

1st IAA CONFERENCE ON SPACE SITUATIONAL AWARENESS

2017
NOVEMBER 13TH - 15TH
ORLANDO, FL, USA



SPONSORED BY



ICSSA 2017 Draft Agenda

Please note that actual time slots will be assigned after the paper submission deadline. Student papers running for awards will be scheduled in the first two days, in order to provide sufficient time for the judges to assign awards at the Reception.

Monday, November 13th, 2017	
7:00am – 7:00pm	Registration
7:00am – 8:00am	Breakfast
8:00am – 8:30am	Welcome from Chairs & IAA Delegates
8:30am – 9:30am	Keynote 1
9:30am – 10:00am	Coffee Break
10:00am – 12:00pm	Sessions
12:00pm – 1:30pm	Lunch
1:30pm – 3:30pm	Sessions
3:30pm – 4:00pm	Coffee Break & Networking
4:00pm – 7:00pm	Workshop 1
Tuesday, November 14th, 2017	
7:00am – 6:00pm	Registration
7:00am – 8:00am	Breakfast
8:00am – 9:00am	Keynote 2
9:00am – 9:30am	Coffee Break
9:30am – 11:30am	Sessions
11:30am – 1:00pm	Lunch
1:00pm – 3:30pm	Sessions
3:30pm – 4:00pm	Coffee Break & Networking
4:00pm – 5:00pm	Keynote 3
5:30pm – 7:30pm	Reception & Awards Ceremony
Wednesday, November 15th, 2017	
7:00am – 6:00pm	Registration
7:00am – 8:00am	Breakfast
8:00am – 9:00am	Keynote 4
9:00am – 9:30am	Coffee Break
9:30am – 11:30am	Sessions
11:30am – 1:00pm	Lunch & Keynote 5
1:00pm – 3:30pm	Sessions
3:30pm – 4:00pm	Coffee Break & Networking
4:00pm – 4:30pm	Farewell

Abstract Submissions

Title	Authors	Topic
A New Permanent LEO Debris Removal System	Marshall H. Kaplan	Debris removal
A HYBRID ADAPTIVE CONTROL ALGORITHM FOR SPACECRAFT GUIDANCE TRACKING USING AERODYNAMIC DRAG	Sanny Omar, Riccardo Bevilacqua	Drag-controlled re-entry
Drag De-Orbit Device: A New Standard Re-Entry Actuator for CubeSats	David Guglielmo, Sanny Omar, Riccardo Bevilacqua	Alternative (non-propulsive) deorbiting technologies
REMOVAL OF ORBITAL DEBRIS FROM GEOSTATIONARY ORBITS USING SOLAR RADIATION PRESSURE AND LYAPUNOV CONTROL	Patrick Kelly and Riccardo Bevilacqua	Alternative (non-propulsive) deorbiting technologies
LUNAR RENDEZVOUS FOR ORBITAL DEBRIS USING SOLAR RADIATION PRESSURE	Patrick Kelly and Riccardo Bevilacqua	Spacecraft control
CRITICALITY ASSESSMENT OF THE ITALIAN NON-MANEUVRABLE SATELLITES IN LOW EARTH ORBIT	Luciano Anselmo & Carmen Pardini	Risk Assessment
Optimal Debris Re-entry Prediction using Kustaanheimo-Stiefel Space	Harishkumar Sellamuthu, Ram Krishan Sharma	1st IAA Conference on Space Situational Awareness (ICSSA)
Differential Drag for Collision Avoidance	Brian Cooper, Jan King	Spacecraft control
OPTIMIZATION OF SPACE DEBRIS COLLISION AVOIDANCE MANEUVER	Priyatharsan E Rajasekar, Arun K Misra, Frédéric Pelletier and Narendra Gollu	Other
STARS Elevator Technology Demonstration and Mission Process for Debris Mitigation	Masahiro Nohmi	Other
Data Stream-Centric SST System Architecture Enhancement	Sven Müller, Enrico Stoll	1st IAA Conference on Space Situational Awareness (ICSSA)
Consensus-based Object Tracking within Heterogeneous Wireless Sensor Networks	Alexander A. Soderlund and Mrinal Kumar	Tracking
Tensor Decomposition based Data Association for Target Tracking	Sriram Krishnaswamy and Mrinal Kumar	Association
An Adaptive Monte Carlo Method for Uncertainty Forecasting in Perturbed Two-Body Dynamics	Chao Yang, Mrinal Kumar, and David Gedeon	Forecasting
A TENTATIVE CONSTELLATION FOR LEO RSO CATALOGUE MAINTENANCE	Jianli Du (1), Jizhang Sang (2), Xiangxu Lei (3)	1st IAA Conference on Space Situational Awareness (ICSSA)
REMOTE ECHOGRAPHY ONBOARD THE ISS FULLY CONTROLLED FROM THE GROUND CNES SPACE CENTER. APPLICATION IN ISOLATED MEDICAL CENTRE ON EARTH (200 patients).	Ph ARBEILLE*, D CHAPUT**, A DEPRIESTER**, A MAILLET**, S BARDE**.	Information & Communication
SIMULATION OF TETHER-NETS FOR CAPTURE OF SPACE DEBRIS AND SMALL ASTEROIDS	Eleonora M. Botta, Arun K. Misra, and Inna Sharf	Debris removal

