

7th International ESA Conference on Guidance, Navigation & Control Systems

PRELIMINARY PROGRAMME

Sunday, 1 June 2008

13:00-17:00	Early Bird Registration at County Kerry Museum <i>Welcome Drink sponsored by Enterprise Ireland</i>
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Monday, 2 June 2008

09.00	Opening Address
	Session 1 - Current Missions Chairs: J.P. Lejault (ESA), J. Rouquet (ESA)
09.25	Qualification of the Automated Transfer Vehicle (ATV) Flight Control <i>Clerc, X.1; Delpy, P.1; Chaize, M.1; Clerc, H.2; Zink, M.1; Riccardi, P.A.1; Strandmoe, S.3</i> <i>1EADS Astrium-ST (France); 2Astrium EADS-ST (France); 3ESA (Netherlands)</i>
09.50	The Gaia Attitude & Orbit Control System <i>Colegrove, T.1; Chapman, P.1; Di Filippantonio, D.1; Walker-Deemin, A.1; Davies, A.1; Myatt, J.2; Ecale, E.3; Girouart, B.4</i> <i>1Astrium Ltd (United Kingdom); 2Tessella plc (United Kingdom); 3Astrium SAS (France); 4ESTEC/ESA (Netherlands)</i>
10.15	Overview Aeolus AOCS Design <i>Neal, M.1, Hardacre, S.1, Prezzavento, A.1, Lejault, J.P.2</i> <i>1Astrium (United Kingdom), 2ESA (Netherlands)</i>
10.40	Coffee Break
11.10	Struggling to Prevent Burning the Payload: Planck AOCS FDIR <i>Zorita, D.1; Llorente, S.1; Bos, J.F.2; Bacchetta, A.3; Chlewicky, G.3; Pitaval, S.4; Rasmussen, I.5</i> <i>1SENER Ingeniería y Sistemas (Spain); 2Dutch Space (Netherlands); 3Thales Alenia Space (Italy); 4Thales Alenia Space (France); 5ESA/ESTEC (Netherlands)</i>
11.35	PROBA-2: AOCS Software Validation Process and Critical Results <i>de Lafontaine, J.1; Côté, J.1; Kron, A.1; Naudet, J.2; Van den Braembussche, P.2</i> <i>1NGC Aerospace Ltd (Canada); 2Verhaert Space (Belgium)</i>
12.00	LEO GNC Design Evolution at Thales Alenia Space-France <i>Renaud, P.Y.; Brethe, D.; Beaupellet, J.L.; Busseuil, J.</i> <i>Thales Alenia Space (France)</i>
12.30	Lunch Break
	Session 2 - Space Exploration: Entry Descent and Landing Chairs: R. Draï (ESA), J. de Lafontaine (University of Sherbrook)
14.00	SELENE "KAGUYA" Attitude and Orbit Control System and its Flight Results <i>Matsumoto, S.1; Tayama, S.1; Ishijima, Y.1; Iwamoto, Y.2; Tanaka, K.2; Iwayama, Y.2; Ogo, K.2</i> <i>1JAXA (Japan); 2NEC TOSHIBA Space System (Japan)</i>
14.25	Soft Landing on Mars: The GNC Tasks in the Exomars Descent Module Mission <i>Martella, P.; Portigliotti, S.</i> <i>Thales Alenia Space (Italy)</i>
14.50	Autonomous Planetary Landing using a LIDAR Sensor: The Landing Dynamic Test Facility <i>de Lafontaine, J.; Neveu, D.; Hamel, J.-F.</i> <i>NGC Aerospace Ltd. (Canada)</i>
15.15	Hazard Avoidance Developments for Planetary Exploration <i>Devouassoux, Y.1; Reynaud, S.1; Jonniaux, G.1; Ribeiro, R.A.2; Pais, T.C.2</i> <i>1ASTRIUM Space Transportation (France); 2UNINOVA (Portugal)</i>
15.40	Coffee Break
16.10	Hazard Avoidance for Planetary Landing: GNC Design and Performance Assessment <i>Parreira, B.1; Di Sotto, E.1; Rogata, P.1; Caramagno, A.1; Rebordão, J.2</i> <i>1Deimos Engenharia (Portugal); 2Ineti/Laer (Portugal)</i>

