Swarm Algorithm with Experimental Quadrotor Flight Results (AIAA 2013-5098)	5116
<i>Pablo Ghiglino, Jason L. Forshaw, Vaios J. Lappas</i>	
Indoor Experimentation and Flight Test Results for a Twin Rotor Tailsitter Unmanned Air Vehicle (AIAA 2013-5099)	5132
<i>Jason L. Forshaw, Vaios J. Lappas, Phil Briggs</i>	

Flight Test Verification of Flight Controller for Quad Tilt Wing Unmanned Aerial Vehicle (AIAA 2013-5100)	5149
<i>Masayuki Sato, Koji Muraoka</i>	
Stochastic Thrust Model for Small UAVs (AIAA 2013-5101)	5166
<i>Chandra Tjhai, Demoz Gebre-Egziabher</i>	

CONTROL SYSTEMS THEORY, DESIGN, AND ANALYSIS METHODS

Equivalence Between State Space Exact Linearization Based and Back-Stepping Based Design Approaches (AIAA 2013-5102)	5179
<i>Thanh T. Tran, Brett A. Newman</i>	
Application of Lexicographic Goal Programming with Convex Optimization in Control Systems (AIAA 2013-5103)	5196
<i>Behcet A. Acikmese</i>	
Universal Congruence Constraint for Simultaneous Synthesis of Decentralized Controllers (AIAA 2013-5104)	5208
<i>Frederick C. Parker</i>	
Flight Control Design Using Observer-based Loop Transfer Recovery (AIAA 2013-5105)	5226
<i>Kevin A. Wise, Eugene Lavretsky</i>	

FLAPPING AND PERCHING FOR MICRO AIR VEHICLES

Development of a Flapping Wing Mechanism that Can Produce Lift Greater than Weight (AIAA 2013-5106)	5253
<i>Michael W. Oppenheimer, David Sigthorsson, Isaac Weintraub, Todd J. Smith, Jaderic Dawson, David B. Doman</i>	
Near-Optimal Perching Trajectory Selection using Bézier Curve Interpolation (AIAA 2013-5107)	5268
<i>Christopher Meckstroth, Gregory W. Reich</i>	
A Bio-inspired Approach for UAV Landing and Perching (AIAA 2013-5108)	5279
<i>Pu Xie, Ou Ma, Zhen Zhang</i>	

LOCALIZATION AND SURVEILLANCE USING MULT-VEHICLE SYSTEMS

A Coverage Strategy with Guaranteed Collision Avoidance in Multi-Agent Systems using Navigation Functions (AIAA 2013-5109)	5292
<i>Farid Sharifi, Hamid Mahboubi, Amir G. Aghdam, Youmin Zhang</i>	
Cooperative Vision-Based Tracking of Multiple UAVs (AIAA 2013-5110)	5301
<i>Venanzio Cichella, Isaac Kaminer, Vladimir Dobrokhodov, Naira Hovakimyan</i>	
Cooperative Underwater Localization in Ocean Currents (AIAA 2013-5111)	5321
<i>Zhuoyuan Song, Kamran Mohseni</i>	

MISSILE SYSTEMS GUIDANCE III

Cooperative Interception with Double-Line-of-Sight-Measuring (AIAA 2013-5112)	5333
<i>Yanfang Liu, Naiming Qi, Jinjun Shan</i>	
Control of Impact Angle Using Biased Proportional Navigation (AIAA 2013-5113)	5348
<i>Koray S. Erer, M. Kemal Ozgoren</i>	
Perturbation Based Guidance for a Generic 2D Course Correcting Fuze (AIAA 2013-5114)	5363
<i>John Robinson, Peter Strömbäck</i>	
Second Order Sliding Mode-Based Intercept Guidance with Uncertainty and Disturbance Compensation (AIAA 2013-5115)	5389
<i>Takeshi Yamasaki, Sivasubramanya N. Balakrishnan, Hiroyuki Takano, Isao Yamaguchi</i>	

