2015 IEEE Metrology for Aerospace

(MetroAeroSpace 2015)

Benevento, Italy
4-5 June 2015
Thursday, June 4th

**SSI (Part 1): Special Session on Navigation Technologies and Related Applications**

**Room:** Red Hall, Palazzo San Domenico

**Chairs:** Bingbo Cui, Southeast University, China
Antonio Paolozzi, Sapienza University of Rome and Centro Fermi, Italy

1. **Quality assessment of LARES satellite ranging data**
   - Erricos C. Pavlis, University of Maryland, US
   - Antonio Paolozzi, Sapienza University of Rome & Centro Fermi, Italy
   - Claudio Paris, Sapienza University of Rome & Centro Fermi, Italy
   - Ignazio Ciufolini, University of Salento & Centro Fermi, Italy
   - Giampiero Sindoni, Sapienza University of Rome, Italy

6. **Optimal Modeling on Magnetic Shielding Cylinder of Atomic Spin Gyroscope Considering Transverse Shielding Factor**
   - Hong Zhang, Southeast University, China
   - Sheng Zou, Southeast University, China
   - Xi-Yuan Chen, Southeast University, China

9. **Benefit of GNSS Multiconstellation in Position and Velocity Domain**
   - Salvatore Gaglione, Parthenope University of Naples, Italy
   - Antonio Angrisano, Parthenope University of Naples, Italy
   - Pierluigi Freda, Parthenope University of Naples, Italy
   - Anna Innac, Parthenope University of Naples, Italy
   - Nicola Crocetto, Second University of Naples, Italy
   - Mario Valtaggio, Italian Institute of Navigation, Italy

15. **Study on calibration method for tri-axial accelerometers**
   - Caiping Lv, Southeast University, China
   - Xi-Yuan Chen, Southeast University, China
   - Haoqian Huang, Southeast University, China
   - Zhikai Zhou, Southeast University, China

21. **Efficient ensemble modeling method of FOG thermal-induced errors based on EEMD and extreme learning machine**
   - Bingbo Cui, Southeast University, China
   - Xi-Yuan Chen, Southeast University, China
   - Chuanye Tang, Southeast University, China

**SS2: Special Session on Complex Systems Operational Availability: Measurements, Methodologies and Requirements**

**Room:** Blue Hall, Palazzo San Domenico

**Chairs:** Fabio Leccese, University of Rome "Roma Tre", Italy

26. **Operational Availability (Ao) of Warships**
   - Angelo Dell’Isola, Orizzonte Sistemi Navali S.p.A., Italy
   - Armando Vendittelli, Orizzonte Sistemi Navali S.p.A., Italy

33. **The CoDef structure: a way to evaluate Ai including failures caused by multiple minor degradations**
   - Ruggero De Francesco, SeTeL s.r.l, Italy
   - Ettore De Francesco, SeTeL s.r.l, Italy
A Proposal to Update LSA Databases for an Operational Availability Based on Autonomic Logistic
Eduardo De Francesco, SeTeL s.r.l., Italy
Ettore De Francesco, SeTeL s.r.l., Italy
Ruggero De Francesco, SeTeL s.r.l., Italy
Fabio Leccese, University of Rome "Roma Tre", Italy
Marco Cagnetti, University of Rome "Roma Tre", Italy

Optimization of Availability Operation via simulated Prognostics
Roberto Paggi, ItalConsul s.r.l., Italy
Gian Luca Mariotti, ItalConsul s.r.l., Italy
Anna Paggi, ItalConsul s.r.l., Italy
Fabio Leccese, University of Rome "Roma Tre", Italy

Development on Aerospace Composite Structures Investigation using Thermography and Shearography in Comparison to Traditional NDT Methods
Giovanni De Angelis, Flight Test Centre - Chemistry Department, Italian Air Force, Italy
Enrico Dati, Flight Test Centre - Chemistry Department, Italian Air Force, Italy
Manuele Bernabei, Flight Test Centre - Chemistry Department, Italian Air Force, Italy
Fabio Leccese, University of Rome "Roma Tre", Italy

Improvement of Altitude Precision in Indoor and Urban Canyon Navigation for Small Flying Vehicles
Enrico Petritoli, University of Rome "Roma Tre", Italy
Fabio Leccese, University of Rome "Roma Tre", Italy

SS3 (Part 1): Special Session on Relativistic Metrology
Room: Library of Province of Benevento
Chairs: Roberto Peron, Institute for Space Astrophysics and Planetology, Italy
Enrico Lorenzini, Center of Studies and Activities for Space (CISAS), Italy

A proposal for a test of Weak Equivalence Principle with improved accuracy using a cryogenic differential accelerometer installed on a pendulum
Valerio Antonio Iafolla, Institute for Space Astrophysics and Planetology, Italy
Emiliano Fiorenza, Institute for Space Astrophysics and Planetology, Italy
Carlo Lefevre, Institute for Space Astrophysics and Planetology, Italy
David M. Lucchesi, Institute for Space Astrophysics and Planetology, Italy
Marco Lucente, Institute for Space Astrophysics and Planetology, Italy
Carmelo Magnafico, Institute for Space Astrophysics and Planetology, Italy
Sergio Nozzoli, Institute for Space Astrophysics and Planetology, Italy
Roberto Peron, Institute for Space Astrophysics and Planetology, Italy
Francesco Santoli, Institute for Space Astrophysics and Planetology, Italy
Enrico Lorenzini, University of Padova, Italy
Vadim Milyukov, Moscow University, Russia
Irwin I. Shapiro, Harvard-Smithsonian Center for Astrophysics, US
Sheldon Glashow, Boston University, US

