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## Welcome to 1<sup>st</sup> IEEE Workshop on Metrology for AeroSpace

On behalf of the organizing committee, we cordially welcome you to the 1<sup>st</sup> IEEE Workshop on Metrology for AeroSpace (MetroAeroSpace).

The first edition of MetroAeroSpace will be held in Benevento, a historic town in the region of Campania. It was a base for Roman expansion in Southern Italy and an important stop on the Appian Way, the ancient Roman road connecting the West and East coasts. After being sacked in 452, Benevento was ruled by the Lombards (or Longobards) and Byzantines, and finally by the Pope who ruled the town for 800 years. Benevento, in a beautiful setting in the hills, is a pleasant place to visit, a good break from the heavily touristed areas near Naples and the Amalfi Coast and a chance to experience the feel of a Southern Italian town. Visiting Benevento is like a journey through history: the prehistoric and the Egyptian finds at the Museum of Sannio, Traiano's Arch and the Roman theatre, the Dome and the Church of Santa Sofia of Longobardian times, the undergrounds of the Prefectural Palace that host ARCOS, the contemporary art museum.

Benevento is included, for the Santa Sofia Complex, in the UNESCO World Heritage Sites for "*The Longobards in Italy, Places of Power, 568 - 774 A.D.*". It comprises seven groups of important buildings (including fortresses, churches, and monasteries) throughout the Italian Peninsula. They testify to the high achievement of the Lombards, who migrated from Northern Europe and developed their own specific culture in Italy where they ruled over vast territories in the 6<sup>th</sup> to 8<sup>th</sup> centuries.

MetroAeroSpace covers aspects of the theory and practice of instrumentation, measurement for AeroSpace applications. We are sure that the universally recognized historical beauty of Benevento will be a perfect frame for this prestigious conference. It is, in fact, a further occasion, not only to meet old friends and new people from all over the world, but, moreover, to engage with them a continuous comparison directed to make wider the views on the technological progress of Metrology for AeroSpace.

The MetroAeroSpace organization was a complex task due to the large and increasing interest of our research and application areas. Efforts from many people were required to shape the technical program, arrange accommodation, manage the administrative aspects, and set up the social functions. We like to take this opportunity to thank all and each of them. We like also to thank the public and private organizations that supported the meeting in different ways. A special thank to Italian Air Force for supporting with several actions the Workshop.

The MetroAeroSpace Technical Program consists of 19 oral and poster sessions scheduled over two days. With the wide range of technical sessions covering the many fields of metrology for aerospace we are happy to welcome you to the variety of technical presentations that await you this year. Thanks to all of the Technical Program Committee members and the reviewers who have contributed to make this outstanding program possible.

The technical program was particularly difficult to be arranged since we received, for this first Workshop 146 abstracts from all over the world. Due to the time limits of the conference only 115 papers have been selected after a painstaking activity of the program committee and additional reviewers. We like to thank all people who contributed to this process with opinions, comments, and suggestions to choose the best papers and even improve their quality.

The technical program encompasses several events and activities. The keynote speeches will be held by experts in the field of metrology for aerospace; Dr Roberto Sabatini, RMIT University – Australia, will present the *Innovative Flight Test Instrumentation and Techniques for Airborne Laser Systems Performance Analysis and Mission Effectiveness Evaluation*, Prof.Dr.Uwe Sterr, Physikalisch-Technische Bundesanstalt (PTB) – Germany, will analyze the *Optical Clocks for Applications on Ground and in Space*. Several parallel sessions will accommodate the contributed papers: to avoid overlapping of sessions on related topics, papers are distributed in separate thematic tracks. Some sessions are designated as special since they have been solicited and organized and will be chaired by well-known experts from the international industrial and academic communities.

Several Awards offered by International Institution and Companies will be assigned, in particular to young researchers.

The Workshop is about to begin. You are now in a position to enjoy the fellowship of colleagues and experts and to pass free time in natural and artistic beauties. It is up to you to appreciate the Workshop worth! Be critical! We, metrologists, colleagues, and friends, we know that this is the best way to improve quality, and to achieve lasting excellences.



**General Co-Chair**

Pasquale DAPONTE, University of Sannio,  
Benevento, Italy



**General Co-Chair**

Marina RUGGIERI, University of Rome  
"Tor Vergata", Italy



**Technical Program Co-Chair**

Stephen DYER, Kansas State University,  
United States of America



**Technical Program Co-Chair**

Hugh GRIFFITHS, University College London,  
United Kingdom

## **MetroAeroSpace 2014 Organizing Committee**

### **GENERAL CHAIRS**

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Marina Ruggieri, *University of Rome "Tor Vergata", Italy*

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Hugh Griffiths, *University College London, UK*

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Aldo Napoli, *Centre de reserche sur les Risques et les Crises, France*

Pavel Paces, *Czech Technical University, Czech Republic*

Jacek Pieniazek, *Rzeszow University of Technology, Poland*

Vasily Popovich, *Russian Academy of Science, Russia*

Helena G. Ramos, *Instituto Superior Técnico - Universidade de Lisboa, Portugal*

Robert Rassa, *Raytheon, US*

Artur L. Ribeiro, *Instituto Superior Técnico - Universidade de Lisboa, Portugal*  
Roberto Sabatini, *RMIT University, Australia*  
Bortolino Saggin, *Politecnico di Milano, Italy*  
Nicolas Sklavos, *Technological Educational Institute of Western Greece, Greece*  
Patrizia Tavella, *INRIM, Italy*  
Fabrizio Francesco Vinaccia, *MDBA Italia, Italy*  
Graham Wild, *RMIT University, Australia*  
Ho-Soon Yang, *KRISS, Republic of Korea*  
David Zucconi, *SAB Aerospace, Italy*

#### **LOCAL COMMITTEE**

Pasquale Arpaia, *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*  
Ioan Tudosa, *University of Sannio, Italy*  
Silvia Ullo, *University of Sannio, Italy*  
Judy Scharmann (IEEE AESS Executive Assistant)

#### **LOCAL ARRANGEMENTS**



## MetroAeroSpace 2014 Keynote Speakers

**Dr. Roberto Sabatini**

*RMIT University*

*School of Aerospace, Mechanical and Manufacturing Engineering, Australia*



*Keynote Thursday, May 29, 2014*

**"Innovative Flight Test Instrumentation and Techniques for Airborne Laser Systems  
Performance Analysis and Mission Effectiveness Evaluation"**

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**Prof. Dr. Uwe Sterr**

*Physikalisch-Technische Bundesanstalt (PTB), Germany*



*Keynote Friday, May 30, 2014*

**"Optical Clocks for Applications on Ground and in Space"**

## Program Schedule - Thursday, May 29, 2014

PROGRAM SCHEDULE - Thursday, 29 May, 2014			
8:30 - 9:00	REGISTRATION -Museum of Sannio		
9:00 - 9:30	Welcome Addressess- Museum of Sannio		
9:30 - 10:30	Invited Speech - Dr. Roberto Sabatini		
10:30 - 11:00	COFFEE BREAK - Palazzo San Domenico		
	Red Hall Palazzo San Domenico	Blue Hall Palazzo San Domenico	Library of Province of Benevento
11:00 - 12:40	<b>Session 1</b> Satellite navigation system metrology	<b>SS1 (Part 1)</b> Instrumentation and sensing for unmanned systems	<b>SS2 (Part1)</b> Mechanical and thermal measurements for aerospace
12:40 - 14:00	LUNCH - Second Floor, Palazzo San Domenico		
14:00 - 15:40	<b>Session 2</b> Automatic test systems for aerospace	<b>SS1 (Part 2)</b> Instrumentation and sensing for unmanned systems	<b>SS2 (Part 2)</b> Mechanical and thermal measurements for aerospace
15:40 - 16:00	COFFEE BREAK - Palazzo San Domenico		
16:00 - 17:40	<b>Session 3</b> Design and characterization of sensors for aerospace	<b>SS3</b> Measurement and evaluation of reliability and safety in aerospace applications	<b>SS2 (Part 3)</b> Mechanical and thermal measurements for aerospace
20:00 - 22:00	GALA DINNER - Historical Building of Strega Alberti S.p.a.		

