

CONTENTS

	Page
FOREWORD	vii
PREFACE	xi
Part I	
SESSION 1: SPACE SITUATIONAL AWARENESS I	1
A Boundary Value Problem Approach to Too-Short Arc Optical Track Association (AAS 14-201) K. Fujimoto, K. T. Alfriend and T. Schildknecht	3
Distant Periodic Orbits for Space-Based Near Earth Objects Detection (AAS 14-202) Michele Stramacchia, Camilla Colombo and Franco Bernelli-Zazzera	19
Estimation for Satellite Collision Probabilities Using Importance Sampling (AAS 14-203) Earl Lawrence, David Higdon, Andrew Walker and Michael Shoemaker	41
Initial Orbit Determination, Data Association, and Admissible Regions of Space Objects Using Magnetometers (AAS 14-204) Marcus J. Holzinger	49
“Inverse Crime” and Model Integrity in Unresolved Space Object Identification (AAS 14-205) Laura S. Henderson and Kamesh Subbarao	65
Enabling the Use of Rotating Platforms for Orbit Determination Applications (AAS 14-206) Brad Sease, William Anthony and Brien Flewelling	79
Collision Avoidance in Elliptical Formation Flying Based on Relative Orbit Elements (AAS 14-208) Jianfeng Yin, Yinrui Rao, Guo Zhong and Chao Han	91
Stochastic Optimization for Sensor Allocation Using AEGIS-FISST (AAS 14-209) I. I. Hussein, Z. Sunberg, S. Chakravorty, M. K. Jah and R. S. Erwin	105
Particle Filtering Light Curve Based Attitude Estimation for Non-Resolved Space Objects(AAS 14-210) Richard Linares, John L. Crassidis and Moriba K. Jah	119

SESSION 2: RENDEZVOUS AND PROXIMITY OPERATIONS	131
Relative Orbital Motion and Angles-Only Relative State Observability in Cylindrical Coordinates (AAS 14-211) David K. Geller and T. Alan Lovell	133
Initial Relative Orbit Determination Performance Analysis in Cylindrical Coordinates Using Angles-Only Measurements (AAS 14-212) David K. Geller and T. Alan Lovell	149
A Non-Singular Keplerian Differential State Transition Matrix (AAS 14-213) Stefano Casotto	167
Formation Flying and Relative Dynamics Under the Circular Restricted Three-Body Problem Formulation (AAS 14-214) Fabio Ferrari and Michèle Lavagna	185
Relative Dynamics and Control of High Area-to-Mass Ratio Spacecraft Flying Around an Oblate Earth Exploiting Solar Radiation Pressure (AAS 14-215) G. Mingotti and C. McInnes	205
Inverse Transformation of Relative State Transition Matrix Based on Relative Orbit Elements (AAS 14-216) Jianfeng Yin, Yinrui Rao and Chao Han	223
Relative Position Control of a Two-Satellite Formation Using the SDRE Control Method (AAS 14-217) Mohammad Mehdi Gomroki and Ozan Tekinalp	235
Use of Cartesian-Coordinate Calibration for Satellite Relative-Motion Control (AAS 14-218) Andrew J. Sinclair, Ryan E. Sherrill and T. Alan Lovell	255
Periodic Orbits in the Elliptical Relative Motion Problem With Space Surveillance Applications (AAS 14-219) Ashley D. Biria and Ryan P. Russell	267
Further Exploration of Lambert's Problem Using Relative Satellite Dynamics (AAS 14-220) William Anthony and Thomas Alan Lovell	287
Finite-Time Control for Body-Fixed Hovering of Rigid Spacecraft Over an Asteroid (AAS 14-221) Daero Lee, Amit K. Sanyal, Eric A. Butcher and Daniel J. Scheeres	303
SESSION 3: ASTRODYNAMICS ALGORITHMS	323
Framework for Performance Comparison of Lambert Algorithms (AAS 14-222) Jaemyung Ahn, Sang-Il Lee and Jun Bang	325
Long-Term Orbital Propagation Through Differential Algebra Transfer Maps and Averaging Semi-Analytical Approaches (AAS 14-224) Alexander Wittig, Roberto Armellin, Camilla Colombo and Pierluigi Di Lizia	339

Asymptotic Solution for the Two Body Problem With Radial Perturbing Acceleration (AAS 14-226)	359
Juan L. Gonzalo and Claudio Bombardelli	
EDromo: An Accurate Propagator for Elliptical Orbits in the Perturbed Two-Body Problem (AAS 14-227)	379
Giulio Baù, Hodei Urrutxua and Jesús Peláez	
Efficient Solutions of Kepler's Equation Via Hybrid and Digital Approaches (AAS 14-228)	399
Daniel L. Oltrogge	
Solutions of Multivariate Polynomial Systems Using Macaulay Resultant Expressions (AAS 14-229)	401
Keith A. LeGrand, Kyle J. DeMars and Jacob E. Darling.	
Application of the Stark Problem to Space Trajectories With Time-Varying Perturbations (AAS 14-230)	421
Noble Hatten and Ryan P. Russell	
Applications of Implicit Functions to Orbital Mechanics Problems (AAS 14-231)	439
Donghoon Kim and Daniele Mortari	
Multi-Segment Adaptive Modified Chebyshev Picard Iteration Method (AAS 14-232)	459
Donghoon Kim, John L. Junkins, James D. Turner and Ahmad Bani-Younes	
SESSION 4: LOW ENERGY TRAJECTORY DESIGN	471
A Quick Search Method for Low-Energy Trajectory Options to Near Earth Objects (AAS 14-233)	481
Rodney L. Anderson	
Applications of Gravity Assists in the Bicircular and Bielliptic Restricted Four-Body Problem (AAS 14-234)	483
Kenta Oshima and Tomohiro Yanao	
Flow Control Segment and Lagrangian Coherent Structure Approaches for Application in Multi-Body Problems (AAS 14-235)	503
Cody R. Short, Daniel Blazevski, Kathleen C. Howell and George Haller	
Improved Transfers to Earth-Moon L_3 Halo Orbits (AAS 14-236)	523
Kathryn E. Davis, Jeffrey S. Parker, Masoud Deilami and Eric A. Butcher	
F and G Taylor Series Solutions to the Circular Restricted Three Body Problem (AAS 14-237)	543
Etienne Pellegrini and Ryan P. Russell.	
Near Optimal Feedback Guidance Design and the Planar Restricted Three-Body Problem (AAS 14-238)	559
Joseph Dinius, Roberto Furfaro, Francesco Topputo and Scott Selnick	
Novel Solar Sail Mission Concepts for Space Weather Forecasting (AAS 14-239)	575
Jeannette Heiligers and Colin R. McInnes	
	585