Orbital predictions for the LARES satellite mission
Gianpiero Sindoni, Sapienza University of Rome, Italy
Erricos C. Pavlis, University of Maryland, US
Antonio Paolozzi, Sapienza University of Rome & Centro Fermi, Italy
Claudio Paris, Sapienza University of Rome & Centro Fermi, Italy
Ignazio Ciufolini, University of Salento & Centro Fermi, Italy

Fundamental physics in the Field of the Earth with the LARSeR ANged Satellites Experiment (LARASE)
David M. Lucchesi, Institute for Space Astrophysics and Planetology, Italy
Roberto Peron, Institute for Space Astrophysics and Planetology, Italy
Massimo Visco, Institute for Space Astrophysics and Planetology, Italy
Luciano Anselmo, National Research Council, Italy
Carmen Pardini, National Research Council, Italy
Massimo Bassan, University of Tor Vergata & INFN, Italy
Giuseppe Pucacco, University of Tor Vergata & INFN, Italy
Laser Ranging Positioning Metrology for Galileo and the Moon
Manuele Martini, INFN, Italy
Simone Dell’Agnello, INFN, Italy
Giovanni Delle Monache, INFN, Italy
Roberto Vittori, INFN, Italy
Alessandro Boni, INFN, Italy
Claudio Cantone, INFN, Italy
Emanuele Ciocci, INFN, Italy
Giordano Patrizi, INFN, Italy
Mattia Tibuzzi, INFN, Italy
Nicola Intaglietta, INFN, Italy
Lorenzo Salvatori, INFN, Italy
Caterina Lops, INFN, Italy
Stefania Contessa, INFN, Italy
Luca Porcelli, INFN, Italy
Chiara Mondaini, INFN, Italy
Paolo Tuscano, INFN, Italy
Mauro Maiello, INFN, Italy
Douglas Currie, University of Maryland, US & INFN, Italy
John F. Chandler, Center for Astrophysics, US
Giuseppe Bianco, Italian Space Agency & INFN, Italy

Spacecraft design impacts on the post-Newtonian parameter estimation
Anja Katharina Schuster, Technical University of Darmstadt, Germany
Rüdiger Jehn, European Space Operations Center, Germany
Elsa Montagnon, European Space Operations Center, Germany

SS1 (Part 2): Special Session on Navigation Technologies and Related Applications

Room: Red Hall, Palazzo San Domenico
Chairs: Bingbo Cui, Southeast University, China
        Ferdinando Dolce, Italian Air Force, Italy

Experimental Activity for 3D Coordinates Mensuration from COSMO-SkyMed SAR Data through Radar-grammetry: Technique and Methodology
Andrea Cecchini, Italian Air Force, Italy
Jacopo Paoli, Italian Air Force, Italy
Luigi Caravita, Italian Air Force, Italy
Ferdinando Dolce, Italian Air Force, Italy
Emanuele Nerla, Joint Center for Satellite Remote Sensing, Italy
Maurizio Monteleone, Aeronautical Geo-Topographic Information Center, Italy

A novel hybrid algorithm of split-radix fast Fourier transform and unscented Kalman filter for navigation information estimation
Haoqian Huang, Southeast University, China
Xi-Yuan Chen, Southeast University, China
Caiping Lv, Southeast University, China
Zhikai Zhou, Southeast University, China
The Horizon 2020 DEMETRA project: DEMonstrator of EGNSS services based on Time Reference Architecture

Patrizia Tavella, National Institute of Metrological Research, Italy
Ilaria Sesia, National Institute of Metrological Research, Italy
Giancarlo Cerretto, National Institute of Metrological Research, Italy
Giovanna Signorile, National Institute of Metrological Research, Italy
Davide Calonico, National Institute of Metrological Research, Italy
Elena Cantoni, National Institute of Metrological Research, Italy
Concetta De Stefano, National Institute of Metrological Research, Italy
Valerio Formichella, National Institute of Metrological Research, Italy
Roberto Costa, National Institute of Metrological Research, Italy
Paolo Cerabolini, ANTARES, Italy
Lucia Rotiri, ANTARES, Italy
Antonella Simonetti, ANTARES, Italy
Alberto Colombo, ANTARES, Italy
Pascale Defratiyne, Observatoire Royal de Belgique, Belgium
Nilufer Ozdemir, Observatoire Royal de Belgique, Belgium
Marc Gandara, Thales Alenia Space France, France
Pierre-Louis Puech, Thales Alenia Space France, France
Vincent Hamoniaux, Thales Alenia Space France, France
Enrico Varriale, Thales Alenia Space Italy, Italy
Quirino Morante, Thales Alenia Space Italy, Italy
Tomasz Widomski, ELPROMA, Poland
Jan Kaczmarek, ELPROMA, Poland
Jarek Kowalski, ELPROMA, Poland
Alice Cernigliaro, AIZOON, Italy
Franco Fiasca, AIZOON, Italy
Andrea Perucca, AIZOON, Italy
Andrea Samperi, AIZOON, Italy
Viney Dhiri, Telespazio VEGA UK Ltd, United Kingdom
Eleonora Giulianini, Telespazio VEGA UK Ltd, United Kingdom
Maria Teresa Veiga, DEIMOS, Spain
Tomás Suárez, DEIMOS, Spain
Marco Mangiantini, METEC, Italy
Anders Wallin, MIKES Metrology, Finland
Lorenzo Galleani, Politecnico di Torino, Italy
David Hindley, National Physical Laboratory, United Kingdom

Inter system bias: Stability and Impact on Multi-constellation Positioning

Ciro Gioia, Piksel S.p.A., Italy
Salvatore Gaglione, Parthenope University of Naples, Italy
Daniele Borio, European Commission, Joint Research Centre