## Program Schedule - Friday, May 30, 2014

PROGRAM SCHEDULE - Friday, 30 May, 2014			
<b>8:30 - 9:20</b>	Invited Speech - Prof. Dr. Uwe Sterr - Museum of Sannio		
	Red Hall Palazzo San Domenico	Blue Hall Palazzo San Domenico	Library of Province of Benevento
<b>9:30 - 11:10</b>	<b>SS4</b> Sensor systems and information fusion for aerospace applications	<b>SS5 (Part1)</b> Thermal noise and extreme metrology	<b>SS6 (Part1)</b> SDR for on-board and ground-based space applications and metrology
<b>11:10 - 13:10</b>	<b>POSTER SESSION - COFFEE BREAK</b> - Palazzo San Domenico		
<b>13:10 - 14:30</b>	<b>LUNCH</b> - Second Floor, Palazzo San Domenico		
<b>14:30 - 16:10</b>	<b>SS7</b> Test and measurement solutions for aerospace security and defence	<b>SS5 (Part2)</b> Thermal noise and extreme metrology	<b>SS6 (Part2)</b> SDR for on-board and ground-based space applications and metrology
<b>16:10 - 16:30</b>	<b>COFFEE BREAK</b> - Palazzo San Domenico		
<b>16:30 - 18:10</b>	<b>SS8</b> Antennas and systems for signal detection in aerospace	<b>SS9</b> Telemetry systems for space metrology	<b>SS10</b> Photonic sensors for aerospace
<b>18:15 - 18:30</b>	<b>CLOSING AND AWARD CEREMONY</b> - Blue Hall, Palazzo San Domenico		



## LOCATION



### 1. Museum of Sannio - Conference Hall

#### *Piazza Santa Sofia*

Welcome Reception  
Registration  
Plenary Opening Session

### 2. Palazzo San Domenico

(Red Hall, Blue Hall)

#### *Piazza Guerrazzi*

Conference Rooms  
Poster Session  
Lunches and Coffee Breaks



### 3. Library of Province of Benevento

#### *Corso Garibaldi*

Conference Rooms



### 4. Piazza Castello

Static exhibition of the *Predator B*

## **Wednesday, May 28**

**16:00 - 19:00**

**Registration**

**Place:** *Museum of Sannio*

**18:00 - 19:00**

**Guided Tours**

**19:00 - 20:30**

**Welcome reception**

**Place:** *Museum of Sannio*

**Thursday, May 29**

**08:30 - 09:00**

**Registration**

**09:00 - 09:30**

**Welcome addresses**

**Room:** *Museum of Sannio*

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**09:30 - 10:30**

**Plenary Opening Session**

**Chair:** *Stephen Dyer (Kansas State University, USA)*

**Room:** *Museum of Sannio*

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**Innovative Flight Test Instrumentation and Techniques for Airborne Laser  
Systems Performance Analysis and Mission Effectiveness Evaluation**

*Dr Roberto Sabatini*

*RMIT University – School of Aerospace, Mechanical and Manufacturing Engineering, Australia*

**10:30 - 11:00**

**Morning Break**

**Place:** *Palazzo San Domenico*

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**11:00 - 12:40**

**Session 1: Satellite navigation system metrology**

**Chairs:** *Patrizia Tavella (Optics Division, INRiM, Italy)*

*Giovanni B. Palmerini (University of Rome “La Sapienza”, Italy)*

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

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**11:00     Analyzer of the GNSS Simulators Parameters**

*Aleksandr A. Savin (Tomsk State University of Control Systems and Radio  
Electronics, Russia)*

**11:20     Time Metrology in the Galileo Navigation System**

*Ilaria Sesia (Optics Division, INRiM, Italy)*

*Giovanna Signorile (Optics Division, INRiM, Italy)*

*Giancarlo Cerretto (Optics Division, INRiM, Italy)*

*Elena Cantoni (Optics Division, INRiM, Italy)*

*Patrizia Tavella (Optics Division, INRiM, Italy)*

*Alice Cernigliaro (DASS Division, aizoOn, Italy)*

*Andrea Samperi (DASS Division, aizoOn, Italy)*

- 11:40 Multi GNSS Advanced RAIM: An Availability Analysis**  
*Bilal Muhammad (University of Rome Tor Vergata, Italy)*  
*Ernestina Cianca (University of Rome Tor Vergata, Italy)*  
*Antonio Maria Salonic (Telespazio, Italy)*
- 12:00 GNSS Software Receiver as Navigation Sensor in Very High Orbits**  
*Giovanni B. Palmerini (University of Rome "La Sapienza", Italy)*
- 12:20 On-the-fly outlier rejection in high-precision spaceborne GPS applications**  
*Urbano Tancredi (University of Naples "Parthenope")*  
*Alfredo Renga (University of Naples "Federico II")*  
*Michele Grassi (University of Naples "Federico II")*

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**11:00 - 12:40**

**SS1 (Part 1): Instrumentation and sensing for unmanned systems**

**Chairs:** *Graham Wild (RMIT University - SAMME, Australia)*

*Roberto Sabatini (RMIT University - SAMME, Australia)*

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

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- 11:00 Italian Air Force's RPAS capability: a decade of superior experience, ready to face future challenges**  
*Gianluca Chiriatti, Colonel - Italian Air Force, Commander of the Center of Excellence for Unmanned Aerial Vehicles*
- 11:20 Unmanned Aircraft Bistatic LIDAR for CO<sub>2</sub> Column Density Determination**  
*Alessandro Gardi (RMIT University - SAMME, Australia)*  
*Roberto Sabatini (RMIT University - SAMME, Australia)*  
*Graham Wild (RMIT University - SAMME, Australia)*
- 11:40 The Workload Sensing for the Human Machine Interface of Unmanned Air Systems**  
*Barbara Piuze (Alltek Innovations S.r.l., Italy)*  
*Alessandro Cont (Alltek Innovations S.r.l., Italy)*  
*Magda Balerna (Selex ES S.p.A., Italy)*
- 12:00 Lightweight GNSS/IRS Integrated Navigation System for UAV Vehicles**  
*Enrico Petritoli (LTG Elettronica S.r.l., Italy)*  
*Tonino Giagnacovo (LTG Elettronica S.r.l., Italy)*  
*Fabio Leccese (University of "Roma Tre", Italy)*

**12:20 Distance measurement technique in hemispherical area for indoor Vertical Take-Off and Landing Unmanned Aerial Vehicle**

*Bartosz Brzozowski (Military University of Technology, Poland)*  
*Przemysław Kordowski (Military University of Technology, Poland)*  
*Zdzisław Rochala (Military University of Technology, Poland)*  
*Konrad Wojtowicz (Military University of Technology, Poland)*

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**11:00 - 12:40**

**SS2 (Part1): Mechanical and thermal measurements for aerospace**

**Chairs:** *Stefano Debei (University of Padova, Italy)*  
*Enrico Lorenzini (University of Padova, Italy)*

**Room:** *Library of Province of Benevento*

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**11:00 Spacecraft Health Monitoring and Management Systems**

*Massimo Tipaldi (Compagnia Generale per lo Spazio, Italy)*  
*Bernhard Bruenjes (OHB System AG, Germany)*

**11:20 Attitude Module Characterization of the Satellite Formation Flight Testbed**

*Andrea Valmorbida (Center of Studies and Activities for Space (CISAS), Italy)*  
*Francesco Scarpa (Center of Studies and Activities for Space (CISAS), Italy)*  
*Mattia Mazzucato (Center of Studies and Activities for Space (CISAS), Italy)*  
*Sergio Tronco (Center of Studies and Activities for Space (CISAS), Italy)*  
*Stefano Debei (Center of Studies and Activities for Space (CISAS), Italy)*  
*Enrico C. Lorenzini (Center of Studies and Activities for Space (CISAS), Italy)*