RENDEZVOUS AND PROXIMITY OPERATIONS II

Autonomous Approach and Fly around a Target Satellite with Input Constraints (AIAA 2013-5116)	5406
<i>Xinglong Li, Baoqing Yang, Yu Yao</i>	
Optical Navigation and Fuel-Efficient Orbit Control Around an Irregular-Shaped Asteroid (AIAA 2013-5117)	5420
<i>Timothy Winkler, Brian D. Kaplinger, Bong Wie</i>	
Covariance Analysis Tool for Far Non-Cooperative Rendezvous (AIAA 2013-5118)	5439
<i>Leonore De Mijolla, Bruno Cavois, Alexandre Profizi, Cédric Renault, Alexandre Cropp</i>	

SPACECRAFT ATTITUDE CONTROL IV

Fault -Tolerant Attitude Control Systems for Satellite Equipped with Control Moment Gyros (AIAA 2013-5119)	5455
<i>Ai Noumi, Masaki Takahashi</i>	
Disturbance Torque Compensation of the BepiColombo Spacecraft during Interplanetary Cruise Flight using Solar Sailing Effect (AIAA 2013-5120)	5467
<i>Andrei Kornienko, Rob S. Harris, Philippe Temporelli, Koki Ho</i>	

Attitude Control of Spacecraft using Robust Backstepping Controller based on High Order Sliding Modes (AIAA 2013-5121)	5475
<i>Jorge A. Davila, Gian C. Gómez-Cortes</i>	

THE HISTORY AND FUTURE DIRECTIONS OF INERTIAL NAVIGATION-ENABLED GNC I (INVITED)

Demonstrating Practical Inertial Navigation: The Beginnings and Beyond (AIAA 2013-5122)	5485
<i>Neil M. Barbour, Christopher Gibson, Karl Flueckiger, Ralph Hopkins</i>	
Advances in Inertial Guidance Technology for Aerospace Systems (AIAA 2013-5123)	5497
<i>Robert D. Braun, Zachary R. Putnam, Bradley A. Steinfeldt, Michael J. Grant</i>	
Advances in the Science and Technology of Position, Navigation, and Timing (PNT) (AIAA 2013-5124)	5515
<i>Stephen P. Smith, David Johnson</i>	
Guidance, Control and Navigation for Aerospace Systems: Charles Stark Draper's influence on a Personal Perspective (AIAA 2013-5125)	5521
<i>Jason L. Speyer</i>	

TRACKING SYSTEMS AND APPLICATIONS

Bayesian Estimation for Tracking of Spiraling Reentry Vehicles (AIAA 2013-5126)	5531
<i>Robert H. Bishop, Juan E. Tapiero</i>	
SDDRE versus IMM based Estimation of 3D Coordinated Turn Target Maneuvers (AIAA 2013-5127)	5561
<i>Liat Peld-Eitan, Yehuda Moran, Ilan Rusnak</i>	
High-Precision, Practical Relative Orbit Propagation Using Least-Squares Method (AIAA 2013-5128)	5586
<i>Zhen Yang, Ya-Zhong Luo, Guo-Jin Tang</i>	

TRAJECTORY PREDICTION ANALYSIS

Reducing Aircraft Climb Trajectory Prediction Errors with Top-of-Climb Data (AIAA 2013-5129)	5598
<i>David P. Thippavong</i>	
Automating Trajectory Prediction Performance Analyses for the FAA Traffic Management Advisor (AIAA 2013-5130)	5610
<i>Gabriele Enea, Robert A. Vivona, Vincent H. Kuo, Karen Cate, Michelle M. Eshow</i>	
Determination of Lateral and Vertical Adherence to Route (AIAA 2013-5131)	5626
<i>Nicole A. Nelson, Mike Paglione</i>	
Trajectory Based Operations Conflict Resolution Advisories: Fast-Time Simulation Study Investigating Benefits from Improved Entry of Controller Intent (AIAA 2013-5132)	5650
<i>Christina M. Young, Andrew J. Fabian, Mike Paglione</i>	