SS4: Special Session on Aerospace Photonics Sensors

Room: Blue Hall, Palazzo San Domenico
Chairs: Graham Wild, RMIT University, Australia
Matthew Marino, RMIT University, Australia
109 Thermo-mechanical design of the optical head for MAJIS experiment
   Diego Scaccabarozzi, Politecnico di Milano, Italy
   Bortolino Saggin, Politecnico di Milano, Italy
   Marianna Magni, Politecnico di Milano, Italy
   Roberto Pianesi, Politecnico di Milano, Italy
   Marco Tarabini, Politecnico di Milano, Italy
   Giuseppe Piccioni, Institute for Space Astrophysics and Planetology, Italy

114 Development of Integrated Vibratory-Gyroscopes Based on Photonic Bandgap Materials
   Carlo Trigona, University of Catania, Italy
   Bruno Andò, University of Catania, Italy
   Salvatore Baglio, University of Catania, Italy

118 Blade tip clearance and time of arrival immediate measurement method using an optic probe
   Jose Miguel Gil-García, University of the Basque Country UPV/EHU, Spain
   Iker García, University of the Basque Country UPV/EHU, Spain
   Joseba Zubia, University of the Basque Country UPV/EHU, Spain
   Gerardo Aranguren, University of the Basque Country UPV/EHU, Spain

123 Optimising the Design of a Pressure Transducer for Aircraft Altitude Measurement using Optical Fibre Bragg Grating Sensors
   Graham Wild, RMIT University, Australia

129 Novel Photonics Sensing and Systems for Military Metrology
   Graham Wild, RMIT University, Australia

SS3 (Part 2): Special Session on Relativistic Metrology
Room: Library of Province of Benevento
Chairs: Roberto Peron, Institute for Space Astrophysics and Planetology, Italy
       Enrico Lorenzini, Center of Studies and Activities for Space (CISAS), Italy

135 Testing general relativity during the cruise phase of the BepiColombo mission to Mercury
   Luigi Imperi, Sapienza University of Rome, Italy
   Luciano Iess, Sapienza University of Rome, Italy

141 The relativity experiment of MORE: global full-cycle simulation and results
   Giulia Schettino, University of Pisa, Italy
   Stefano Cicalò, SpaceDyS s.r.l., Italy
   Sara Di Ruzza, SpaceDyS s.r.l., Italy
   Giacomo Tommei, University of Pisa, Italy

146 GALILEO with high eccentricity and equipped by Accelerometers: a tool for GR experiments
   Francesco Vespe, Italian Space Agency, Italy

150 Pure gravitational orbits of GNSS - the tool for the relativistic space geodesy
   Janusz B. Zieliński, Institute of Navigation, Airforce Academy, Poland

SS5: Special Session on Measurement for Improving Quality, Reliability And Safety in Aerospace Applications
Room: Red Hall, Palazzo San Domenico
Chairs: Marcantonio Catelani, University of Florence, Italy
       Lorenzo Ciani, University of Florence, Italy

155 Spacecraft autonomy and reliability in MTG satellite via On-board Control Procedures
   Massimo Tipaldi, Compagnia Generale per lo Spazio & University of Sannio, Italy
   Massimo Ferraguto, Space Systems Finland Ltd., Finland
   Tiago Ogando, Space Systems Finland Ltd., Finland
   Gianluigi Camaitto, Compagnia Generale per lo Spazio, Italy
   Tim Wittrock, indi-IT GmbH, Germany
   Bernhard Bruenjes, OHB System AG, Germany
   Luigi Glielmo, University of Sannio, Italy
Thermovacuum Tests on TIGRIsat structure
Claudio Paris, Sapienza University of Rome and Centro Fermi, Italy
Maurizio Parisse, Sapienza University of Rome, Italy
Whatiq Aziz Allawi, Ministry of Science and Technology, Iraq

GPS/Barometer augmented navigation system: integration and integrity monitoring
Salvatore Gaglione, Parthenope University of Naples, Italy
Antonio Angrisano, Parthenope University of Naples, Italy
Gaetano Castaldo, Parthenope University of Naples, Italy
Ciro Gioia, Parthenope University of Naples, Italy
Anna Inmac, Parthenope University of Naples, Italy
Luigi Perrotta, Parthenope University of Naples, Italy
Giuseppe Del Core, Parthenope University of Naples, Italy
Salvatore Troisi, Parthenope University of Naples, Italy

Haptic Touchscreen Display for Avionics: demonstrator characterization measurements
Marcantonio Catelani, University of Florence, Italy
Antonio Angrisano, Parthenope University of Naples, Italy
Gaetano Castaldo, Parthenope University of Naples, Italy
Ciro Gioia, Parthenope University of Naples, Italy
Anna Inmac, Parthenope University of Naples, Italy
Luigi Perrotta, Parthenope University of Naples, Italy
Giuseppe Del Core, Parthenope University of Naples, Italy
Salvatore Troisi, Parthenope University of Naples, Italy

SS6: Special Session on Non Destructive Testing and Evaluation for Aerospace
Room: Blue Hall, Palazzo San Domenico
Chairs: Helena G. Ramos, University of Lisboa, Portugal
Marco Laracca, University of Cassino and Southern Lazio, Italy

Lock-In Termography for Investigation of Impact Damage in Hybrid Polypropylene/Glass Composites
Simone Boccardi, University of Naples Federico II, Italy
Giovanni Maria Carlomagno, University of Naples Federico II, Italy
Carosena Meola, University of Naples Federico II, Italy
Domenico Acerino, Reference Centre for Processing Technology of Polymers and Composites, Italy
Giorgio Simeoli, University of Naples Federico II, Italy
Salvatore Iannace, National Research Council, Italy
Luigi Sorrentino, National Research Council, Italy
Pietro Russo, National Research Council, Italy

Analysis of the influence of lift-off variation on Eddy-Current images
Marco Ricci, University of Perugia, Italy
Giuseppe Silipigni, University of Perugia, Italy
Luigi Ferrigno, University of Cassino and Southern Lazio, Italy
Marco Laracca, University of Cassino and Southern Lazio, Italy
Ibukun Dapo Adewale, University of Perugia, Italy & Newcastle University, UK
Gui Yun Tian, Newcastle University, UK