Using Lunar Swingbys and Libration-Point Orbits to Extend Human Exploration to Mars (AAS 14-241)	605
John N. Kidd Jr., Roberto Furfarò and David Dunham	
Investigating the Optimization of Mid-Course Maneuvers to Earth-Moon L ₂ Libration Orbit (AAS 14-242)	623
Jennifer Dowling and Jeffrey Parker	
SESSION 5: SPACECRAFT AUTONOMY	641
Spinner Spacecraft Propulsion Model For Magnetospheric Multiscale Mission (MMS) Flight Dynamics Applications (AAS 14-243)	
Laurie M. Mann, Conrad Schiff and Henry W. Mulkey	643
Orbit Control and Hovering in Asteroid Dynamical Environments Using Higher Order Sliding Control Theory (AAS 14-245)	
Roberto Furfarò	657
Fault Detection and Isolation Strategy for Redundant Inertial Measurement Units (AAS 14-246)	
Renato Zanetti, Abran Alaniz, Louis Breger, Ian Mitchell and Richard Phillips	671
Autonomous Position Estimation for Lunar Orbiters Using a Visible Camera (AAS 14-247)	
Stoian Borissov and Daniele Mortari	685
Model Predictive Control and Extended Command Governor for Improving Robustness of Relative Motion Guidance and Control (AAS 14-249)	
Christopher Petersen, Andris Jaunzemis, Morgan Baldwin, Marcus Holzinger and Ilya Kolmanovsky	701
The Adaptive Entry Guidance Based on 3D Obtainable Space Concept (AAS 14-250)	
Erlong Su, Jianjun Luo and Baichun Gong	719
Semi-Analytical Guidance Algorithm for Autonomous Close Approach to Non-Cooperative Low-Gravity Targets (AAS 14-251)	
Paolo Lunghi, Michèle Lavagna and Roberto Armellin	731
Feedback and Iterative Learning Control With Disturbance Estimators (AAS 14-252)	
Anil Chinnan, Minh Q. Phan and Richard W. Longman	747
Idiosyncrasies in the Inverse Models of Digital Skip Step Finite Time Systems (AAS 14-253)	
Te Li and Richard W. Longman	767

SESSION 6: NAVIGATION	787
Solar and Thermal Radiation Pressure Models and Flight Evaluation for Ikaros Solar Sail (AAS 14-244)	
Jozef van der Ha, Yuya Mimasu, Yuichi Tsuda and Osamu Mori	789
Expected Performance of the Deep Space Atomic Clock Mission (AAS 14-254)	
Todd A. Ely, David Murphy, Jill Seubert, Julia Bell and Da Kuang	807
The Evolution of Deep Space Navigation: 1999–2004 (AAS 14-255)	
Lincoln J. Wood	827
Navigation Filter Simulator Development for Small Body Proximity Operation (AAS 14-256)	
Peter C. Lai and David S. Bayard	849
Linear And Unscented Covariance Analysis for Spacecraft Close Proximity Relative Navigation (AAS 14-257)	
Jacob E. Darling, James S. McCabe, Henry J. Pernicka and Kyle J. DeMars	869
Performance Evaluation of the Target-Star Angles Based Relative Navigation Method (AAS 14-259)	
Kai Wang and Shijie Xu	889
Finite-Time Observer for Rigid Spacecraft Motion Over an Asteroid (AAS 14-260)	
Daero Lee, Maiziar Izadi, Amit K. Sanyal, Eric A. Butcher and Daniel J. Scheeres	905
A Novel Angles-Only Relative Navigation Algorithm for Space Non-Cooperative Target On-Orbit Servicing (AAS 14-262)	
Baichun Gong, Jianjun Luo, Jianping Yuan and Wenyong Zhou	923
Navigation Design and Analysis for the Orion Earth-Moon Mission (AAS 14-263)	
Christopher D'Souza and Renato Zanetti	941

Part II

SESSION 7: TRAJECTORY DESIGN I	959
Forced Precession Orbit Departing From Keplerian Orbit Under Continuous Normal Thrust (AAS 14-265)	
Jing Cao, Jianping Yuan, Yong Shi, Jianjun Luo and Zhiguo Zhang	961
Optimal Impulsive Rendezvous With Terminal Tangent Burn Between Elliptic and Hyperbolic Orbits Considering the Trajectory Constraints (AAS 14-266)	
Wenbo Zhang, Yue Chen, Xin Sui and Ningfei Wang	979
Design of End-to-End Trojan Asteroid Rendezvous Tours Incorporating Potential Scientific Value (AAS 14-267)	
Jeffrey Stuart, Kathleen Howell and Roby Wilson	997