AIRCRAFT GNC: CONTROLS V

In-Flight Multi-Variable Optimization of Redundant Controls on a Compound Rotorcraft (AIAA 2013-5165)	5669
<i>Gurbuz T. Ozdemir, Joseph F. Horn, Adam T. Thorsen</i>	
Impact of Control Specifications on Vehicle Design for Scramjet-Powered Hypersonic Vehicles (AIAA 2013-5166)	5690
<i>Srikanth Sridharan, Armando Rodriguez</i>	
Development of a State Dependent Riccati Equation based Tracking Flight Controller for an Unmanned Aircraft (AIAA 2013-5167)	5708
<i>Ozan Tekinalp, Anna Prach</i>	
Attenuation of Aircraft Flexible Modes during Maneuvering Flight (AIAA 2013-5168)	5722
<i>Fabio Almeida, Bruno Silva</i>	

AIRCRAFT GNC: FLIGHT TEST II

Flight Test of a Flying-Wing Type UAV with Partial Wing Loss Using Neural Network Controller (AIAA 2013-5169)	5739
<i>Kijoon Kim, Do-Myung Kim, Seungkeun Kim, Jinyoung Suk, Jong-Min Ahn, Heungsik Lim, Gi-Bong Hur, Nakwan Kim, Byoung-Soo Kim</i>	
Approach and Departure Procedure Variations to Reduce and Redistribute Noise (AIAA 2013-5170)	5752
<i>Stefan Kreth</i>	
Peak-Seeking Optimization of Trim for Reduced Fuel Consumption: Flight-Test Results (AIAA 2013-5171)	5767
<i>Nelson A. Brown, Jacob R. Schaefer</i>	
A Multi-Mode Upset Recovery Flight Control System for Large Transport Aircraft (AIAA 2013-5172)	5788
<i>Jacobus A. Engelbrecht, Simon J. Pauck, Iain K. Peddle</i>	

ATTITUDE AND ORBIT DETERMINATION

Adaptive Model-Independent Tracking of Rigid Body Position and Attitude Motion with Mass and Inertia Matrix Identification using Dual Quaternions (AIAA 2013-5173)	5805
<i>Nuno Filipe, Panagiotis Tsiotras</i>	
Commissioning of Attitude and Orbit Determination and Control System of RASAT Satellite (AIAA 2013-5174)	5820
<i>Mustafa Akbas, Yusuf Acar, Farid Gulmammadov, Cagatay Yavuzylmaz, Ozgur Kahraman</i>	
A Close Examination of Multiple Model Adaptive Estimation Vs Extended Kalman Filter for Precision Attitude Determination (AIAA 2013-5175)	5827
<i>Quang M. Lam, John L. Crassidis</i>	
Navigating by Twilight: Autonomous Orbit Determination Using Solar Occultation Detection on the AIM Spacecraft (AIAA 2013-5176)	5847
<i>John R. Fulmer</i>	

AVIATION ENVIRONMENTAL IMPACT REDUCTION

Vertical Grid Shifting Approach to the Development of Contrail Reduction Strategies with Sector Capacity Constraints (AIAA 2013-5177)	5861
<i>Peng Wei, Banavar Sridhar, Neil Y. Chen, Dengfeng Sun</i>	
Evaluation of Aircraft Contrails using Dynamic Dispersion Model (AIAA 2013-5178)	5873
<i>Jinhua Li, Fabio Caiazzo, Neil Y. Chen, Banavar Sridhar, Hok Ng, Steven Barrett</i>	
Contrail Sensitive 4D Trajectory Planning with Flight Level Allocation Using Multiphase Mixed-Integer Optimal Control (AIAA 2013-5179)	5883
<i>Manuel Soler-Arnedo, Mark Hansen, Bo Zou</i>	

HUMAN AND AUTONOMOUS/UNMANNED SYSTEMS II

Longitudinal Robust Controller for Excellent Handling Qualities Design of a General Aviation Aircraft using QFT (AIAA 2013-5180)	5902
<i>Falko Schuck, Matthias Heller, Thaddäus Baier, Florian Holzapfel</i>	
Adaptive Guidance for UAV based on Dubins Path (AIAA 2013-5181)	5927
<i>Pau Bares, Samuel Lazarus, Antonios Tsourdos, Ali Savvaris</i>	
Experimental Implementation of Spectral Multiscale Coverage and Search Algorithms for Autonomous UAVs (AIAA 2013-5182)	5954
<i>George Mathew, Suresh Kannan, Amit Surana, Sanjay Bajekal, Konda R. Chevva</i>	