16.35	Visual Navigation over Flat Terrain using Virtual Optical Flow <i>Chernykh, V.; Beck, M.; Janschek, K.</i> <i>TU Dresden (Germany)</i>
17.00	Titan Flagship Mission 3-DOF Simulation Analysis <i>Prince, J.1; Powell, R.W.2; Lockwood, M.K.3</i> <i>1NASA Langley Research Center (United States); 2AMA (United States); 3Johns Hopkins University Applied Physics Laboratory (United States)</i>
19.00-22.00	Siamsa Tire Theatre Trip Sponsored by Selex Galileo & Cypress

Tuesday, 3 June 2008

	Session 3 - Advances in Sensors and Actuators I Chairs: S. Dussy (ESA), P. Guay (CNES)	Session 4 - Control and Guidance Chairs: S. Bennani (ESA), M. Lovera (Politecnico di Milano)
09.00	New Earth Sensor Development: Design, Performance and Application <i>Boldrini, F.1; Brogi, S.1; Monnini, E.1; Tremolizzo, E.2</i> <i>1Galileo Avionica (Italy); 2European Space Agency (Netherlands)</i>	Collision Avoidance Maneuver Planning with Robust Optimization <i>Mueller, J.1; Larsson, R.2</i> <i>1Princeton Satellite Systems (United States); 2Swedish Space Corporation (Sweden)</i>
09.25	Reaction Wheel Unit Design Update and Re-Qualification <i>Yüce, V.; van Put, P.</i> <i>Bradford Engineering BV (Netherlands)</i>	Satellite Attitude Trajectory Planning using the Flatness Framework <i>Charbonnel, C.1; Louembet, C.2; Cazaurang, F.2; Zolghadri, A.2</i> <i>1Thales Alenia Space (France); 2Université Bordeaux I, IMS Lab./Dept. LAPS (France)</i>
09.50	Development of Low Disturbance Magnetic Bearing Wheel (MBW) with Inclined Magnetic Poles <i>Saito, M.1; Fukushima, K.1; Sato, N.2; Izawa, K.3; Hashimoto, T.3; Nakajima, A.3</i> <i>1Mitsubishi Electric Corporation (Japan); 2Mitsubishi Precision Corporation (Japan); 3Japan Aerospace Exploration Agency (Japan)</i>	Robust Attitude Control Using mu-synthesis for Large Flexible Satellite ETS-VIII <i>Ohtani, T.1; Hamada, Y.1; Nagashio, T.2; Kida, T.2; Mitani, S.1; Yamaguchi, I.1; Kasai, T.1; Igawa, H.1</i> <i>1Japan Aerospace Exploration Agency (Japan); 2University of Electro-Communications (Japan)</i>
10.15	HYDRA Multiple Heads Star Tracker with Enhanced Performances <i>Blarre, L.1; Perrimon, N.1; Piot, D.1; Oddos-Marcel, L.1; Martinez, P.E.2; Dussy, S.3</i> <i>1EADS-SODERN (France); 2CNES Toulouse (France); 3ESA-ESTEC (Netherlands)</i>	Drag-Free Control Design for Misaligned Cubic Test Masses <i>Schleicher, A.1; Brandt, N.1; Hirth, M.2; Fichter, W.2</i> <i>1Astrium GmbH (Germany); 2Universität Stuttgart (Germany)</i>
10.40	Coffee Break	
11.10	Qualification of HAS APS Detector for Space <i>Van Aken, D.1; Cos, S.2</i> <i>1Cypress Semiconductor Belgium BVBA (Belgium); 2Cypress Semiconductor Belgium (Belgium)</i>	System Identification for Control System Design and Demonstration by Flexlab <i>Mitchell, J.; Irwin, R.D.</i> <i>Ohio University (United States)</i>
11.35	Experimental Studies of Four-Small CMG Cluster <i>Rhee, S.-W.</i> <i>Korea Aerospace Research Institute (Korea, Republic of)</i>	Comparison of Robust Outer Loop Design via Analytical Loop Shaping vs LMIs on the Control of Reentry Vehicle <i>Renault, C.1; Duriau, F.2</i> <i>1Astrium Space Transportation (France); 2SUPELEC (France)</i>
12.00	Next Generation Inertial Stellar Compass <i>Brady, T.</i> <i>Draper Laboratory (United States)</i>	A Low-Order Linear Parametric Varying H infinity Loop-Shaping Controller for a Re-Entry Vehicle <i>Menon, P.1; Prempain, E.2; Postlethwaite, I.3; Bates, D.G.3</i> <i>1Control and Instrumentation Research (United Kingdom); 2Control and Instrumentation Research, Department of Engineering,</i>