The Filtering Effect of the Tikhonov Regularization
Artur Lopes Ribeiro, University of Lisboa, Portugal
Dario Pasadas, University of Lisboa, Portugal
Helena G. Ramos, University of Lisboa, Portugal
Tiago Rocha, University of Lisboa, Portugal

SS3 (Part 3): Special Session on Relativistic Metrology
Room: Library of Province of Benevento
Chairs: Roberto Peron, Institute for Space Astrophysics and Planetology, Italy
Enrico Lorenzini, Center of Studies and Activities for Space (CISAS), Italy

An Autonomous Reference Frame for Relativistic Positioning System
Uros Kostic, University of Ljubljana, Slovenia
Martin Horvat, University of Ljubljana, Slovenia
Andreja Gomboc, University of Ljubljana, Slovenia
198  On geodesic deviation in Schwarzschild spacetime
    Dennis Philipp, University of Bremen, Germany
    Volker Perlick, University of Bremen, Germany
    Claus Lämmerzahl, University of Bremen, Germany
    Kaustubh Deshpande, University of Bremen, Germany

204  Time and frequency optical fiber links for space metrology
    Davide Calonico, National Institute of Metrological Research, Italy
    Cecilia Clivati, National Institute of Metrological Research, Italy
    Matteo Frittelli, National Institute of Metrological Research, Italy
    Alberto Mura, National Institute of Metrological Research, Italy
    Massimo Zucco, National Institute of Metrological Research, Italy
    Filippo Levi, National Institute of Metrological Research, Italy
    Federico Perini, Radiotelescopi di Medicina INAF, Istituto di Radioastronomia, Italy
    Claudio Bortolotti, Radiotelescopi di Medicina INAF, Istituto di Radioastronomia, Italy
    Mauro Roma, Radiotelescopi di Medicina INAF, Istituto di Radioastronomia, Italy
    Roberto Ambrosini, Radiotelescopi di Medicina INAF, Istituto di Radioastronomia, Italy
    Giovanni Antonio Costanzo, Politecnico di Torino, Italy

209  Switching times in Fabry-Perot Measurements
    Giovanni Filatrella, University of Sannio, Italy
    Paolo Addesso, University of Salerno, Italy
    Vincenzo Pierro, University of Sannio, Italy

Friday, June 5th

SS7: Special Session on Wave Chaos Metrology and Modeling in EMC and Acoustics
Room: Red Hall, Palazzo San Domenico
Chairs: Innocenzo M. Pinto, University of Sannio, Italy
        Olivier Legrand, University of Nice Sophia Antipolis, France

214  Application of the Random Coupling Model to Lossy Ports in Complex Enclosures
    Bisrat D. Addisie, University of Maryland, US
    John C. Rodgers, University of Maryland, US
    Thomas M. Antonsen, University of Maryland, US

220  Measurement and Analysis of Electromagnetic Field-Field Correlation Functions
    Gabriele Gradoni, University of Nottingham, United Kingdom
    Stephen C. Creagh, University of Nottingham, United Kingdom
    Gregor Tanner, University of Nottingham, United Kingdom
    Christopher Smartt, University of Nottingham, United Kingdom
    Mohd Hafiz Baharuddin, University of Nottingham, United Kingdom
    David Thomas, University of Nottingham, United Kingdom

225  Universal Intensity Statistics in a Chaotic Reverberation Chamber to Refine the Criterion of Statistical
     Field Uniformity
    J.-B. Gros, University of Nice Sophia Antipolis, France
    U. Kuhl, University of Nice Sophia Antipolis, France
    O. Legrand, University of Nice Sophia Antipolis, France
    F. Mortessagne, University of Nice Sophia Antipolis, France
    E. Richalot, Université Paris-Est, France

230  Probability Density Function for the Quality Factor of Vibrating Reverberation Chambers
    Giuseppe Ferrara, University of Naples Parthenope, Italy
    Angelo Gifuni, University of Naples Parthenope, Italy
    Maurizio Migliaccio, University of Naples Parthenope, Italy
    Antonio Sorrentino, University of Naples Parthenope, Italy
Three-Dimensional Polarimetry for Wave Chaos Description
Maurizio Migliaccio, University of Naples Parthenope, Italy
Josè J. Gil, University of Zaragoza, Spain
Antonio Sorrentino, University of Naples Parthenope, Italy
Ferdinando Nunziata, University of Naples Parthenope, Italy
Giuseppe Ferrara, University of Naples Parthenope, Italy

SS8: Special Session on Systems and Measurements for Aerial Vehicles, Intelligent Transportation and Automatic (online) Inspection
Room: Blue Hall, Palazzo San Domenico
Chairs: Francesco Adamo, Politecnico di Bari, Italy
Maurizio Spadavecchia, Politecnico di Bari, Italy

Space-aided Autonomous Sensor System for Hydrogeological Disaster Management
Francesco Fedi, Selex ES, Italy
Sabino Cacucci, Selex ES, Italy

An IoT-based measurement system for aerial vehicles
Savio Sciancalepore, Politecnico di Bari, Italy
Giuseppe Piro, Politecnico di Bari, Italy
Francesco Bruni, Politecnico di Bari, Italy
Enrico Nasca, Politecnico di Bari, Italy
Gennaro Boggia, Politecnico di Bari, Italy
Luigi Alfredo Grieco, Politecnico di Bari, Italy

Ionospheric Incremental Delay Models in Railway Applications
Pietro Salvatori, University of Rome "Roma Tre", Italy
Cosimo Stallo, RadioLabs Consortium, Italy
Alessandro Neri, RadioLabs Consortium, Italy
Francesco Rispoli, Ansaldo STS, Italy