VOLUME 8

Model Checking Human-Automation UAV Mission Plans (AIAA 2013-5183)	5967
<i>Laura R. Humphrey, Michael J. Patzek</i>	

INTELLIGENT CONTROL IN AEROSPACE APPLICATIONS II

Development of Immunity-Based Framework for Aircraft Abnormal Conditions Detection, Identification, Evaluation, and Accommodation (AIAA 2013-5184)	5982
<i>Mario G. Perhinschi, Hever Moncayo, Dia Al Azzawi</i>	
Dendritic Cell Mechanism for Aircraft Immunity-Based Failure Detection and Identification (AIAA 2013-5185)	6006
<i>Dia Al Azzawi, Mario G. Perhinschi, Hever Moncayo</i>	
Analytical Analysis of Cyber Attacks on Unmanned Aerial Systems (AIAA 2013-5186)	6025
<i>Cheolhyeon Kwon, Inseok Hwang</i>	

ORBITAL DYNAMICS AND PROPAGATION

Wald Sequential Probability Ratio Test for Analysis of Orbital Conjunction Data (AIAA 2013-5187)	6037
<i>J. Russell Carpenter, F Landis Markley, Dara Gold</i>	
Analytical Orbit Propagator Based on Vectorial Orbital Elements (AIAA 2013-5188)	6050
<i>Daniel Condurache, Vladimir Martinusi</i>	
Computing Collision Probability Using Linear Covariance and Unscented Transforms (AIAA 2013-5189)	6062
<i>Sun H. Hur-Diaz, Matthew Ruschmann, Martin Heyne, Michael Phillips</i>	
Analytical Solutions to Uncertainty Propagation in Satellite Relative Motion (AIAA 2013-5190)	6072
<i>Sangjin Lee, Inseok Hwang</i>	

PARAMETER IDENTIFICATION AND ROBUST, RECONFIGURATION CONTROL

Robust Stability of Uncertain Sampled Data Time Delay Systems with Application to Turbine Engine Control (AIAA 2013-5191)	6080
<i>Siddharth P. Mulay, Rama K. Yedavalli</i>	
On the Accuracy of State Estimators for Constant and Time-Varying Parameter Estimation (AIAA 2013-5192)	6095
<i>Jiapeng Zhong, Alexey Morozov, Yousaf Rahman, Dennis Bernstein</i>	
Retrospective Cost Model Refinement for On-Line Estimation of Constant and Time-Varying Flight Parameters (AIAA 2013-5193)	6110
<i>Jiapeng Zhong, Jin Yan, Yousaf Rahman, Changhong Wang, Dennis Bernstein</i>	
Robust Adaptive Control in the Presence of Unmodeled Actuator Dynamics (AIAA 2013-5194)	6125
<i>Jovan Boskovic, Joseph A. Jackson, Raman Mehra</i>	

RENDEZVOUS AND PROXIMITY OPERATIONS III

Autonomous Multi Satellites Assembly in Keplerian Orbits (AIAA 2013-5195)	6143
<i>Mohamed Okasha, Chandeok Park, Sang-Young Park</i>	
Photometry and Angles Data for Spacecraft Relative Navigation (AIAA 2013-5196)	6158
<i>Matthew P. Whittaker, Richard Linares, John L. Crassidis</i>	
Robust Feature Detection, Acquisition and Tracking for Relative Navigation in Space with a Known Target (AIAA 2013-5197)	6175
<i>Dae-Min Cho, Panagiotis Tsiotras, Guangcong Zhang, Marcus Holzinger</i>	

SENSOR SYSTEMS FOR GNC II

Does the Unscented Kalman Filter Converge Faster than the Extended Kalman Filter? A Counter Example (AIAA 2013-5198)	6193
<i>Matthew B. Rhudy, Yu Gu, Marcello Napolitano</i>	
COTS Lens and Detector Characterization for Low Cost Miniature SAL Seekers (AIAA 2013-5199)	6201
<i>Randal T. Allen, John Volpi, Steve Roerman</i>	
On-Line Orientation Calibration of Inertial Measurement Unit Pairs using Unmanned Aerial Vehicle Flight Data (AIAA 2013-5200)	6208
<i>Kyle Lassak, Matthew B. Rhudy, Yu Gu</i>	
UAV Attitude, Heading, and Wind Estimation Using GPS/INS and an Air Data System (AIAA 2013-5201)	6222
<i>Matthew B. Rhudy, Trenton Larrabee, Haiyang Chao, Yu Gu, Marcello Napolitano</i>	