		<i>University of Leicester (United Kingdom); 3University of Leicester (United Kingdom)</i>
12.30	Lunch Break	
	Session 5 - Micro Nano and Pico Challenges Chairs: R. Jansson (ESA), S. Theil (DLR)	Session 6 - Simulation of Visually-Guided Autonomous Landing System of Unmanned Helicopter Chairs: A. Benoit (ESA), G.Andre (ESA)
14.00	Development of the Micro Reaction Wheel RW 1 <i>Stoltz, S.1; Driescher, H.1; Kayal, H.2 1Astro- und Feinwerktechnik Adlershof GmbH (Germany); 2Technical University Berlin (Germany)</i>	Simulation of Visually-Guided Autonomous Landing System of Unmanned Helicopter <i>Pan, S. China Academy of Space Technology (China)</i>
14.25	Sunsensors and the Limits of Scalability <i>De Boom, C.W.; Leijtsens, J. TNO Science and Industry</i>	Flight Results of the LOLA Demonstration of Optical Communications between an Aircraft and a GEO Relay Satellite <i>Vaillon, L.; Planche, G.; Chorvalli, V.; Gendre, D.; Jobert, G. EADS Astrium (France)</i>
14.50	System on Chip Development for Attitude Sensors <i>Boldrini, F.1; Monnini, E.1; Procopio, D.1; Alison, B.2; Ogiers, W.3; Innocent, M.3; Pritchard, A.4; Stace, C.4; Airey, S.5 1Galileo Avionica (Italy); 2Thales Alenia Space (France); 3Cypress Semiconductor Corp (Belgium); 4BAE Systems (United Kingdom); 5European Space Agency (Netherlands)</i>	ExoMars Rover Autonomous Localisation, Navigation and Control <i>Silva, N.; Davies, A.; Watt, M.; Tovo, D.; Lancaster, R.; Grocott, S. Astrium Ltd, Stevenage (United Kingdom)</i>
15.15	PICARD - High Pointing Performances with a Microsatellite <i>Samson, P.1; Fallet, C.2 1Thales Alenia Space (France); 2CNES (France)</i>	An Image-Based Sensor System for Autonomous Rendez-Vous with Uncooperative Satellites <i>Miravet, C.; Pascual, L.; del Cura, J.M. SENER Ingenieria y Sistemas (Spain)</i>
15.40	Analysis of ITÜ NXG I Next Generation Technology Demonstrator from a Controls Perspective <i>Kurtulus, C.; Inalhan, G. Istanbul Technical University (Turkey)</i>	The SOLAR Payload Pointing Control System <i>Cometto, F.1; Musetti, B.1; Galeone, P.2; Salehi, S.3 1ThalesAlenia Space Italia (Italy); 2ESA/ESTEC (Netherlands); 3Rhea @ ESA/ESTEC (Netherlands)</i>
17.30-20.30	GNC Product Exhibition Opening and Reception <i>sponsored by Enterprise Ireland Dedicated Exhibition and Poster Session</i>	

Wednesday, 4 June 2008

	Session 7 - Advances in Sensors and Actuators II Chairs: D. Temperanza (ESA), H. Suzuki (JAXA)	Session 8 - Navigation and Estimation Chairs: T. Voirin (ESA), L. Valavani (University of Athens)
09.00	Development of High Performance Fiber Optical Gyro Inertial Reference Unit (FOG-IRU) for Satellite Applications <i>Mitani, S.1; Ishijima, Y.1; Suzuki, H.1; Oono, A.2; Miyahara, Y.2; Okikura, H.2; Sakai, S.1; Toda, T.1; Hashimoto, T.1 1Japan Aerospace Exploration Agency (Japan); 2Japan Aviation Electronics, Ltd (Japan)</i>	Spacecraft Navigation Using X-ray Pulsars <i>Graven, P.1; Collins, J.T.1; Hanson, J.E.2; Sheikh, S.I.3 1Microcosm, Inc. (United States); 2CrossTrac Engineering (United States); 3ASTER Labs (United States)</i>
09.25	The Feasibility of Applying Plug-and-Play (PnP) Concepts to Spacecraft Guidance, Navigation, and Control (GN&C) Systems to Meet the Challenges of Future Responsive	Attitude Determination Tailored to Multiple Heads Star-Tracker <i>Beaupellet, J.L.1; De Sanctis, S.2; Sechi, G.2; Girouart, B.3</i>