DLC Integrated GHz Antenna for Aerospace
Grazia Cicala, National Research Council, Italy
Alessandro Massaro, National Research Council, Italy
Luciano Velardi, National Research Council, Italy
Antonio Valentini, University of Bari, Italy
Francesco Adamo, Politecnico di Bari, Italy
Filippo Attivissimo, Politecnico di Bari, Italy

Automatic Diagnostic by Using a New Optical Sensor
Nicola Ivan Giannoccaro, University of Salento, Italy
Luigi Spedicato, University of Salento, Italy
Aimè Lay-Ekuakille, University of Salento, Italy
Alessandro Massaro, Italian Institute of Technology IIT, Italy

SS9 (Part 1): Special Session on Measurement and Instrumentation for Aerospace Application
Room: Library of Province of Benevento
Chairs: Marco Pertile, Center of Studies and Activities for Space (CISAS), Italy
Enrico Lorenzini, Center of Studies and Activities for Space (CISAS), Italy

A geometric method for estimating space debris center of mass position and orbital parameters from features tracking
Gabriele Biondi, Politecnico di Torino, Italy
Stefano Mauro, Politecnico di Torino, Italy
Tharek Mohtar, Politecnico di Torino, Italy
Stefano Pastorelli, Politecnico di Torino, Italy
Massimo Sorli, Politecnico di Torino, Italy
Multiphysic modelling of MarsTEM shield
Sebastiano Chiodini, Center of Studies and Activities for Space (CISAS), Italy
Giacomo Colombatti, Center of Studies and Activities for Space (CISAS), Italy
Enrico Friso, Center of Studies and Activities for Space (CISAS), Italy
Marco Pertile, Center of Studies and Activities for Space (CISAS), Italy
Stefano Debei, Center of Studies and Activities for Space (CISAS), Italy

In-Flight Calibration of Magnetometer and Attitude Determination System for Land-survey Mini-satellite
Yevgeny Somov, Samara State Technical University, Russia
Sergey Butyrin, Samara State Technical University, Russia
Chingiz Hajiyev, Istanbul Technical University, Turkey

Uncertainty evaluation of a vision system for pose measurement of a spacecraft with fiducial markers
Marco Pertile, Center of Studies and Activities for Space (CISAS), Italy
Mattia Mazzucato, Center of Studies and Activities for Space (CISAS), Italy
Luca Bottaro, Center of Studies and Activities for Space (CISAS), Italy
Sebastiano Chiodini, Center of Studies and Activities for Space (CISAS), Italy
Stefano Debei, Center of Studies and Activities for Space (CISAS), Italy
Enrico Lorenzini, Center of Studies and Activities for Space (CISAS), Italy

Poster Session

Room: Palazzo San Domenico
Chairs: Lorenzo Ciani, University of Florence, Italy
Francesco Lamonaca (University of Calabria, Italy)

Hail detection in Naples urban area using singlepolarization X-band weather radar: preliminary results
Vincenzo Capozzi, University of Naples "Parthenope", Italy
Vincenzo Mazzarella, University of Naples "Parthenope", Italy
Marzia Moccia, University of Naples "Parthenope", Italy
Giorgio Budillon, University of Naples "Parthenope", Italy
Errico Picciotti, University of l'Aquila, Italy
Frank S. Marzano, University of l'Aquila, Italy

Icing Hazard for Civil Aviation
Piercesare Bernabò, University of Pisa, Italy
Fabrizio Cuccoli, National Laboratory of Radar and Surveillance Systems CNIT, Italy
Luca Baldini, ISAC - National Research Council, Italy

Detection and forecast of convective clouds using MSG data for aviation support
Valeria Rillo, CMCC, Euro-Mediterranean Centre for Climate Change, Italy
Alessandra Lucia Zollo, Euro-Mediterranean Centre on Climate Change & Italian Aerospace Research Center, Italy
Paola Mercogliano, Euro-Mediterranean Centre on Climate Change & Italian Aerospace Research Center, Italy
Carmela Galdi, University of Sannio, Italy

Metrology for drone and drone for metrology: measurement systems on small civilian drones
Pasquale Daponte, University of Sannio, Italy
Luca De Vito, University of Sannio, Italy
Gianluca Mazzilli, University of Sannio, Italy
Francesco Picariello, University of Sannio, Italy
Sergio Rapuano, University of Sannio, Italy
Maria Riccio, University of Sannio, Italy
On-Ground Actuator Calibration for ISA - BepiColombo
Marco Pisani, National Institute of Metrological Research, Italy
Milena Astrua, National Institute of Metrological Research, Italy
Valerio Antonio Iafolla, Institute for Space Astrophysics and Planetology, Italy
Francesco Santoli, Institute for Space Astrophysics and Planetology, Italy
David Lucchese, Institute for Space Astrophysics and Planetology, Italy
Carlo Lefevre, Institute for Space Astrophysics and Planetology, Italy
Marco Lucente, Institute for Space Astrophysics and Planetology, Italy

LED-based field radiometer for sensor web in-situ measurements
Emanuele Taralli, National Institute of Metrological Research, Italy
Roberto Filippo, National Institute of Metrological Research, Italy
Giorgio Brida, National Institute of Metrological Research, Italy
Mauro Rajteri, National Institute of Metrological Research, Italy
Simon R.G. Hall, Optical Measurement Group NPL, UK
Agnieszka Bialek, Optical Measurement Group NPL, UK
Claire Greenwell, Optical Measurement Group NPL, UK
Nigel Fox, Optical Measurement Group NPL, UK

On the BepiColombo and Juno Radio Science Experiments: precise models and critical estimates
Giacomo Tommei, University of Pisa, Italy
Fabrizio De Marchi, University of Pisa, Italy
Daniele Serra, University of Pisa, Italy
Giulia Schettino, University of Pisa, Italy