SPACE NAVIGATION AND ESTIMATION

Experimental Validation of Pulse Phase Tracking for X-ray Pulsar Based Spacecraft Navigation (AIAA 2013-5202)	6233
<i>Kevin D. Anderson, Darryll Pines</i>	
Modeling and Simulation of a Laser Ranging Interferometer Acquisition and Guidance Algorithm (AIAA 2013-5203)	6258
<i>Filippo Ales, Peter Gath, Ulrich Johann, Claus Braxmaier</i>	
Real-time Navigation for Mars Final Approach Using X-ray Pulsars (AIAA 2013-5204)	6283
<i>Pingyuan Cui, Zhengshi Yu, Shengying Zhu, Ai Gao</i>	
Closed-Form Nonlinear Covariance Prediction for Two-Body Orbits (AIAA 2013-5205)	6294
<i>Michael E. Hough</i>	

THE HISTORY AND FUTURE DIRECTIONS OF INERTIAL NAVIGATION-ENABLED GNC II (INVITED)

History and Future Directions of Mission- and Safety-Critical Avionics (AIAA 2013-5206)	6310
<i>Jaynarayan H. Lala</i>	
Future Directions for Aerospace GN&C (AIAA 2013-5207)	6332
<i>John R. Dowdle, Philip D. Hattis, Piero Miotto</i>	

AEROSPACE ROBOTICS AND UNMANNED/AUTONOMOUS SYSTEMS VI

Implementation of Composite Clothoid Paths for Continuous Curvature Trajectory Generation for UAVs (AIAA 2013-5230)	6348
<i>Jennifer N. Wilburn, Mario G. Perhinschi, Brenton K. Wilburn</i>	
Kinodynamic Motion Planning for UAVs: A Minimum Energy Approach (AIAA 2013-5231)	6369
<i>Nir Rikovitch, Inna Sharf</i>	
Implementation of a 3-Dimensional Dubins-Based UAV Path Generation Algorithm (AIAA 2013-5232)	6386
<i>Jennifer N. Wilburn, Mario G. Perhinschi, Brenton K. Wilburn</i>	

Path Following Using Trajectory Shaping Guidance (AIAA 2013-5233)	6404
<i>Ashwini Ratnoo, Shmuel Hayoun, Asaf Granot, Tal Y. Shima</i>	

AIRCRAFT GNC: ADAPTIVE/FUZZY CONTROLS

Nonlinear Adaptive Dynamic Inversion Applied to a Generic Hypersonic Vehicle (AIAA 2013-5234)	6427
<i>Elizabeth Rollins, John Valasek, Jonathan A. Muse, Michael A. Bolender</i>	
Design and Worst-case Validation of a Longitudinal Adaptive Flight Control Law : A Practical Approach (AIAA 2013-5235)	6451
<i>Simon Oudin, Guilhem Puyou, Gilles Ferreres, Philippe Mouyon</i>	
L₁ Adaptive Control Design for Improved Handling of the F/A-18 class of Aircraft (AIAA 2013-5236)	6466
<i>Leena Singh, Piero Miotto, Louis S. Breger</i>	

CONTROL THEORY DESIGN AND ANALYSIS IN FLIGHT CONTROL APPLICATIONS

Control of a Flexible Aircraft using an Adaptive Mixing Scheme with a Guaranteed Stability Margin (AIAA 2013-5237)	6478
<i>Saeid Jafari, Petros Ioannou, Lael E. Rudd</i>	
Longitudinal Control Strategy for Hypersonic Accelerating Vehicles (AIAA 2013-5238)	6485
<i>Dawid Preller, Sanchito Banerjee, Michael Smart, Michael A. Creagh</i>	
Real-Time Optimization for use in a Control Allocation System to Recover from Pilot Induced Oscillations (AIAA 2013-5239)	6503
<i>Michael W. Leonard</i>	