	<p>Missions <i>Hansen, L.J.1; Graven, P.2; Fogle, D.3; Lyke, J.4</i> <i>1HRP Systems, Inc. (United States); 2Microcosm, Inc. (United States); 3Air Force Research Laboratory (AFRL), Space Vehicles Directorate (RV), Kirtland Air Force Base, NM (United States); 4AFRL/RV, Kirtland AFB, NM (United States)</i></p>	<p><i>1Thales Alenia Space France (France); 2Thales Alenia Space Italy (Italy); 3ESA/ESTEC (Netherlands)</i></p>
09.50	<p>REGYS 20: A Promising HRG-Based IMU for Space Application <i>Rosellini, L.; Caron, J.M.</i> <i>SAGEM Defense and Security (France)</i></p>	<p>Combined Attitude and Orbit Determination Filter for Earth Observation Missions in GEO Using Ground Control Points and Inertial Measurements <i>Lagadec, K.1; Ledez, C.1; Meixner, H.2; Righetti, P.-L.2</i> <i>1EADS Astrium (France); 2Eumetsat (Germany)</i></p>
10.15	<p>In Flight Star Sensors Self Calibration Using Inter-stars Angular Separation Measurements <i>Montel, J.1, Martinez, P.E.2</i> <i>1Guidance and AOCS Dept. CNES (France), 2AOCS Equipments and Mechanisms Dept. CNES (France)</i></p>	<p>Optical Flow based GEO Satellite Attitude Estimation from Payload Image Data <i>Zaunick, E.1; Janschek, K.J.1; Levenhagen, J.L.2</i> <i>1Technische Universität Dresden (Germany); 2EADS Astrium (Germany)</i></p>
10.40	Coffee Break	
11.10	<p>SiREUS - Status of the European MEMS Rate Sensor <i>Durrant, D.1; Crowle, H.2; Robertson, J.3; Dussy, S.4</i> <i>1SEA (United Kingdom); 2AIS (United Kingdom); 3SELEX S&AS (United Kingdom); 4ESA (Netherlands)</i></p>	<p>Robust INS/GPS Hybrid Navigator Demonstrator Design for Launch, Re-entry and Orbital Vehicles <i>Voirin, T.1; Polle, B.1; Frapard, B.1; Draï, R.2; Krauss, P.A.3; Peñin, L.F.4; D'Angelo, P.5; Zangerl, F.6; Belin, S.7; Reynaud, S.7</i> <i>1Astrium Satellites (France); 2European Space Agency (Netherlands); 3Astrium Satellites (Germany); 4Deimos Space (Spain); 5Deimos Engenharia (Portugal); 6Austrian Aerospace (Austria); 7Astrium Space Transportation (France)</i></p>
11.35	<p>GNSS Goes LEON - A LEON-2 Based GNSS Receiver for Space Applications <i>Kuehl, C.T.F.; Mitnacht, M.; Krauss, P.A.; Heim, J.; Gottzein, E.</i> <i>Astrium GmbH Satellites (Germany)</i></p>	<p>In-flight Performance Assessment of the Single Frequency MosaicGNSS Receiver for Satellite Navigation <i>Yoon, Y.1; Montenbruck, O.1; Ulrich, D.2</i> <i>1German Aerospace Center (DLR) (Germany); 2Astrium GmbH Friedrichafen (Germany)</i></p>
12.00	<p>AEOLUS Magnetometer for Attitude Determination <i>Vieira, I.1; Felix, C.1; Borda, C.1; Pepe, C.1; Temperanza, D.2; Furano, G.2</i> <i>1LUSOSPACE (Portugal); 2ESA (Netherlands)</i></p>	<p>Simultaneous Spacecraft Attitude and Orbit Estimation Using Magnetic Field Vector Measurements <i>Abdelrahman, M.; Park, S.-Y.</i> <i>Yonsei University (Korea, Republic of)</i></p>
12.30	Lunch Break	
	<p>Session 9 - Space Exploration - Rendezvous and Docking Chairs: A. Cropp (ESA), T.Crain (NASA)</p>	<p>Session 10 - Launch Vehicles and Atmospheric Re-Entry Chairs: S. Bennani (ESA), F. Corraro (CIRA)</p>
14.00	<p>Autonomous Rendezvous Control System: a High Fidelity Functional Engineering Simulator Developed for GNC/AMM/FDIR Validation <i>Le Peuvédic, C.1; Colmenarejo, P.2; Guiotto, A.3</i> <i>1Thales Alenia Space (France); 2GMV (Spain); 3Thales Alenia Space (Italy)</i></p>	<p>Re-Entry Demonstrator Mission: Scenario Definition with Vega Launcher <i>Espinosa Ramos, A.; Pascal, Ph.; Guedron, S.; Baiocco, P.; Casalino, S.</i> <i>CNES (France)</i></p>