Metrology for AGP - Astrometric Gravitation Probe
Mario Gai, National Institute of Astrophysics, Osserv. Astrofisico di Torino (OATo), Italy
Alberto Vecchiato, National Institute of Astrophysics, Osserv. Astrofisico di Torino (OATo), Italy
Deborah Busonero, National Institute of Astrophysics, Osserv. Astrofisico di Torino (OATo), Italy
Alberto Riva, National Institute of Astrophysics, Osserv. Astrofisico di Torino (OATo), Italy
Mario Gilberto Lattanzi, National Institute of Astrophysics, Osserv. Astrofisico di Torino (OATo), Italy
Marco Pisani, National Institute of Metrological Research, Italy

Evaluation of Crack Depth Using Eddy Current Techniques with GMR-based Probes
Helena G. Ramos, University of Lisboa, Portugal
Ruben Filipe Menezes, University of Lisboa, Portugal
Artur Lopes Ribeiro, University of Lisboa, Portugal

Fast 2D crack profile reconstruction by image processing for Eddy-Current Testing
Giovanni Betta, University of Cassino and Southern Lazio, Italy
Luigi Ferrigno, University of Cassino and Southern Lazio, Italy
Marco Laracca, University of Cassino and Southern Lazio, Italy
Helena G. Ramos, University of Lisboa, Portugal
Marco Ricci, University of Perugia, Italy
Artur Lopes Ribeiro, University of Lisboa, Portugal
Giuseppe Silipigni, University of Perugia, Italy

Design of Sonar Sensor Model for Safe Landing of an UAV
Umberto Papa, University of Naples "Parthenope", Italy
Giuseppe Del Core, University of Naples "Parthenope", Italy

The engineering and assembly of a low cost UAV
Domenica Costantino, Politecnico di Bari, Italy
Maria Giuseppa Angelini, Politecnico di Bari, Italy
Gabriele Vozza, Politecnico di Bari, Italy

Safety Improvement of Fixed Wing mini-UAV Based on Handy FDI Current Sensor and a Fail-Safe Configuration of Control Surface Actuators
Giuseppe Fuggetti, University of Bologna, Italy
Antonio Ghetti, University of Bologna, Italy
Matteo Zanzi, University of Bologna, Italy
Operational Flow of Twin Satellite Mission
Kamal Lamichhane, Nitte Meenakshi Institute of Technology, India
Kiran M, Nitte Meenakshi Institute of Technology, India
Kannan T, Nitte Meenakshi Institute of Technology, India
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Xi-Yuan Chen, Southeast University, China

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Xi-Yuan Chen, Southeast University, China
Bingbo Cui, Southeast University, China

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Generoso Giangregorio, University of Sannio, Italy
Silvia Liberata Ullo, University of Sannio, Italy

The Pulsed Optically Pumped Rb frequency standard: a Proposal for a Space Atomic Clock
Salvatore Micalizio, National Institute of Metrological Research, Italy
Aldo Godone, National Institute of Metrological Research, Italy
Filippo Levi, National Institute of Metrological Research, Italy
Claudio Eligio Calosso, National Institute of Metrological Research, Italy
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Low-cost relative navigation sensors for miniature spacecraft and drones
Francesco Sansone, University of Padova, Italy
Alessandro Francesconi, University of Padova, Italy
Lorenzo Olivieri, Center of Studies and Activities for Space (CISAS), Italy
Francesco Branz, Center of Studies and Activities for Space (CISAS), Italy

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Francesco Cappello, RMIT University, Australia
Roberto Sabatini, RMIT University, Australia
Subramanian Ramasamy, RMIT University, Australia
Matthew Marino, RMIT University, Australia

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Angelo Consoli, Ecleys Sagl, Switzerland
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Gianni D'Angelo, University of Sannio, Italy
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Integration of satellite observations and ground–based measurements for landfill monitoring
Pia Addabbo, University of Sannio, Italy
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Mariano Focareta, Mediterranean Agency for Remote Sensing and Environmental Control (MARSec), Italy
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Analysis of autogyro rotor balancing and vibration
Darius Vainilavicius, Kaunas University of Technology, Lithuania
Vygantas Augutis, Kaunas University of Technology, Lithuania
Marius Malcius, Kaunas University of Technology, Lithuania
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Marcantonio Catelani, University of Florence, Italy
Lorenzo Ciani, University of Florence, Italy
Matteo Venzi, University of Florence, Italy
Giovanni Barile, Sirio Panel S.p.A., Italy

A Markovian based approach for autonomous space systems
Massimo Tipaldi, Compagnia Generale per lo Spazio & University of Sannio, Italy
Luigi Glielmo, University of Sannio, Italy

Integrated Measurement System for UAV
Jacek Pieniążek, Rzeszow University of Technology, Poland
Piotr Cieciński, Rzeszow University of Technology, Poland
Łukasz Wałek, Rzeszow University of Technology, Poland
Dariusz Nowak, Rzeszow University of Technology, Poland

A mechanical mode-stirred reverberation chamber inspired by chaotic cavities
Franco Moglie, Marche Polytechnic University, Italy
Gabriele Gradoni, University of Nottingham, United Kingdom
Luca Bastianelli, Marche Polytechnic University, Italy
Valter Mariani Primiani, Marche Polytechnic University, Italy

Guidance Law Recognition of Target Pursuing Vehicle
Runle Du, National Key Laboratory of Science and Technology on Test Physics and Numerical Mathematics, China
Jiaqi Liu, National Key Laboratory of Science and Technology on Test Physics and Numerical Mathematics, China
Zhifeng Li, National Key Laboratory of Science and Technology on Test Physics and Numerical Mathematics, China
Zhenhong Niu, National Key Laboratory of Science and Technology on Test Physics and Numerical Mathematics, China