ASSOCIATION OF VERY-SHORT-ARC TRACKS WITH GEOMETRICAL AND CBTA METHODS	Xiangxu Lei, Jizhang Sang	1st IAA Conference on Space Situational Awareness (ICSSA)
ITALIAN SPACE AGENCY SENSORS EVOLUTION FOR SPACE SURVEILLANCE AND TRACKING OPERATIONS	Elena Vellutini, Luigi Muolo, Giuseppe D'Amore, Cosimo Marzo, Claudio Portelli	Other
ATTITUDE STATES OF SPACE DEBRIS DETERMINED FROM OPTICAL LIGHT CURVE OBSERVATIONS	Thomas Schildknecht, Jiří Šilha, Jean-Noël Pittet, and Abdul Rachman	RSO/NEO sensing
Nonlinear Relative Motion State Estimation and Backstepping Control of Spacecraft Hovering Around Asteroid	Hong Yao, Dan Simon	Proximity operations
INITIAL POSE DETERMINATION FOR NON-COOPERATIVE SPACECRAFT RENDEZVOUS USING CONVOLUTIONAL NEURAL NETWORKS	Sumant Sharma, Connor Beierle, Simone D'Amico	Proximity operations
Weighting Method for Scheduling Korean Space Situational Awareness Radar	Kyoung Keun Park, Siwoo Kim, Woochul Lee, Han-Lim Choi, Eunjung Choi, and Sungki Cho	Resource Allocation
Development of a Simulator for the Evaluation of SSA systems	C. Kepschull; E. Stoll	Other
High-performance Stereo Image Acquisition and Processing System for Space Debris Mitigation	Shinichi Kimura, Nozomi Shiraishi, Hisako Tamura, Wataru Oobayashi, and Kouichi Shibasaki	Debris removal
A NEW APPROACH TO LEO SPACE DEBRIS SURVEY: THE ITALIAN MULTIBEAM BI-STATIC RADAR 'BIRALES'	Germano Bianchi, Claudio Bortolotti, Alessandro Cattani, Franco Fiocchi, Andrea Maccaferri, Andrea Mattana, Marco Morsiani, Giovanni Naldi, Federico Perini, Alessandra Porfido, Giuseppe Pupillo, Mauro Roma, Marco Schiaffino, Tonino Pisanu, Pierluigi Di Lizia, Matteo Losacco, Mauro Massari, Josef Borg, Denis Cutajar, Alessio Magro, Marco Reali, Walter Villadei	Other
Synthesis of Sensing Architecture for Kalman Filtering	Niladri Das and Raktim Bhattacharya	1st IAA Conference on Space Situational Awareness (ICSSA)
LASER OPTICAL TRACKING TECHNOLOGY FOR SPACE DEBRIS MONITORING	Wolfgang Riede, Jens Rodmann, Leif Humbert, Daniel Hampf	Tracking