14.25	Navigation and Guidance Strategies for High-Velocity Impact of a Near Earth Asteroid <i>de Lafontaine, J.1; Kron, A.1; Ulrich, S.1; Clerc, S.2</i> 1NGC Aerospace Ltd (Canada); 2Thales Alenia Space (France)	Scheduling Schemes and Control Law Robustness in Atmospheric Flight of VEGA Launcher <i>Roux, C.R.; Cruciani, I.</i> ELV SpA (Italy)
14.50	HARVD Development, Verification and Validation Approach (from Traditional GNC Design/V&V Framework Simulator to Real-Time Dynamic Testing) <i>Colmenarejo, P.1; Tarabini-Castellani, L.1; Le Peuvédic, C.2; Guiotto, A.3</i> 1GMV (Spain); 2TAS-F (France); 3TAS-I (Italy)	Fault Analysis for Robust FDI Design during RLV Ascent and Re-Entry Phases <i>Marcos, A.1; De Zaiacomo, G.1; Penin, L.F.1; Bornschlegl, E.2</i> 1Deimos Space S.L. (Spain); 2ESA ESTEC (Netherlands)
15.15	Realistic Image Generation for Testing Vision Based Autonomous Rendezvous <i>McCrum, M.; Dunstan, M.N.; Parkes, S.</i> University of Dundee (United Kingdom)	Launchers Analytical Loop Shaping Design and Validation <i>Renault, C.; Saunois, P.</i> Astrium Space Transportation (France)
15.40	Coffee Break	
16.10	Vision Based GNC For Autonomous RVD in Circular and Elliptical Orbit <i>Di Sotto, E.1; Parreira, B.1; Branco, J.1; Caramagno, A.1; Peñin, L.F.2; Rebordão, J.3</i> 1Deimos Engenharia (Portugal); 2Deimos Space (Spain); 3Ineti/Laer (Portugal)	Gain-Scheduled and LPV Control for Re-Entry Vehicle <i>Ganet-Schoeller, M.1; Charbonnel, H.1; Pita-Gil, G.2</i> 1Astrium Space Transportation (France); 2Supelec (France)
16.35	Autonomous Optical Navigation for Manned Lunar Missions <i>Prieto-Llanos, T.; Gil-Fernández, J.; Corral van Damme, C.</i> GMV (Spain)	Time Variant Notch Filter for Bending Modes Active Supression in Aerospace Systems <i>França, S.; Brito, A.G.</i> Institute of Aeronautics and Space (Brazil)
17.00	Autonomous RendezVous System: the HARVD Solution <i>Kerambrun, S.1; Frapard, B.1; Silva, N.2; Ganet, M.2; Philippe, C.3; Cropp, A.3</i> 1Astrium Satellites (France); 2Astrium Space Transportation (France); 3ESA (Netherlands)	CIRA Technologies and Flight Test Results for Innovative Terminal Area Energy Management GN&C Systems <i>Corraro, F.; Cuciniello, G.; Morani, G.; Nebula, F.; Russo, M.; Filippone, E.</i> CIRA-Italian Aerospace Research Centre (Italy)
19.00	ESA GNC 2008 Conference Dinner at Ballyseede Castle <i>sponsored by ESA & Bradford Engineering</i>	

Thursday, 5 June 2008

	Session 11 - In Orbit Experience Chairs: Peter Zentgraf (ESA); J. Fertig (ESOC)	
09.00	Proteus/Corot AOCS Flight Results <i>Brethé, D.1; Tello, M.2; Auvergne, M.3</i> 1Thales Alenia Space (France); 2CNES (France); 3LESIA (France)	
09.25	Enhancement of Performances for Metop-A Short Maneuvers <i>Righetti, P.L.1; de la Taille, L.1; Crozat, C.2; Klinc, M.3; Batilliot, E.4; Reuilh, A.4</i> 1EUMETSAT (Germany); 2Telespazio at EUMETSAT (Germany); 3Klinc at EUMETSAT (Germany); 4ASTRIUM Toulouse (France)	
09.50		
10.15	"SMART" Features Evolution of Russian IR Horizon Sensors <i>Vetrov, O.V.; Medvedev, B.V.</i> JSC "NPP "Geofizika-Cosmos" (Russian Federation)	
10.40	Coffee Break	
11.10	Giove-A AOCS: An Experience from Verification to Flight <i>Johnston, G.; Holt, A.; Jackson, C.</i> SSTL (United Kingdom)	