**11:40 Determination and Uncertainty Analysis of Mercury Libration Using BepiColombo HRIC Images**

*Alessio Aboudan (Center of Studies and Activities for Space (CISAS), Italy)*  
*Giacomo Colombatti (Center of Studies and Activities for Space (CISAS), Italy)*  
*Stefano Debei (Center of Studies and Activities for Space (CISAS), Italy)*  
*Pasquale Palumbo (DiST, Parthenope University, Italy)*  
*Enrico Flamini (Italian Space Agency, Italy)*

**12:00 Strain gauge sensors based on thermoplastic nanocomposite for monitoring inflatable structures**

*Alessandro Pecora (Institute for Microelectronics and Microsystems (IMM)- CNR, Italy)*  
*Luca Maiolo (The Institute for Microelectronics and Microsystems (IMM) - CNR, Italy)*  
*Antonio Minotti (The Institute for Microelectronics and Microsystems (IMM) - CNR, Italy)*  
*Ruggero De Francesco (Se.Te.L S.r.l., Italy)*  
*Eduardo De Francesco (Se.Te.L S.r.l., Italy)*  
*Fabio Leccese (University of "Roma Tre", Italy)*  
*Marco Cagnetti (University of "Roma Tre", Italy)*  
*Andrea Ferrone (University of "Roma Tre", Italy)*

**12:20 Self-Optimizing Compensation of Large Component Deformations**

*Robert Schmitt (RWTH Aachen University, Germany)*

*Markus Janßen (RWTH Aachen University, Germany)*

*Felix Bertelsmeier (RWTH Aachen University, Germany)*

**12:40 - 14:00 Lunch**

**Room:** *Second Floor, Palazzo San Domenico*

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**14:00 - 15:40**

**Session 2: Automatic test systems for aerospace**

**Chairs:** *Artur Lopes Ribeiro (Universidade de Lisboa, Portugal)*

*Eulalia Balestrieri (University of Sannio, Italy)*

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

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**14:00 A study of feasibility for a motor with embedded geartrain**

*Giuseppe Carbone (University of Cassino and Southern Lazio, Italy)*

*Franco Tedeschi (University of Cassino and Southern Lazio, Italy)*

**14:20 Smart data driven maintenance: improving damage detection and assessment on aerospace structures**

*Francesco Archetti (Consorzio Milano Ricerche & University of Milano - Bicocca, Italy)*

*Gaia Arosio (Consorzio Milano Ricerche, Italy)*

*Antonio Candelieri (Consorzio Milano Ricerche & University of Milano - Bicocca, Italy)*

*Ilaria Giordani (Consorzio Milano Ricerche, Italy)*

*Raul Sormani (Consorzio Milano Ricerche & University of Milano - Bicocca, Italy)*

**14:40 Development of automatic tolerance inspection through Reverse Engineering**

*Michele Bici (University of Rome "La Sapienza", Italy)*

*Francesca Campana (University of Rome "La Sapienza", Italy)*

*Alessio Trifirò (University of Rome "La Sapienza", Italy)*

*Claudio Testani (Centro Sviluppo Materiale S.p.A., Italy)*

**15:00 AFIT's laboratory test equipment to optimise the integrated avionics systems for polish military aircrafts**

*Sławomir Michalak (Air Force Institute of Technology, Poland)*

*Andrzej Szelmanowski (Air Force Institute of Technology, Poland)*

*Andrzej Pazur (Air Force Institute of Technology, Poland)*

**15:20 Open Crack Depth Evaluation Using Eddy Current Methods and GMR Detection**

*Dário Jerónimo Pasadas (Universidade de Lisboa, Portugal)*

*Artur Lopes Ribeiro (Universidade de Lisboa, Portugal)*

*Tiago Jorge Rocha (Universidade de Lisboa, Portugal)*

*Helena Geirinhas Ramos (Universidade de Lisboa, Portugal)*

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**14:00 - 15:40**

**SS1 (Part 2): Instrumentation and sensing for unmanned systems**

**Chairs:** *Graham Wild (RMIT University - SAMME, Australia)*

*Roberto Sabatini (RMIT University - SAMME, Australia)*

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

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**14:00 A Combined Experimental and Numerical Analysis of UAV Pitot-static System Error at Low Reynolds Number**

*James Ellingson (Center for Optimal Control & Autonomy, University of St. Thomas, MN USA)*

*Thomas Shepard (Center for Optimal Control & Autonomy, University of St. Thomas, MN USA)*

*Yu-Chen Li (Center for Optimal Control & Autonomy, University of St. Thomas, MN USA)*

**14:20 Architectures and Algorithms for Non-cooperative Sense and Avoid**

*Anna Elena Tirri (University of Naples "Federico II")*

*Giancarmine Fasano (University of Naples "Federico II")*

*Domenico Accardo (University of Naples "Federico II")*

*Antonio Moccia (University of Naples "Federico II")*

**14:40 Investigating the Practicality of Hazardous Material Detection Using Unmanned Aerial Systems**

*Nathan Gerhardt (RMIT University - SAMME, Australia)*

*Reece Clothier (RMIT University - SAMME, Australia)*

*Graham Wild (RMIT University - SAMME, Australia)*

**15:00 Unsteady Pressure Measurements on a MAV Wing for the Design of a Turbulence Mitigation System**

*Matthew Marino (RMIT University - SAMME, Australia)*

*Simon Watkins (RMIT University - SAMME, Australia)*

*Roberto Sabatini (RMIT University - SAMME, Australia)*

*Alessandro Gardi (RMIT University - SAMME, Australia)*

**15:20 Reverse Engineering of a Fixed Wing Unmanned Aircraft 6-DoF Model Based on Laser Scanner Measurements**

*Martin Burstn (RMIT University - SAMME, Australia)*

*Roberto Sabatini (RMIT University - SAMME, Australia)*

*Alessandro Gardi (RMIT University - SAMME, Australia)*

*Reece Clothier (RMIT University - SAMME, Australia)*

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**14:00 - 15:40**

**SS2 (Part2): Mechanical and thermal measurements for aerospace**

**Chairs:** *Stefano Debei (University of Padova, Italy)*

*Bortolino Saggin (Politecnico di Milano, Italy)*

**Room:** *Library of Province of Benevento*

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**14:00 Characterization of a pumping system in Martian-like environment**

*Diego Scaccabarozzi (Politecnico di Milano, Italy)*

*Marco Tarabini (Politecnico di Milano, Italy)*

*Lorenzo Almasio (Politecnico di Milano, Italy)*

*Bortolino Saggin (Politecnico di Milano, Italy)*

*Francesca Esposito (INAF - Osservatorio Astronomico di Capodimonte, Italy)*

*Fabio Cozzolino (University of Naples "Federico II", Italy)*

**14:20 High-accuracy Eddy Current Measurements of Metals**

*Olev Martens (Tallin University of Technology, Estonia)*

*Raul Land (Tallin University of Technology, Estonia)*

*Marek Rist (Tallin University of Technology & Competence Centre ELIKO, Estonia)*

*Andrei Pokatilov (Tallin University of Technology & Metrosert, Estonia)*

**14:40 FISICA (Far Infrared Space Interferometer Critical Assessment)  
Metrological problems and system requirements for interferometric  
observations from space**

*Valerio Antonio Iafolla (Assist in Gravitation and Instrumentation S.r.l. & IAPS - INAF, Italy)*

*Emiliano Fiorenza (Assist in Gravitation and Instrumentation S.r.l. & IAPS - INAF, Italy)*

*Lorenzo Iafolla (Assist in Gravitation and Instrumentation S.r.l., Italy)*

*Carlo Lefevre (Assist in Gravitation and Instrumentation S.r.l. & IAPS - INAF, Italy)*