SAFETY ANALYSIS FOR SHALLOW CONTROLLED RE-ENTRIES THROUGH REDUCED ORDER MODELING AND INPUTS' STATISTICS METHOD	Simone Flavio Rafano Carnà, Sanny Omar, David Guglielmo and Riccardo Bevilacqua	1st IAA Conference on Space Situational Awareness (ICSSA)
Orbit Determination Performance of the LeoLabs Radar Network	Nathan Griffith, PhD, Michael Nicolls, PhD, Ed Lu, PhD, and In-Kwan Park, PhD	Tracking
Initial Orbit Determination for LeoLabs' Next Generation Radars	Inkwan Park, Michael Nicolls, Nathan Griffith, and Ed Lu	RSO/NEO sensing
REVISIT ANALYTICAL EXPRESSION FOR ESTIMATING THE TIME WHEN THE UNCERTAINTY BECOMES NON-GAUSSIAN	Inkwan Park, Kyle T. Alfriend	Forecasting
Methods of Processing Geosynchronous Breakups	Zach Slatton, Robin Thurston	Other
Covariance-based optical tracking network scheduling simulation for the OWL-Net	Jin Choi, Jung Hyun Jo, Hong-Suh Yim	RSO/NEO sensing
Can Telescopes Help LEO Satellites Dodge Most Lethal Impacts?	Joseph Carroll and David Rowe	Tracking
ISO11227 "TEST PROCEDURE TO EVALUATE SPACECRAFT MATERIAL EJECTA UPON HYPERVELOCITY IMPACT" AND ITS SYSTEMATIC REVIEW	Yasuhiro AKAHOSHI and Akifumi SATO	Other
Yuzhnoye State Design Office's Status on Mitigation Techniques and Activities	Mykhailo Kaliapin, Juliia Lysenko, Gennadiy Osinovy	Other
Space Traffic Management through the Control of the Space Environment's Capacity	Holger Krag, Stijn Lemmens	Other
Differential Drag Demonstration: A Post-mission Experiment with the EO-1 Spacecraft	Scott Hull, Amanda Shelton, David Richardson	Alternative (non-propulsive) deorbiting technologies
REAL-TIME HARDWARE-IN-THE-LOOP HAND-OFF FROM A FINDER SCOPE TO A LARGER TELESCOPE	Daniel Aguilar Marsillach, Marcus J. Holzinger	Tracking
Application of Directional Statistics to Problems in SSA	John T. Kent, Shambo Bhattacharjee, Islam Hussein, Moriba K Jah and Weston R Faber	Tracking
PROXIMITY OPERATIONS ABOUT AND IDENTIFICATION OF NONCOOPERATIVE RESIDENT SPACE OBJECTS USING STEREO IMAGING	Jill Davis and Henry Pernicka	Proximity operations
Space Object Maneuver Detection in a Multi-Target Environment Using a Labeled Multi-Bernoulli Filter	Nicholas Ravago, Brandon A. Jones	Tracking
UPGRADING THE SARDINIA RADIO TELESCOPE TO A BI-STATIC TRACKING RADAR FOR SPACE DEBRIS	Luca Schirru, Giacomo Muntoni, Tonino Pisanu, Enrico Urru, Giuseppe Valente, Francesco Gaudiomonte, Pierluigi Ortu, Andrea Melis, Raimondo	Tracking

	Concu, Germano Bianchi, Giorgio Montisci	
JUST-IN-TIME COLLISION AVOIDANCE (JCA): A REALISTIC SOLUTION FOR FUTURE SUSTAINABLE SPACE ACTIVITIES	Christophe BONNAL , Darren McKNIGHT	Debris removal
MULTI-FIDELITY ORBIT UNCERTAINTY PROPAGATION	Brandon A. Jones	Forecasting
Optimization of Geosynchronous Space Situational Awareness Architectures using Parallel Computation	Maj Michael S. Felten, Dr. John M. Colombi, Dr. Richard G. Cobb, Mr. David W. Meyer	Tracking
CLOSE-UP SURVEY OF LEO DEBRIS	Jerome Pearson and Eugene Levin	RSO/NEO sensing
SPACE TEST OF WHOLESALE LEO CUBESAT REMOVAL	Jerome Pearson and Eugene Levin	Testing of Debris Removal Systems (e.g. via CubeSats)
The GEO-Political Observatory	Arthur Woods	Information & Communication
Experimental Demonstration of a Technique to Detumble Orbital Debris Using Eddy Current Torques	Joseph Figura, Nikko James	Debris removal
END TO END SIMULATION FRAMEWORK FOR SPACE SITUATIONAL AWARENESS	Narendra Gollu, Jean-Claude Leclerc, Derek Nelson, Frederic Pelletier, Glenn Ehrlich, John Hertzberg, Peter Klimas, Dan O'Connell	Tracking
Methods to build-up and maintain an space objects catalogue	D. Escobar, A. Anton, F. Ayuga, A. Agueda and J. M. Lozano	Identification
BENEFITS OF FLEXIBILITY AND MODULARITY FOR THREE-Dimensionally PROLIFERATED SSA SENSOR ARCHITECTURES	Phillip M. Cunio, Shahzad Virani, Brien R. Flewelling	RSO/NEO sensing
Turbulence and aerodynamic effect on spacecraft re-entry	Lin Zhong	Drag-controlled re-entry
ORBITAL PROBABILITY OF COLLISION USING ORTHOGONAL POLYNOMIAL APPROXIMATIONS	Austin B. Probe, Christopher T. Shelton, Tarek A. Elgohary, and John L. Junkins	Risk Assessment
Evaluating the Threat to Space Assets and Activities in Cislunar Space Due to Asteroid Disruptions	Thomas J. J. Kehoe and Ashley J. Espy Kehoe	Risk Assessment
SAMPLE EVALUATION CRITERIA FOR SPACE TRAFFIC MANAGEMENT SYSTEMS	D.L. Oltrogge, T.M. Johnson, A.R. D'Uva	Risk Assessment
CLOSE RANGE TRACKING OF A NONCOOPERATIVE SPACE TARGET IN A SEQUENCE OF PMD IMAGES	Ksenia Klionovska, Jacopo Ventura, Heike Benninghoff, Felix Huber	Tracking
Probability of Collision between Space Objects Including Model Uncertainty	Christopher T. Shelton, John L. Junkins	Risk Assessment