11.35	On Orbit Performance and Lessons Learnt of FORMOSAT-3/COSMIC Spacecraft Attitude Control System <i>Lin, C.T.</i> <i>National Space Organization (Taiwan)</i>
12.00	Science and Lifetime Maximization My AOCS Means <i>Peschke, S.1; Denis, M.1; Fischer, J.2; Jayaraman, P.2</i> <i>1ESA/ESOC (Germany); 2Vega IT GmbH (Germany)</i>
12.25	Automated Transfer Vehicle (ATV) Flight Control Achievements <i>Strandmoe, S.1, DePasquale, E.1, Escane, I.2, Augelli, M.2, Personne, G.3, Cavois, B.3, Fau, N.3, Yu, M.3, Zink, M.3, Clerc, X.3, Chaize, M.3, Clerc, H.3, Gogibus, E.3, Brun, P.3, Roussel, S.3, Requiston, H.3, Delage, R.3, Martel, F.3, Chavy, S.3, Veltz, Ch.3, Martinez Fadrique, F.M.4, Juarez, I.4, Casas-Cuadrado, C.M.4, Bonnet, M.5, Caluwaerts, D.6</i> <i>1ESA (France); 2CNES (France); 3EADS Astrium-ST (France); 4GMV (Spain); 5Booz-Allen (France); 6Booz-Allen (The Netherlands)</i>
13.00	Lunch Break
	Session 12 - Future Missions Chairs: P. van den Braembussche (ESA), S. Berrivin (CNES)
14.30	Rapid ADCS Design for Commercial Leo Constellations – Designing for Deadline <i>Gittins, D.1, Dugate, D.1; Silverdis K.1, Rouat, O.2, Charbonnel, P.2</i> <i>1Tessella Support Services plc (United Kingdom); 2Thales Alenia Space (France)</i>
14.55	Wheel and Pulsed Thrusters Based Architecture for the Pégase Mission <i>Villien, A.1; Morand, J.1; Delpech, M.2; Guidotti, P.Y.2</i> <i>1Astrium Satellites (France); 2CNES (France)</i>
15.20	Application of the Embedded Model Control to Satellite-To-Satellite Tracking for Future Earth Observation Missions <i>Massotti, L.1; Silvestrin, P.1; Canuto, E.2</i> <i>1ESA (Netherlands); 2Politecnico di Torino (Italy)</i>
15.55	Geostationary AOCS based on STR Only <i>Gaudic, L.</i> <i>Thales Alenia Space (France)</i>
16.20	Coffee Break
16.50	Microscope: Debris Impacts on a Drag-free Mission <i>Lefebvre, J.1, Prieur, P.1, Josselin, V.2</i> <i>1Centre National d'Etudes Spatiales CNES (AACS Team) (France); 2Office National d'Etudes et de Recherches Aérospatiales ONERA (Scientific Instrument) (France)</i>
17.15	ADCS Implementation of Operationally Responsive Space Bus Standards for a HEO Communication Mission <i>Sandhu, G.1; Lim, T.2; Delahunt, P.2; Raynor, W.2; Johnson, M.2; Stadter, P.3; Dellinger, W.3; Griswold, J.4</i> <i>1United States Naval Research Lab (United States); 2U.S. Naval Research Laboratory (United States); 3The Johns Hopkins University Applied Physics Laboratory (United States); 4Rapid Reaction Technology Office, DDR&E, DOD (United States)</i>
17.40	Challenges of Accurate Attitude Control for a High-Resolution Earth Observation Platform in Geostationary Orbit <i>Lagadec, K.; Roche, C.; Levy, E.</i> <i>EADS Astrium (France)</i>
18.05-18.20	Closing Address

Poster Session

Sensors and Actuators
<p>ASTRIX FOG Family, a Step Beyond <i>Cros, G.1; Muller, G.2</i> <i>1Astrium SAS (France); 2Astrium (France)</i></p> <p>CMG Test Bed Development <i>Endo, T.; Kawai, H.</i> <i>Japan Aerospace Exploration Agency (Japan)</i></p>

Standardization of GNC Units: A Necessary Evil?

Alison, B.1; Renaud, P.Y.1; Zentgraf, P.2; Lappas, V.3

1Thales Alenia Space (France); 2ESA (Netherlands); 3Surrey Space Center (United Kingdom)

A Low-Power, Miniaturised GPS Receiver Design for Low and High Earth Orbit Spacecraft

de Vos van Steenwijk, R.; Unwin, M.J.; Myatt, R.M.

SSTL (United Kingdom)

Reaction Wheel Unit Life Test Status and Analysis

Yüce, V.; van Put, P.