*Carmelo Magnafico (Institute for Space Astrophysics and Planetary Sciences - National Institute of Astrophysics, Italy)*

*Francesco Santoli (Assist in Gravitation and Instrumentation S.r.l. & IAPS - INAF, Italy)*

*Luigi Spinoglio (Institute for Space Astrophysics and Planetary Sciences - National Institute of Astrophysics, Italy)*

**15:00 The DREAMS experiment on the ExoMars 2016 mission for the study  
of Martian environment during the dust storm season**

*Carlo Bettanini (Center of Studies and Activities for Space (CISAS), Italy)*

*Francesca Esposito (INAF, Osservatorio Astronomico di Capodimonte, Italy)*

*Stefano Debei (Center of Studies and Activities for Space (CISAS), Italy)*

*Cesare Molfese (INAF, Osservatorio Astronomico di Capodimonte, Italy)*



**15:20      The ASD S3000L for the Enhancement of "in Field" Avionic Measurements**

*Ettore De Francesco (SeTeL S.r.l., Italy)*

*Ruggero De Francesco (SeTeL S.r.l., Italy)*

*Fabio Leccese (University of "Roma Tre", Italy)*

*Anna Paggi (ItalConsul S.r.l., Italy)*

**15:40 - 16:00      Afternoon Break**

**Place:** *Palazzo San Domenico*

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**16:00 - 17:40**

**Session 3: Design and characterization of sensors for aerospace**

**Chairs:** *Ruth Dyer (Kansas State University, USA)*

*Sergio Rapuano (University of Sannio, Italy)*

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

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**16:00      A Rad-Hard Multichannel Front-End Readout ASIC for Space Applications**

*Samuel Sordo-Ibáñez (Universidad de Sevilla, Spain)*

*Blanca Piñero-García (Universidad de Sevilla, Spain)*

*Manuel Muñoz-Díaz (Universidad de Sevilla, Spain)*

*Antonio Ragel-Morales (Consejo Superior de Investigaciones Científicas, Spain)*

*Joaquín Ceballos-Cáceres (Consejo Superior de Investigaciones Científicas, Spain)*

*Luis Carranza-González (Universidad de Sevilla, Spain)*

*Servando Espejo-Meana (Universidad de Sevilla & Consejo Superior de Investigaciones Científicas, Spain)*

*Alberto Arias-Drake (Universidad de Sevilla, Spain)*

*Juan Ramos-Martos (Consejo Superior de Investigaciones Científicas, Spain)*

*Jose Miguel Mora-Gutiérrez (Consejo Superior de Investigaciones Científicas, Spain)*

*Miguel Angel Lagos-Florida (Consejo Superior de Investigaciones Científicas, Spain)*

**16:20      Dual-field-of-view Star Sensors Utilizing Optical Tagging Approach by Grating**

*Shaobo Gao (National University of Defence Technology, China)*

*Shijian Lin (National University of Defence Technology, China)*

*Jichun Tan (National University of Defence Technology, China)*

*Haibo Liu (National University of Defence Technology, China)*

*Xiaofeng Wang (National University of Defence Technology, China)*

*Yunjin Chen (Graz University of Technology, Austria)*

**16:40      Implementation of the MEMS-Based Dual-Axis Sun Sensor for Nano Satellites**

*Abhilash Manjunath (Nitte Meenakshi Institute of Technology, India)*

*Saroj Kumar (Nitte Meenakshi Institute of Technology, India)*

*Sandya Srinivasarao (Nitte Meenakshi Institute of Technology, India)*

*Sridevi Tammana Vankata (Indian Space Research Organization, India)*

*Prabhamani Handralu Ramaswamiah (Indian Space Research Organization, India)*

**17:00      Use of Resistive Ladder Sensors for Crack Monitoring During Full Scale Fatigue Test**

*Artur Kurnyta (Air Force Institute of Technology, Poland)*

*Michal Dziendzikowski (Air Force Institute of Technology, Poland)*

*Krzysztof Dragan (Air Force Institute of Technology, Poland)*

**17:20      Testing Last Generation MEMS-based AHRs**

*Alessandro Simonetti (University of Naples "Federico II")*

*Domenico Accardo (University of Naples "Federico II")*

*Domenico De Simone (Axitude s.r.l., Italy)*

*Paolo Calcagni (Axitude s.r.l., Italy)*

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**16:00 - 17:40**

**SS3: Measurement and evaluation of reliability and safety in aerospace applications**

**Chairs:** *Marcantonio Catelani (University of Florence, Italy)*

*Lorenzo Ciani (University of Florence, Italy)*

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

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**16:00      Implementation of Fault Detection and Prediction Capabilities in a Multilevel Current Source Inverter**

*Hector P. Polenta (CIDEI - ITBA, Argentina)*

*Pablo Cossutta (CIDEI - ITBA, Argentina)*

*Asok Ray (Pennsylvania State University, USA)*

**16:20      Evaluation of delaminated area of polymer/Carbon Nanotubes fiber reinforced composites after flexural tests by ESPI**

*Vito Pagliarulo (National Institute of Optics, National Council of Research, Italy)*

*Rosaria Palummo (National Institute of Optics, National Council of Research, Italy)*

*Alessandra Rocco (National Institute of Optics, National Council of Research, Italy)*

*Pietro Ferraro (National Institute of Optics, National Council of Research, Italy)*

*Maria Rosaria Ricciardi (Institute for Composite and Biomedical Materials, National Council of Research, Italy)*

*Vincenza Antonucci (Institute for Composite and Biomedical Materials, National Council of Research, Italy)*

- 16:40 Analysis of Drilled Holes on Carbon Fibre Material with X-ray Computed Tomography**  
*Nadia Kourra (WMG, University of Warwick, UK)*  
*Mark A. Williams (WMG, University of Warwick, UK)*  
*Alex Attridge (WMG, University of Warwick, UK)*  
*Jason Warnett (WMG, University of Warwick, UK)*  
*Stuart Barnes (WMG, University of Warwick, UK)*  
*Aniruddha Gupta (WMG, University of Warwick, UK)*
- 17:00 Why and When Must The Preventive Maintenance be Performed?**  
*Salvatore Bianchi (ItalConsul S.r.l., Italy)*  
*Roberto Paggi (ItalConsul S.r.l., Italy)*  
*Gian Luca Mariotti (ItalConsul S.r.l., Italy)*  
*Fabio Leccese (University of "Roma Tre", Italy)*
- 17:20 A new haptic technology touchscreen: development, characterization and reliability aspects**  
*Marcantonio Catelani (University of Florence, Italy)*  
*Lorenzo Ciani (University of Florence, Italy)*  
*Giovanni Barile (Sirio Panel S.p.A., Italy)*
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- 16:00 - 17:40**  
**SS2 (Part 3): Mechanical and thermal measurements for aerospace**  
**Chairs:** *Enrico Lorenzini (University of Padova, Italy)*  
*Bortolino Saggin (Politecnico di Milano, Italy)*  
**Room:** *Library of Province of Benevento*
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- 16:00 Comparison of visual odometry systems suitable for planetary exploration**  
*Marco Pertile (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)*
- 16:20 A Measurement System for Static Test of Airplane Structure**  
*Piotr Ciecinski (Rzeszow University of Technology, Poland)*  
*Jacek Pieniążek (Rzeszow University of Technology, Poland)*  
*Łukasz Święch (Rzeszow University of Technology, Poland)*
- 16:40 Acceleration Data Acquisition and Processing System for Structural Health Monitoring**  
*Henrik Herranen (Tallin University of Technology, Estonia)*  
*Alar Kuusik (Tallin University of Technology & Competence Centre ELIKO, Estonia)*  
*Tonis Saar (Competence Centre ELIKO, Estonia)*  
*Marko Reidla (Competence Centre ELIKO, Estonia)*  
*Raul Land (Tallin University of Technology, Estonia)*  
*Olev Martens (Tallin University of Technology, Estonia)*  
*Juri Majak (Tallin University of Technology, Estonia)*