SS10: Special Session on Meteorological Sensors and Sensor Systems for Flight Support
Room: Red Hall, Palazzo San Domenico
Chairs: Paola Mercogliano, CIRA, Italian Aerospace Research Centre, Italy
Carmela Galdi, University of Sannio, Italy

Short Range Fog Forecasting by applying Data Mining Techniques
Gaetano Zazzaro, CIRA, Italian Aerospace Research Centre, Italy
Gianpaolo Romano, CIRA, Italian Aerospace Research Centre, Italy
Paola Mercogliano, CIRA, Italian Aerospace Research Centre, Italy
Valeria Rillo, CMCC, Euro-Mediterranean Centre for Climate Change, Italy
Sebastian Kauczok, Selex ES GmbH, Germany
Aircraft hazard evaluation for critical weather avoidance
Francesco Sermi, National Laboratory of Radar and Surveillance Systems CNIT, Italy
Fabrizio Cuccoli, National Laboratory of Radar and Surveillance Systems CNIT, Italy
Clio Mugnai, National Laboratory of Radar and Surveillance Systems CNIT, Italy
Luca Facheris, University of Florence, Italy

Precipitation nowcasting using the satellite product Multi-Sensor Precipitation Estimate
Alessandra Lucia Zollo, Euro-Mediterranean Centre on Climate Change & Italian Aerospace Research Center, Italy
Maria Paola Manzi, CMCC, Euro-Mediterranean Centre for Climate Change, Italy
Paola Mercogliano, Euro-Mediterranean Centre on Climate Change & Italian Aerospace Research Center, Italy
Carmela Galdi, University of Sannio, Italy

Aviation weather awareness: development of algorithms for the detection of weather hazard through the use of EUMETSAT products
Alessandra Lucia Zollo, Euro-Mediterranean Centre on Climate Change & Italian Aerospace Research Center, Italy
Maria Paola Manzi, CMCC, Euro-Mediterranean Centre for Climate Change, Italy
Paola Mercogliano, Euro-Mediterranean Centre on Climate Change & Italian Aerospace Research Center, Italy
Carmela Galdi, University of Sannio, Italy

SS11 (Part 1): Special Session on Sensors, Measurements, and Information Fusion for Air Space Security and Defense
Room: Blue Hall, Palazzo San Domenico
Chairs: Domenico Accardo, University of Naples Federico II, Italy
Leopoldo Angrisani, University of Naples Federico II, Italy

Infrared Signature - Theory and example of practical measurement methods
Francesco Soldani, Italian Air Force, Italy

i-TEAMS: Cooperative GNC for small UAV formations
Amedeo Rodi Vetrella, University of Naples Federico II, Italy
Giancarmine Fasano, University of Naples Federico II, Italy
Domenico Accardo, University of Naples Federico II, Italy

The quadruple image multi-band sensor
Marcella Iuzzolino, University of Naples Federico II, Italy
Giancarlo Rufino, University of Naples Federico II, Italy
Domenico Accardo, University of Naples Federico II, Italy
Ernesto Oliva, INAF - Osservatorio Astrofisico di Arcetri, Italy
Andrea Tozzi, INAF - Osservatorio Astrofisico di Arcetri, Italy

SS9 (Part 2): Special Session on Measurement and Instrumentation for Aerospace Application
Room: Library of Province of Benevento
Chairs: Marco Pertile, Center of Studies and Activities for Space (CISAS), Italy
Enrico Lorenzini, Center of Studies and Activities for Space (CISAS), Italy

Large Space Debris Pose Acquisition in Close-Proximity Operations
Roberto Opromolla, University of Naples Federico II, Italy
Giancarmine Fasano, University of Naples Federico II, Italy
Giancarlo Rufino, University of Naples Federico II, Italy
Michele Grassi, University of Naples Federico II, Italy

A new Hyperspectral Camera concept for space-borne application
Marco Pisani, National Institute of Metrological Research, Italy
Massimo Zucco, National Institute of Metrological Research, Italy
Demetrio Labate, Selex ES - Space LoB, Italy
Marco Molina, Selex ES - Space LoB, Italy
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Bortolino Saggin, Politecnico di Milano, Italy
Diego Scaccabarozzi, Politecnico di Milano, Italy
Irina Shatalina, Politecnico di Milano, Italy
Roberto Panzeri, Politecnico di Milano, Italy
Marco Tarabini, Politecnico di Milano, Italy
Marianna Magni, Politecnico di Milano, Italy
Giancarlo Bellucci, Institute for Space Astrophysics and Planetology, Italy

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Matthew Marino, RMIT University, Australia
Alex Fisher, RMIT University, Australia
Roberto Sabatini, RMIT University, Australia

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Dario Califano, CO.RI.S.T.A., Consorzio di Ricerca su Sistemi di Telerilevamento Avanzati, Italy
Luca Ciofaniello, CO.RI.S.T.A., Consorzio di Ricerca su Sistemi di Telerilevamento Avanzati, Italy
Raffaello Davide Laiso, CO.RI.S.T.A., Consorzio di Ricerca su Sistemi di Telerilevamento Avanzati, Italy
Marco Bortone, CO.RI.S.T.A., Consorzio di Ricerca su Sistemi di Telerilevamento Avanzati, Italy
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Stefania Mattei, CO.RI.S.T.A., Consorzio di Ricerca su Sistemi di Telerilevamento Avanzati, Italy
Pasquale Pepe, Thales Alenia Space Italia, Italy

Session on Advanced Measurement Systems and Sensors for Aerospace
Room: Red Hall, Palazzo San Domenico
Chairs: Alfonso Farina, IEEE BoG AESS VP for Industry Relations, CTIF Industry Advisory Chair
Sergio Rapuano, University of Sannio, Italy