Bradford Engineering BV (Netherlands)

Qualification and Real Sky Test Results Derived from the ASTRO APS Star Tracker

Schmidt, U.; Meck, U.; Michel, K.

Jena-Optronik GmbH (Germany)

Complete Agile Solutions for a Wide Range of Satellites

Ghezal, M.; Vecco, L.

EADS Astrium (France)

Model Development and Adaptive Imbalance Vibration Control of Magnetic Suspended SGCMG

Tang, L.; Chen, Y.

Beijing Institute of Control Engineering (China)

Modular and Low-Cost Earth Sensor for LEO and GEO Applications

Shea, H.1; Scheidegger, N.1; Gubbini, E.2; Weigel, T.2; Rugi-Grond, E.2

1EPFL (Switzerland); 2Oerlikon Space (Switzerland)

In Orbit Experience

Evolutionary not Revolutionary! - SSTL AOCS Subsystem Design, 1981 to 2007

Liddle, J.D.; Hashida, Y.; Oosthuizen, P.J.; Holt, A.P.

SSTL (United Kingdom)

Navigation and Estimation

Two Different Implemented Relative Position/Velocity Estimations using GPS Sensors On-Board ATV

Cavrois, B.1; Delpy, P.1; Strandmoe, S.2; Reynaud, S.1; Narmada, 1; Zink, M.1

1EADS-Astrium ST (France); 2ESA (Netherlands)

The Flow of Information from the Inertial Sensors - A Panoramic View

Freire de Lima, J.; Castro Leite Filho, W.

Instituto de Aeronáutica e Espaço (Space and Aeronautics Institute) (Brazil)

Methods to improve the accuracy in thruster parameter estimation

Rodriguez, J.; Theil, S.

ZARM University of Bremen (Germany)

An Overview of Argo Navigation System Modeling and Simulation

You, H.; Jan, Y.-W.

National Space Organization (Taiwan)

A New Improved Nonlinear Filter For Robust Estimation

Valavani, L.; Anastasiou, G.; Dontas, G.

Hellenic Space Systems (Greece)

Autonomous Navigation of Satellite Constellation using X-Ray Pulsars

Xiong, K.; Wei, C.; Liu, L.

National Laboratory of Space Intelligent Control (China)

Exploration - RVD

Autonomous GNC Algorithms for NEO Rendezvous Missions

Gil-Fernandez, J.1; Prieto-Llanos, T.1; Cadenas-Gorgojo, R.1; Draí, R.2

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Guidance Algorithm for Rendezvous on Elliptical Orbits

Gogibus, E.; Delpy, P.; Augros, P.

Astrium Space Transportation (France)

Linear Dynamic Modeling of Spacecraft Various Flexible Appendages

Alazard, D.1; Tantawi, K.1; Cumer, C.2

1Université de Toulouse - ISAE (France); 2ONERA/DCSD (France)

Exploration - EDL

ExoMars Descent and Landing System Sizing and Optimisation

Northey, D.1; Gittins, D.1; Riley, D.1; Haya Ramos, R.2; Caramagno, A.2; Portigliotti, S.3

1Analyticon (United Kingdom); 2Deimos Space (Spain); 3Thales Alenia Space (Italy)

Autonomous Navigation and Control for Pinpoint Lunar Soft Landing

Huang, X.; Wang, D.; He, Y.; Guan, Y.

Beijing Institute of Control Engineering (China)

Sensing and Autonomous Navigation of High Precision Planetary Landers

Wild, A.1; Gao, Y.2; Sweeting, M.N.2

1University of Surrey (United Kingdom); 2Surrey Space Centre (United Kingdom)

Future Missions

The SWARM AOCS - Tailored from the CryoSat AOCS to the Specifics of a Magnetic Mission

Usbeck, T.

Astrium GmbH (Germany)

Rapid AOCS Design for Globalstar 2 - Designing for Cost

Gittins, D.1; Dungate, D.1; Siliverdis, K.1; Rouat, O.2; Forestier, D.3; Guidal, Y.3; Rouzier, L.3; Charbonnel, P.2

1Analyticon (United Kingdom); 2Thales Alenia Space (France); 3Thales Alenia Space (external) (France)

Impact of Electric Propulsion on the Collocation of GEO Satellites

Boquet, F.; Huard, E.