**17:00 MarsTEM: the temperature sensor of the DREAMS package onboard Exomars2016**

*Giacomo Colombatti (Center of Studies and Activities for Space (CISAS), Italy)*  
*Sebastiano Chiodini (Center of Studies and Activities for Space (CISAS), Italy)*  
*Enrico Friso (Center of Studies and Activities for Space (CISAS), Italy)*  
*Alessio Aboudan (Center of Studies and Activities for Space (CISAS), Italy)*  
*Carlo Bettanini (Center of Studies and Activities for Space (CISAS), Italy)*  
*Stefano Debei (Center of Studies and Activities for Space (CISAS), Italy)*  
*Francesca Esposito (INAF - Osservatorio Astronomico di Capodimonte, Italy)*

**17:20 Investigating fundamental physics and the space environment with a dedicated Earth-orbiting spacecraft**

*Roberto Peron (Institute for Space Astrophysics and Planetology, Italy)*  
*Valerio 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)*  
*Francesco Santoli (Institute for Space Astrophysics and Planetology, Italy)*  
*Enrico C. Lorenzini (University of Padova, Italy)*  
*Luciano Anselmo (Institute of Information Science and Technologies, Italy)*  
*Carmen Pardini (Institute of Information Science and Technologies, Italy)*

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**20:00 - 22:00**

**Gala Dinner**

**Place:** *Historical Building of Strega Alberti S.p.A.*

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**Friday, May 30**

**08:30 - 09:20**

**Plenary Opening Session**

**Chair:** *Pasquale Arpaia (University of Sannio, Italy)*

**Room:** *Museum of Sannio*

**Optical Clocks for Applications on Ground and in Space**

*Prof. Dr. Uwe Sterr*

*Physikalisch-Technische Bundesanstalt (PTB), Germany*

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**09:30 - 11:10**

**SS4: Sensor systems and information fusion for aerospace applications**

**Chair:** *Domenico Accardo (University of Naples "Federico II", Italy)*

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

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**09:30 Measurement device with learned sensor**

*Jacek Pieniążek (Rzeszow University of Technology, Poland)*

*Piotr Ciecierski (Rzeszow University of Technology, Poland)*

**09:50 Spaceborne LIDAR-based system for pose determination of uncooperative targets**

*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)*

**10:10 Avionics Sensor Fusion for Small Size Unmanned Aircraft Sense-and-Avoid**

*Subramanian Ramasamy (RMIT University - SAMME, Australia)*

*Roberto Sabatini (RMIT University - SAMME, Australia)*

*Alessandro Gardi (RMIT University - SAMME, Australia)*

**10:30 Aircraft Conflict Detection Based on ADS-B Surveillance Data**

*Martina Orefice (CIRA - Italian Aerospace Research Centre, Italy)*

*Vittorio Di Vito (CIRA - Italian Aerospace Research Centre, Italy)*

*Federico Corrado (CIRA - Italian Aerospace Research Centre, Italy)*

*Giancarmine Fasano (University of Naples "Federico II", Italy)*

*Domenico Accardo (University of Naples "Federico II", Italy)*

**10:50 A 5DoF compact optical attitude sensor for spaceborne applications**

*Marco Pisani (INRIM, Italy)*

*Massimo Zucco (INRIM, Italy)*

*Andrea Egidi (INRIM, Italy)*

*Sergio Mottini (Thales Alenia Space, Italy)*

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**09:30 - 11:10**

**SS5 (Part1): Thermal noise and extreme metrology**

**Chairs:** *Innocenzo M. Pinto (University of Sannio, INFN, LVC and KAGRA)*  
*Uwe Sterr (Physikalisch-Technische Bundesanstalt (PTB), Germany)*

**Room:** *BlueHall, Palazzo San Domenico*

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**09:30      The Einstein Telescope**

*Stefanie Kroker (Friedrich-Schiller-Universität Jena, Germany)*  
*Ronny Nawrodt (Friedrich-Schiller-Universität Jena, Germany)*

**09:50      Fluctuation Dissipation at Work: Thermal Noise in Reflective Optical Coatings for GW Detectors**

*Daniel Heinert (Friedrich-Schiller-Universität Jena, Germany)*  
*Gerd Hofmann (Friedrich-Schiller-Universität Jena, Germany)*  
*Ronny Nawrodt (Friedrich-Schiller-Universität Jena, Germany)*

**10:10      The LARES satellite and its minimization of the thermal forces - Invited Speaker**

*Ignazio Ciufolini (University of Salento, Italy)*  
*Antonio Paolozzi (Scuola di Ingegneria Aerospaziale, Italy)*  
*Claudio Paris (Scuola di Ingegneria Aerospaziale, Italy)*  
*Giampiero Sindoni (Scuola di Ingegneria Aerospaziale, Italy)*

**10:30      Optical Quantum Noise in High Sensitivity Measurements**

*Giancarlo Cella (National Institute for Nuclear Physics, Italy)*

**10:50      Noise in physical systems: what to do about it?**

*Luca Gamamaitoni (University of Perugia & INFN Perugia, Italy)*

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**09:30 - 11:10**

**SS6 (Part1): SDR for on-board and ground-based space applications and metrology**

**Chairs:** *Marc Pollina (M3 Systems)*  
*Piero Tognolatti (University of L'Aquila, Italy)*

**Room:** *Library of Province of Benevento*

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**09:30      Software Defined Radio Technology for GNSS Receivers - Invited Speaker**

*Letizia Lo Presti (Politecnico di Torino, Italy)*  
*Emanuela Falletti (Istituto Superiore Mario Boella, Italy)*  
*Mario Nicola (Istituto Superiore Mario Boella, Italy)*  
*Micaela Troglia Gamba (Istituto Superiore Mario Boella, Italy)*

- 10:10      Software-Defined-Radio techniques against Jammers for in car GNSS navigation**  
*Antonio Di Fonzo (Tor Vergata University, Italy)*  
*Mauro Leonardi (Tor Vergata University, Italy)*  
*Gaspare Galati (Tor Vergata University, Italy)*  
*Paola Madonna (Tecnologie nelle Reti e nei Sistemi, Italy)*  
*Luca Sfarzo (Tecnologie nelle Reti e nei Sistemi, Italy)*
- 10:30      SDR GNSS Receivers: a Comparative Overview of Different Approaches**  
*Roberta Falone (Università Politecnica delle Marche, Italy)*  
*Cosimo Stallo (Tor Vergata University, Italy)*  
*Ennio Gambi (Università Politecnica delle Marche, Italy)*  
*Susanna Spinsante (Università Politecnica delle Marche, Italy)*
- 10:50      Software-Defined Satellite Ranging Measurements using Laboratory Signal Analyzer**  
*Alessandro Alilla (Infineon Technologies, Italy)*  
*Alessandro Di Carlofelice (University of L'Aquila, Italy)*  
*Marco Faccio (University of L'Aquila, Italy)*  
*Ilaria Lucreti (University of L'Aquila, Italy)*  
*Piero Tognolatti (University of L'Aquila, Italy)*
- 11:20      Coffee Break**  
**Place:** *Palazzo San Domenico*

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**11:10 - 13:10**

**Poster Session**

**Chairs:** *Maria Riccio (University of Sannio, Italy)*  
*Francesco Lamonaca (University of Calabria, Italy)*  
**Place:** *Palazzo San Domenico*

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**The EGSE for the DREAMS Payload onboard the ExoMars 2016 Space Mission**