Attitude and Position Estimation for an UAV Swarm using Consensus Kalman Filtering
Egidio D’Amato, Second University of Naples, Italy
Immacolata Notaro, Second University of Naples, Italy
Massimiliano Mattei, Second University of Naples, Italy
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Research Status and Prospect of Space Metrology
Liu Min, Beijing Oriental Institute of Measurement & Test, China
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Piezoelectric Harvester-Based Structural Health Monitoring that Uses a Self-Powered Adaptive Circuit
Albert Álvarez-Carulla, University of Barcelona, Spain
Jordi Colomer-Farrarons, University of Barcelona, Spain
Jaime López-Sánchez, University of Barcelona, Spain
Pere Miribel-Català, University of Barcelona, Spain

An early-warning aerospace system for relevant water bodies monitoring
Ivano Manfredonia, University of Tor Vergata, Italy
Cosimo Stallo, University of Tor Vergata, Italy
Marina Ruggieri, University of Tor Vergata, Italy
Gaetano Massari, AerialClick Srls, Italy
Sabrina Barbante, AerialClick Srls, Italy
Embedded RTOS Implementation for Twin Nano-Satellite STUDSAT-2
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Divyanshu Sahay, Nitte Meenakshi Institute of Technology, India
Ranjith H. G, Nitte Meenakshi Institute of Technology, India
S. Sandya, Nitte Meenakshi Institute of Technology, India

SS11 (Part 2): Special Session on Sensors, Measurements, and Information Fusion for Air Space Security and Defense
Room: Blue Hall, Palazzo San Domenico
Chairs: Domenico Accardo, University of Naples Federico II, Italy
Leopoldo Angrisani, University of Naples Federico II, Italy

Hypercube - The intelligent hyperspectral imager
Marco Esposito, Cosine Measurement Systems, The Netherlands & Coseno s.r.l., Italy
Alessandro Zuccaro Marchi, ESA-ESTEC/TEC, The Netherlands

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Antonio Fulvio Scannapieco, University of Naples Federico II, Italy
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Blind LTV shortening of doubly selective OFDM channels for UAS applications
Donatella Darsena, Parthenope University of Naples, Italy
Giacinto Gelli, University of Naples Federico II, Italy
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Ivan Iudice, Italian Aerospace Research Centre, Italy

A new high sensitivity radar sensor for space debris detection and accurate orbit determination
Alessandro Morselli, Politecnico di Milano, Italy
Pierluigi Di Lizia, Politecnico di Milano, Italy
Germano Bianchi, National Institute for Astrophysics - IRA (INAF-IRA), Italy
Claudio Bortolotti, National Institute for Astrophysics - IRA (INAF-IRA), Italy
Stelio Montebugnoli, National Institute for Astrophysics - IRA (INAF-IRA), Italy
Giovanni Naldi, National Institute for Astrophysics - IRA (INAF-IRA), Italy
Federico Perini, National Institute for Astrophysics - IRA (INAF-IRA), Italy
Giuseppe Papillo, National Institute for Astrophysics - IRA (INAF-IRA), Italy
Mauro Roma, National Institute for Astrophysics - IRA (INAF-IRA), Italy
Andrea Mattana, National Institute for Astrophysics - IRA (INAF-IRA), Italy
Emma Salerno, National Institute for Astrophysics - IRA (INAF-IRA), Italy
Alessio Magro, University of Malta, Malta
Kristian Zarb Adami, University of Malta, Malta
Roberto Armellin, University of Southampton, UK
Andrea Lazzaretchi Sergiusti, Vitrociset S.p.A., Italy
Walter Villadei, Italian Air Force (ITAF), Italy
Ferdinando Dolce, Italian Air Force (ITAF), Italy
Marco Reali, Italian Air Force (ITAF), Italy
Jacopo Paoli, Italian Air Force (ITAF), Italy

SS9 (Part 3): Special Session on Measurement and Instrumentation for Aerospace Application
Room: Library of Province of Benevento
Chairs: Marco Pertile, Center of Studies and Activities for Space (CISAS), Italy
Enrico Lorenzini, Center of Studies and Activities for Space (CISAS), Italy
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Andrea Valmorbida, Center of Studies and Activities for Space (CISAS), Italy
Sergio Tronco, Center of Studies and Activities for Space (CISAS), Italy
Mattia Mazzucato, Center of Studies and Activities for Space (CISAS), Italy
Stefano Debei, Center of Studies and Activities for Space (CISAS), Italy
Enrico Lorenzini, Center of Studies and Activities for Space (CISAS), Italy

A Sounding Rocket As A Test Bench For Cost Effective Measurements
Matteo Poli, Nimbus Project, Italy
Nicola Bressanin, Nimbus Project, Italy
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Multiple measurement techniques in a complex satellite antenna integration scenario
Marco Cotogni, Thales Alenia Space Italy, Italy
Maurizio Di Serio, Thales Alenia Space Italy, Italy
Gabriele Cosentino, Thales Alenia Space Italy, Italy
Roberto Silvesti, Thales Alenia Space Italy, Italy
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Mathias von Alberti, Airbus DS GmbH, Germany
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MarsTEM field test in Mars analog environment
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Pietro Schipani, INAF - Osservatorio Astronomico di Capodimonte, Italy
Laurent Marty, INAF - Osservatorio Astronomico di Capodimonte, Italy
Raffaele Mugnolo, Italian Space Agency, Italy
Simone Pirrotta, Italian Space Agency, Italy
Ernesto Marchetti, Italian Space Agency, Italy

Design of an interferometric displacement sensor with picometer resolution for the Galileo-Galilei mission
Marco Pisani, National Institute of Metrological Research, Italy
Giovanni Mana, National Institute of Metrological Research, Italy
Anna M. Nobili, University of Pisa & INFN, Italy

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