Nonlinear Uncertainty Propagation in Orbital Elements	Christopher T. Shelton, John L. Junkins	Risk Assessment
JUDICIAL EVIDENTIAL REASONING FOR DECISION SUPPORT APPLIED TO ORBIT INSERTION FAILURE	Andris D. Jaunzemis, Dev Minoira, Marcus J. Holzinger, Karen M. Feigh, Moses W. Chan, Prakash P. Shenoy	Resource Allocation
AUTONOMOUS DEORBING DEVICE FOR CUBESAT BASED ON PALMER-SHAFER FLASHER	Pedro Luiz Kaled Da Cas, Simone Battistini and Chantal Cappelletti	Alternative (non-propulsive) deorbiting technologies
Design and Qualification of the De-Orbit Mechanism for the ESA ESEO Satellite	Chiara Palla, Jenny Kingston	Alternative (non-propulsive) deorbiting technologies
RE-ENTRY PREDICTION USING OWL-NET OBSERVATION DATA	Eun-Jung Choi	Other
CASTOR: An in-situ instrument for small debris detection	M. Carmona, J. Bosch, A. Casas, D. Roma, F. Aguado, A. Castro and J. M. Gomez	Tracking
UNCERTAINTY TREATMENT FOR THE GOCE RE-ENTRY	Edmondo Minisci, Romain Serra, Massimiliano Vasile, Annalisa Riccardi, Stuart Grey	Forecasting
RECOGNITION OF ORBITING-OBJECTS THROUGH OPTICAL MEASUREMENTS OF LIGHT-REFLECTING-TARGETS BY USING STAR-SENSORS	Fabio CURTI, Dario SPILLER	Identification
3D Reconstruction, Representation, and Registration of Satellite Imagery for Improved Space Situational Awareness	Troy A. Henderson	Identification
SPACE DEBRIS PROLIFERATION AND DIPLOMATIC NETWORKS IN THE UNITED NATIONS	Caleb Pomeroy	Policy
APPROACHES TO MAKING BEST USE OF TWO LINE ELEMENTS SETS FOR SATELLITE NAVIGATION AND COLLISION AVOIDANCE	Dr. David Finkleman and Dr. Xiaoli Bai	Risk Assessment
SPACEBOURNE ORBIT DETERMINATION OF UNKNOWN SATELLITES USING A STABILIZED-GAUSS-METHOD, LINEAR PERTURBATION THEORY AND ANGLE-ONLY MEASUREMENTS.	Mark B. Hinga	Other
ANGLES-ONLY INITIAL ORBIT DETERMINATION: COMPARISON OF RELATIVE DYNAMICS AND INERTIAL DYNAMICS APPROACHES, WITH ERROR ANALYSIS	Kenneth R. Horneman, Alex E. Sizemore, Bradyn W. Morton, Brett A. Newman, and T. Alan Lovell	RSO/NEO sensing
LOBO: A SmallSat Mission for ADR of GEO Debris Fragment with Large Area-to-Mass Ratios	M. Carmona, J. Bosch, A. Casas, D. Roma, J. Sabater, Norman Fitz-Coy, Stephen Eikenberry, Janise McNair and J. M. Gomez	Debris removal