*Cesare Molfese (INAF - Osservatorio Astronomico di Capodimonte, Italy)*  
*Pietro Schipani (INAF - Osservatorio Astronomico di Capodimonte, Italy)*  
*Laurent Marty (INAF - Osservatorio Astronomico di Capodimonte, Italy)*  
*Francesca Esposito (INAF - Osservatorio Astronomico di Capodimonte, Italy)*  
*Sergio D'Orsi (INAF - Osservatorio Astronomico di Capodimonte, Italy)*  
*Stefano Debei (Center of Studies and Activities for Space (CISAS), Italy)*  
*Carlo Bettanini (Center of Studies and Activities for Space (CISAS), Italy)*  
*Alessio Aboudan (Center of Studies and Activities for Space (CISAS), Italy)*  
*Giacomo Colombatti (Center of Studies and Activities for Space (CISAS), Italy)*  
*Raffaele Mugnuolo (Italian Space Agency - ASI, Italy)*  
*Ernesto Marchetti (Italian Space Agency - ASI, Italy)*  
*Simone Pirrotta (Italian Space Agency - ASI, Italy)*

### **A Method for Identifying Image Data Coming from Two Optical Channels in A Split Field of View Star Camera**

*Dong Cao (Jinan University, China)*

*Ze Chen (Jinan University, China)*

*Xiaofeng Wang (National University of Defence Technology, China)*

*Shaobo Gao (National University of Defence Technology, China)*

*Jichun Tan (National University of Defence Technology, China)*

*Yunjin Chen (Graz University of Technology, Austria)*

### **A Novel Approach to the Simulation of On-Orbit Rendezvous and Docking Maneuvers in a Laboratory Environment Through the Aid of an Anthropomorphic Robotic Arm**

*Andrea Antonello (Centre of Studies and Activities for Space (CISAS), Italy)*

*Francesco Sansone (Centre of Studies and Activities for Space (CISAS), Italy)*

*Alessandro Francesconi (Centre of Studies and Activities for Space (CISAS), Italy)*

*Ruggero Carli (University of Padova, Italy)*

*Andrea Carron (University of Padova, Italy)*

### **An Infrared Sensor Tx/Rx Electronic Card for Aerospace Applications**

*Fabio Leccese (University of "Roma Tre", Italy)*

*Marco Cagnetti (University of "Roma Tre", Italy)*

*Andrea Ferrone (University of "Roma Tre", Italy)*

*Alessandro Pecora (Institute for Microelectronics and Microsystems - CNR, Italy)*

*Luca Maiolo (Institute for Microelectronics and Microsystems - CNR, Italy)*

### **AFIT's laboratory test equipment to optimise the integrated communication systems for polish military helicopters**

*Andrzej Pazur (Air Force Institute of Technology, Poland)*

*Śławomir Michalak (Air Force Institute of Technology, Poland)*

*Andrzej Szelmanowski (Air Force Institute of Technology, Poland)*

### **A First Study on Prognostic System for Electric Engines Based on Envelope Analysis**

*Maurizio Caciotta (University of "Roma Tre", Italy)*

*Valerio Cerqua (University of "Roma Tre", Italy)*

*Fabio Leccese (University of "Roma Tre", Italy)*

*Sabino Giannetti (University of "Roma Tre", Italy)*

*Ettore De Francesco (SeTeL S.r.l., Italy)*

*Eduardo De Francesco (SeTeL S.r.l., Italy)*

*Nicola Scaldarella (CMD S.p.A., Italy)*

### **Assessment of the Possibility of Comparing the Infrared Thermographs Geometric Resolution Defined by Various Methods**

*Leszek Rozanski (Poznan University of Technology, Poland)*



### **Visual support and interaction for error prevention in aircraft maintenance**

*Gaia Arosio (Consorzio Milano Ricerche)*

*Ilaria Giordani (Consorzio Milano Ricerche)*

*Laura Arieni (Consorzio Milano Ricerche)*

*Francesco Archetti (Consorzio Milano Ricerche & University of Milano - Bicocca, Italy)*

### **Challenges for Aerospace Measurement Systems: Acquisition of Wideband Radio Frequency using Analog-to-Information Converters**

*Pasquale Daponte (University of Sannio, Italy)*

*Luca De Vito (University of Sannio, Italy)*

*Sergio Rapuano (University of Sannio, Italy)*

*Ioan Tudosa (University of Sannio, Italy)*

### **Multi-Triggering and signal extraction for acoustic emissions monitoring**

*Francesco Lamonaca (University of Calabria, Italy)*

*Domenico Luca Carnì (University of Calabria, Italy)*

*Antonio Carrozzini (University of Calabria, Italy)*

*Domenico Grimaldi (University of Calabria, Italy)*

*Renato Sante Olivito (University of Calabria, Italy)*

### **Magnetometer Data Fusion Algorithms Performance in Indoor Navigation**

*Ariela Pizzol Busato (Universidade Estadual de Campinas, Brazil)*

*Pavel Paces (Czech Technical University in Prague, Czech Republic)*

*Jan Popelka (Czech Technical University in Prague, Czech Republic)*

### **Performance Evaluation in terms of Accuracy Positioning of Local Augmentation and Integrity Monitoring Network for Railway Sector**

*Veronica Palma (RadioLabs Consortium, Italy)*

*Pietro Salvatori (University of Roma TRE, Italy)*

*Cosimo Stallo (University of Rome Tor Vergata, Italy)*

*Andrea Coluccia (University of Rome Tor Vergata, Italy)*

*Alessandro Neri (University of Roma TRE, Italy)*

*Francesco Rispoli (Ansaldo STS, Italy)*

### **Software Defined Radio: a Key Technology for Flexibility and Reconfigurability in Space Applications**

*Piero Angeletti (European Space Agency - ESTEC, The Netherlands)*

*Marco Lisi (European Space Agency - ESTEC, The Netherlands)*

*Piero Tognolatti (University of L'Aquila, Italy)*

### **Software Designed GNSS System Emulator**

*Marc Pollina (M3 Systems)*

*Olivier Desenfans (M3 Systems)*

*Raffaele Fiengo (National Instruments)*

*Bertalan Eged (National Instruments)*

### **Diagnosis of aerospace structure defects by a HPC implemented soft computing algorithm**

*Gianni D'Angelo (University of Sannio, Italy)*

*Salvatore Rampone (University of Sannio, Italy)*

### **A Fault Recovery Procedure based on Bayesian Reasoning and Decision Analysis**

*Maria Carmela Vitelli (University of Sannio, Italy)*

*Giuseppina Formato (Consorzio di Ricerca Sistema ad Agenti - CORISA, Italy)*

*Alfredo Vaccaro (University of Sannio, Italy)*

### **Highly Accelerated Life Testing for avionics devices**

*Marcantonio Catelani (University of Florence, Italy)*

*Lorenzo Ciani (University of Florence, Italy)*

### **A free-space method for microwave characterization of materials in aerospace application**

*Adriana Brancaccio (Seconda Università di Napoli, Italy)*

*Giuliana D'Alterio (MBDA ITALIA S.p.A., Italy)*

*Emilio De Stefano (MBDA ITALIA S.p.A., Italy)*

*Lucia Di Guida (MBDA ITALIA S.p.A., Italy)*

*Maurizio Feo (MBDA ITALIA S.p.A., Italy)*

*Salvatore Luce (MBDA ITALIA S.p.A., Italy)*

### **A Review of Spectrally Efficient Modulations for Earth Observation data downlink**

*Pia Addabbo (University of Sannio, Italy)*

*Francesco Antonacchio (ART S.p.A., Italy)*

*Tiziana Beltramonte (University of Sannio, Italy)*

*Maurizio di Bisceglie (University of Sannio, Italy)*

*Fabio Gerace (TEMIS S.r.l., Italy)*

*Generoso Giangregorio (University of Sannio, Italy)*

*Silvia Liberata Ullo (University of Sannio, Italy)*

### **Numerical study of lander effects on DREAMS scientific package measurements**

*Sebastiano Chiodini (Centre of Studies and Activities for Space (CISAS), Italy)*