FORMATION FLYING

Optimal Hybrid Control for Lorentz-Augmented Formation Flying (AIAA 2013-5240)	6518
<i>Ludwik A. Sobiesiak, Chris J. Damaren</i>	
Spacecraft Formation Reconfiguration in Elliptic Reference Orbits (AIAA 2013-5241)	6527
<i>Jonghee Bae, Gwanghyeok Ju, Youdan Kim</i>	
Formation Flying of Satellites with G-MPSP Guidance (AIAA 2013-5242)	6550
<i>Arnab Maity, Girish Joshi, Radhakant Padhi</i>	
Comparison of Two Particle Filter Methods For Image Plane Tracking of Multiple Objects (AIAA 2013-5243)	6572
<i>Ernest J. Ohlmeyer, Padmanabhan K. Menon</i>	
Flight Test Results of a MEMS IMU Based Transfer Alignment Algorithm for Short Range Air-to-Air Missiles (AIAA 2013-5244)	6591
<i>Marthinus C. Havinga</i>	

MODELING AND ESTIMATION FOR MICRO AIR VEHICLES

Inertial-Aided Vision-Based Localization and Mapping in a Riverine Environment with Reflection Measurements (AIAA 2013-5246)	6601
<i>Junho Yang, Ashwin Dani, Soon-Jo Chung, Seth Hutchinson</i>	
Pipelined Particle Filter with Non-Observability Measure for On-Board Navigation with MAVs (AIAA 2013-5247)	6619
<i>Florian Weimer, Michael Frangenberg, Walter Fichter</i>	

SPACE EXPLORATION AND TRANSPORTATION III

Celestial Navigation-Based Controller Design for Extraterrestrial Surface Navigation (AIAA 2013-5248)	6640
<i>Amy Underwood, May Win L. Thein</i>	
Deflecting Small Asteroids using Laser Ablation: Deep Space Navigation and Asteroid Orbit Control for LightTouch₂ Mission (AIAA 2013-5250)	6661
<i>Massimo Vetrivano, João Branco, Joan Pau Sanchez Cuartielles, Daniel Garci Yarnoz, Massimiliano L. Vasile</i>	

SPACECRAFT GNC SYSTEMS ENGINEERING

Pointing Error Budgeting for High Pointing Accuracy Mission using the Pointing Error Engineering Tool (AIAA 2013-5251)	6682
<i>Massimo Casasco, Gonzalo Saavedra Criado, Sven Weikert, Jochen Eggert, Marc Hirth, Thomas Ott, Haifeng Su</i>	
Tool for Rapid Analysis of Monte Carlo Simulations (AIAA 2013-5252)	6703
<i>Carolina Restrepo, Kurt McCall, John E. Hurtado</i>	
Operational Capabilities of a Six Degrees of Freedom Spacecraft Simulator (AIAA 2013-5253)	6713
<i>Kelsey Saulnier, David Perez, Grace Tilton, Daniele Gallardo, Chris Shake, R. Huang, Riccardo Bevilacqua</i>	
Optimal Attitude Scheduling of an Imaging Satellite (AIAA 2013-5254)	6728
<i>Alan Zorn, Matt West</i>	

TERMINAL AREA OPERATIONS

Conflict Resolution Algorithms for Super Density Operations Impacted by Off-Nominal Events (AIAA 2013-5255)	6736
<i>Moein Ganji, Jit-Tat Chen, Rafal Kicingier, Joseph Mitchell</i>	
Modeling and Optimization of Terminal Area Utilization by Assigning Arrival and Departure Fixes (AIAA 2013-5256)	6753
<i>Bosung Kim, John-Paul Clarke</i>	
Control of Aircraft in the Terminal Manoeuvring Area using Parallelised Sequential Monte Carlo (AIAA 2013-5257)	6767
<i>Alison J. Eele, Jan M. Maciejowski, Thomas Chau, Wayne Luk</i>	
Enhanced Apollo-Class Real-Time Targeting and Guidance for Powered Descent and Precision Landing (AIAA 2013-5258)	6786
<i>Dilmurat Azimov</i>	
Author Index	