Astrium Satellites (France)

Analysis of the Impact of the Electric Propulsion on the Collocation of Geostationary Satellites

Pérez-Cambres, A.1; Tomassini, A.1; Praile, C.1; Dussy, S.2

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Scalable Bus-Based Attitude Control System for Solar Sails

Adeli, S.N.1; Lappas, V.1; Wie, B.2

1University of Surrey (United Kingdom); 2Iowa State University (United States)

Use of Galileo for Launch Services Application

Belin, S.1; Reynaud, S.1; Dubuc, F.1; Resta, P.D.2

1Astrium Space Transportation (France); 2ESA-ESRIN (Italy)

International Berthing and Docking Mechanism Demonstration Mission

Fernandez Ibarz, J.M.1; Del Cura, J.M.1; Urmston, P.2; Gracia, O.2

1SENER Ingeniería y Sistemas S.A. (Spain); 2ESA/ESTEC (Netherlands)

ECSS E-60-10A Control Performance Standard and Handbook

Laurens, P.

Astrium Satellites (France)

GNC of a GEO On Orbit Servicing Mission

del Cura, J.M.; Sánchez-Maestro, R.; Rodríguez-Fernández, G.; Vicente, C.J.; Barrios, I.; García-Riaño, E.

SENER Ingeniería y Sistemas, S.A. (Spain)

Robust Control

Preshaping Profiler for Astro-G Rest-to-Rest Maneuvers

Kamiya, T.1; Ogura, N.1; Haruna, Y.2; Maeda, K.3; Sakai, S.4; Bando, N.4; Nakamura, T.5

1NEC Toshiba Space Systems, Ltd. (Japan); 2NEC Aerospace Systems, Ltd. (Japan); 3NEC Corporation (Japan); 4JAXA-ISAS (Japan); 5Tokyo University (Japan)

Classical vs Modern Magnetic Attitude Control Design: A Case Study

Pulecchi, T.1; Lovera, M.1; Varga, A.2

1Politecnico di Milano (Italy); 2DLR (Germany)

Attitude Control of Magnetically Actuated Satellites with Uneven Inertia Distribution

Chen, W.; Wood, M.

Loughborough University (United Kingdom)

Near Minimum Time Steering Laws for Attitude Maneuvers for Agile Spacecraft
Verbin, D.1; Darbyshire, A.2; Lappas, V.3
1IAI/MBT-SPACE (Israel); 2Surrey Space Centre, University of Surrey (United Kingdom); 3Lecturer, Surrey Space Centre, University of Surrey (United Kingdom)

Stability and Control of Solar Sail Formations in Displaced Planetary Orbits
Bhatta, P.; Thomas, S.J.
Princeton Satellite Systems, Inc. (United States)

Launchers

On-board model-based Robust FDIR strategy for Reusable Launch Vehicles (RLV)
Falcoz, A.1; Henry, D.1; Zolghadri, A.1; Bornschlegl, E.2; Ganet, M.3
1IMS lab - Université Bordeaux1 (France); 2ESA/ESTEC (Netherlands); 3Astrium Space Transportation (France)

Adaptive Control Based on Characteristic Model for a Hypersonic Flight Vehicle
Meng, B.; Wu, H.
Beijing Institute of Control Engineering (China)

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Tancredi, U.1; Grassi, M.1; Corrado, F.2; Filippone, E.2; Verde, L.2
1University of Naples Federico II (Italy); 2Italian Aerospace Research Centre (Italy)

Vega Launcher Trajectory/Guidance Loop: Overall Performance Optimisation
Espinosa Ramos, A.1; Resta, P.D.2; Barbagallo, D.2; Perrot, L.3; Baudin, M.3
1CNES Launchers Directorate (France); 2ESA/ESRIN (Italy); 3ALTRAN (France)

Vision-Based Navigation Demonstrations
Polle, B., Villien, A., Lheritier, J., Frapard, B.
Astrium Satellites (France)

Current Missions

LISA Pathfinder AOCS
Fenal, T.1; Fayard, R.1; Giulicchi, L.2
1EADS Astrium (United Kingdom); 2European Space Agency (Netherlands)

Cryosat AOCS Operations: Small Muscles, Big Responsibilities
Marchese, F.; Mardle, N.
ESA/ESOC (Germany)

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Alonso, M.1; Bargellini, P.2; Barbieri, A.2; Matatoros, M.G.2
1SciSys GmbH c/o ESOC (Germany); 2European Space Operations Centre (ESOC-ESA) (Germany)

Highly Autonomous

On-Board FDIR and ESR for Future ISRO Geosynchronous Spacecrafts
Kumar, V.; Kulkarni, A.K., Malik, N.K.
CSG, ISRO Satellite Centre, Bangalore (India)

Micro Nano Pico

Mini & Micro Sensor Systems: Great Promises for the Future
de Boom, K.; Leijtens, J.
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