*Giacomo Colombatti (Centre of Studies and Activities for Space (CISAS), Italy)*

*Marco Pertile (Centre of Studies and Activities for Space (CISAS), Italy)*

*Stefano Debei (Centre of Studies and Activities for Space (CISAS), Italy)*

## **Test of Attitude Control Maneuvers with a Satellite Formation Flight Testbed**

*Andrea Valmorbida (Center of Studies and Activities for Space (CISAS), Italy)*  
*Mattia Mazzucato (Center of Studies and Activities for Space (CISAS), Italy)*  
*Alessio Aboudan (Center of Studies and Activities for Space (CISAS), Italy)*  
*Sergio Tronco (Center of Studies and Activities for Space (CISAS), Italy)*

## **Position and orientation measurement of a fast moving multibody system in ground tests**

*Marco Pertile (Center of Studies and Activities for Space (CISAS), Italy)*  
*Mirco Zaccariotto (Center of Studies and Activities for Space (CISAS), Italy)*  
*Carlo Bettanini (Center of Studies and Activities for Space (CISAS), Italy)*  
*Stefano Debei (Center of Studies and Activities for Space (CISAS), Italy)*

## **Thermo-mechanical design feasibility study of an Imaging Spectrometer for the Jovian System**

*Bortolino Saggin (Politecnico di Milano, Italy)*  
*Diego Scaccabarozzi (Politecnico di Milano, Italy)*  
*Marco Tarabini (Politecnico di Milano, Italy)*  
*Giuseppe Piccioni (Institute for Space Astrophysics and Planetology, Italy)*

## **Data Handling Equipment for Payload sub-systems**

*Maurizio Marchetti (TEMIS S.r.l., Italy)*  
*Luca Marrocchi (TEMIS S.r.l., Italy)*  
*Massimo Spadoni (TEMIS S.r.l., Italy)*  
*Francesco Costa (TEMIS S.r.l., Italy)*  
*Vanni Vinti (TEMIS S.r.l., Italy)*  
*Stefano Debei (Center of Studies and Activities for Space (CISAS), Italy)*  
*Alessio Aboudan (Center of Studies and Activities for Space (CISAS), Italy)*  
*Francesca Esposito (INAF - Osservatorio Astronomico di Capodimonte, Italy)*

## **Design and Development of a Thrust Balance for RF Plasma Thruster Characterization**

*Daniele Pavarin (Center of Studies and Activities for Space (CISAS), Italy)*  
*Fabio Trezzolani (Center of Studies and Activities for Space (CISAS), Italy)*  
*Franco Bosi (Center of Studies and Activities for Space (CISAS), Italy)*  
*Davide Melazzi (Center of Studies and Activities for Space (CISAS), Italy)*  
*Marco Manente (T4I S.r.l., Italy)*  
*Antonio Selmo (RESIA, Italy)*

## **Noise Estimate of Pendular Fabry-Perot through Reflectivity Change**

*Paolo Adesso (University of Salerno, Italy)*  
*Vincenzo Pierro (University of Sannio, Italy)*  
*Giovanni Filatrella (University of Sannio, Italy)*

## **Minimum Noise Optical Coatings for Interferometric Detectors of Gravitational Waves**

*Maria Principe (University of Sannio & INFN, Italy)*

### **Mechanical Loss Characterization at Cryogenic Temperature of a Tungsten Wire: an Automated Measurement System**

*Dan Chen (Institute for Cosmic Ray Research, University of Tokio, Japan)*

*Pasquale Daponte (University of Sannio, Italy)*

*Domenico Grimaldi (University of Calabria, Italy)*

*Gerd Hofmann (Friedrich-Schiller-Universität Jena, Germany)*

*Julius Komma (Friedrich-Schiller-Universität Jena, Germany)*

*Francesco Lamonaca (University of Calabria, Italy)*

*Alfonso Nastro (University of Calabria, Italy)*

*Ronny Nawrodt (Friedrich-Schiller-Universität Jena, Germany)*

*Francesco Picariello (University of Sannio, Italy)*

*Giuseppe Polimeni (University of Calabria, Italy)*

*Maria Riccio (University of Sannio, Italy)*

*Christian Schwarz (Friedrich-Schiller-Universität Jena, Germany)*

*Kazuhiro Yamamoto (Institute for Cosmic Ray Research, University of Tokio, Japan)*

### **An advanced platform providing multi-sources aviation critical weather information**

*Valeria Rillo (CMCC - Division for Impacts on Soil and Coasts, Italy)*

*Maria Paola Manzi (CIRA - Meteo System and Instrumentation Laboratory, Italy)*

*Paola Mercogliano (CMCC - Division for Impacts on Soil and Coasts & CIRA - Meteo System and Instrumentation Laboratory, Italy)*

*Carmela Galdi (University of Sannio, Italy)*

**13:10 - 14:30**

**Lunch**

**Place:** *Second Floor, Palazzo San Domenico*

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**14:30 - 16:10**

**SS7: Test and measurement solutions for aerospace defence and security**

**Chair:** *Leopoldo Angrisani (University of Naples "Federico II", Italy)*

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

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### **14:30 First steps towards an innovative Compressive Sampling Based-THz Imaging System for Early Crack Detection on Aerospace Plates**

*Leopoldo Angrisani (University of Naples "Federico II", Italy)*

*Francesco Bonavolontà (University of Naples "Federico II", Italy)*

*Rosario Schiano Lo Moriello (University of Naples "Federico II", Italy)*

*Antonello Andreone (University of Naples "Federico II", Italy)*

*Roberto Casini (University of Naples "Federico II", Italy)*

*Gianpaolo Papari (University of Naples "Federico II", Italy)*

*Domenico Accardo (University of Naples "Federico II", Italy)*

**14:50     A Contactless Induction System for Battery Recharging of Autonomous Vehicles**

*Leopoldo Angrisani (University of Naples "Federico II", Italy)*

*Guido d'Alessandro (University of Naples "Federico II", Italy)*

*Mauro D'Arco (University of Naples "Federico II", Italy)*

*Domenico Accardo (University of Naples "Federico II", Italy)*

*Giancarmine Fasano (University of Naples "Federico II", Italy)*

**15:10     On the suitability of DRFMs for in-service testing of complex systems for avionic applications**

*Leopoldo Angrisani (University of Naples "Federico II", Italy)*

*Felice Cennamo (University of Naples "Federico II", Italy)*

*Rosario Schiano Lo Mariello (University of Naples "Federico II", Italy)*

*Egidio Caricati (MBDA ITALIA S.p.a., Italy)*

*Gianluigi Ferrara (MBDA ITALIA S.p.a., Italy)*

*Maurizio Feo (MBDA ITALIA S.p.a., Italy)*

**15:30     Miniaturized Fiber Bragg Grating Spectrometer**

*Stefano Marchetti (MATE s.r.l., Italy)*

*Fabiano Tuccillo (MATE s.r.l., Italy)*

**15:50     Accelerated Life Tests of a New Optocoupler for Aerospace Application**

*Gregorio Andria (Politecnico di Bari, Italy)*

*Attilio Di Nisio (Politecnico di Bari, Italy)*

*Valeria L. Scarano (Politecnico di Bari, Italy)*

*Maurizio Spadavecchia (Politecnico di Bari, Italy)*

*Matteo Bregoli (Optoelettronica Italia S.r.l., Italy)*

*Matteo Franceschi (Optoelettronica Italia S.r.l., Italy)*

*Nicola Tavernini (Optoelettronica Italia S.r.l., Italy)*

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**14:30 - 16:10**

**SS5 (Part2): Thermal noise and extreme metrology**

**Chairs:** *Ignazio Ciufolini (University of Salento, Italy)*

*Innocenzo M. Pinto (University of Sannio, INFN, LVC and KAGRA)*

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

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**14:30     Thermal Noise, Suspensions and New Materials - Invited Speaker**

*Giles Hammond (University of Glasgow, UK)*

*Sheila Rowan (University of Glasgow, UK)*

**14:50     Thermal Noise in Optical Reference Resonators - Invited Speaker**

*Uwe Sterr (Physikalisch-Technische Bundesanstalt (PTB), Germany) et al.*

**15:10 Thermal noise of silicon based grating reflectors for high-precision metrology**

*Stefanie Kroker (Friedrich-Schiller-Universität Jena, Germany)*

*Ernst-Bernhard Kley (Friedrich-Schiller-Universität Jena & Fraunhofer IOF, Germany)*

*Andreas Tunnemann (Friedrich-Schiller-Universität Jena & Fraunhofer IOF, Germany)*

**15:30 A gentle nodal suspension for measurements of the acoustic attenuation in materials**

*Elisabetta Cesarini (INFN Roma Tor Vergata, Italy)*

*Matteo Lorenzini (INFN Roma Tor Vergata & University of Rome "Tor Vergata", Italy)*

*Gianpietro Cagnoli (Laboratoire des Materiaux Avances, France)*

*Francesco Piergiovanni (INFN Firenze & University of Urbino "Carlo Bo", Italy)*

**15:50 The AdCoat project Coatings for gravitational antennas of second and third generation**

*Maurizio Canepa (University of Genoa, Italy)*

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**14:30 - 16:10**

**SS6 (Part2): SDR for on-board and ground-based space applications and metrology**

**Chairs:** *Piero Tognolatti (University of L'Aquila, Italy)*

*Marc Pollina (M3 Systems)*

**Room:** *Library of Province of Benevento*

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**14:30 SDR for space systems: overview and perspectives - Invited Speaker**

*Laurent Franck (Télécom Bretagne - Institut Mines Télécom, France)*

**15:10 Cost effective emulation of geostationary satellite channels by means of software-defined radio**

*Huyen Chi Bui (Télécom Bretagne - Institut Mines Télécom, France)*

*Laurent Franck (Télécom Bretagne - Institut Mines Télécom, France)*

**15:30 ADS-B signals reception: a Software Defined Radio approach**

*Emilio G. Piracci (Tor Vergata University, Italy)*

*Gaspare Galati (Tor Vergata University, Italy)*

*Marco Pagnini (Tor Vergata University, Italy)*

**15:50 Alma Mater Ground Station Transceiver**

*Marco Bosco (University of Bologna, Italy)*

*Paolo Tortora (University of Bologna, Italy)*

*Davide Cinarelli (ALMA Space S.r.l., Italy)*

**16:10 - 16:30**

**Afternoon Break**

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**16:30 - 18:10**

**SS8 - Antennas and systems for signal detection in aerospace**

**Chairs:** *Marco Laracca (University of Cassino and Southern Lazio, Italy)*

*Vincenzo Quaranta (Italian Aerospace Research Centre, CIRA, Italy)*

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

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**16:30      Modular, Customisable, Accomodation-Friendly Antenna System for Satellite Avionics**

*Maria Alberica Saporetto (Microwave Vision Italy, Italy)*

*Andrea Giacomini (Microwave Vision Italy, Italy)*

*Lars Jacob Foged (Microwave Vision Italy, Italy)*

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*Geatano Marrocco (University of "Tor Vergata", Italy)*

*Marco Sabbadini (ESA-ESTEC, The Netherlands)*

**16:50      Performace Analysis of Acoustic Antennas**

*Orsola Petrella (Italian Aerospace Research Centre, CIRA, Italy)*

*Salvatore Ameduri (Italian Aerospace Research Centre, CIRA, Italy)*

*Vincenzo Quaranta (Italian Aerospace Research Centre, CIRA, Italy)*

*Giovanni Betta (University of Cassino and Southern Lazio, Italy)*

*Marco Laracca (University of Cassino and Southern Lazio, Italy)*

**17:10      NARMA: New Radar Architectures for Air Traffic Management and Metereology**

*Aniello Buonanno (SELEX Electronic Systems, Italy)*

*Michele D'Urso (SELEX Electronic Systems, Italy)*

*Ettore Flavio Meliaddò (SESM S.c.a.r.l., Italy)*

*Marcello Ascione (SESM S.c.a.r.l., Italy)*

**17:30      Classification of Future Aeronautical Communication Signals**

*Doris Bao (University of Sannio, Italy)*

*Pasquale Daponte (University of Sannio, Italy)*

*Luca De Vito (University of Sannio, Italy)*

*Sergio Rapuano (University of Sannio, Italy)*

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**16:30 - 18:10**

**SS9 - Telemetry systems for space metrology**

**Chairs:** *Maurizio di Bisceglie (University of Sannio, Italy)*

*Fabio Gerace (TEMIS S.r.l., Italy)*

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

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**16:30 From Mbps to Gbps: Evolution of Payload Data Handling and Transmission System for future Earth Observation Missions**

*Michelangelo L'Abbate (Thales Alenia Space Italia, Italy)*

*Paolo Venditti (Thales Alenia Space Italia, Italy)*

*Carlo Svara (Thales Alenia Space Italia, Italy)*

*Flaviano Bagaglini (Thales Alenia Space Italia, Italy)*

*Rita Roscigno (Thales Alenia Space Italia, Italy)*

**16:50 Stereo Camera for satellite application**

*Emanuele Simioni (CNR - Institute for Photonics and Nanotechnologies, Italy)*

*Vania Da Deppo (CNR - Institute for Photonics and Nanotechnologies, Italy)*

*Giampiero Nalletto (University of Padova, Italy)*

*Gabriele Cremonese (INAF - Astronomical Observatory Padova, Italy)*

*Cristina Re (INAF - Astronomical Observatory Padova, Italy)*

**17:10 PEGASO for low-cost Payload Data Transmission Services**

*Francesco Antonacchio (ART S.p.A., Italy)*

*Maurizio Di Bisceglie (University of Sannio, Italy)*

*Carmela Galdi (University of Sannio, Italy)*

*Vincenzo Galdi (University of Sannio, Italy)*

*Fabio Gerace (TEMIS S.r.l., Italy)*

*Alberto Mennella (ART S.p.A., Italy)*

**17:30 High performance, high configurability modular telemetry system for launch vehicles**

*Luca Marrocchi (TEMIS S.r.l., Italy)*

*Diego Biz (TEMIS S.r.l., Italy)*

*Maurizio Marchetti (TEMIS S.r.l., Italy)*

*Andrea Cecconelli (TEMIS S.r.l., Italy)*

*Daniele Loperfido (TEMIS S.r.l., Italy)*

*Mirko Paggi (TEMIS S.r.l., Italy)*

*Matteo Baldacchini (TEMIS S.r.l., Italy)*

*Daniele Barbagallo (ESA - ESRIN, Italy)*

**17:50 The Microwave Radiometers on-board MetOp Second Generation satellites**

*Salvatore D'Addio (European Space Agency - ESTEC, The Netherlands)*

*Ville Kangas (European Space Agency - ESTEC, The Netherlands)*

*Ulf Klein (European Space Agency - ESTEC, The Netherlands)*

*Marc Loiselet (European Space Agency - ESTEC, The Netherlands)*

*Graeme Mason (European Space Agency - ESTEC, The Netherlands)*



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**16:30 - 18:10**

**SS10 - Photonic sensors for aerospace**

**Chairs:** *Piero Persico (Magnaghi Aeronautica, Italy)*

*Antonio Concilio (Italian Aerospace Research Centre, CIRA, Italy)*

**Room:** *Library of Province of Benevento*

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**16:30      In-line high sensitivity tapered-fiber Mach-Zehnder interferometer for aerospace sensing applications - Invited Speaker**

*Nan-Kuang Chen (National United University, Taiwan)*

*Jheng-Jyun Wang (National United University, Taiwan)*

*Wood-Hi Cheng (National Yat-Sen University, Taiwan)*

**16:50      Radiation Tolerant Fiber Optic Thermo-Hygrometers for Aerospace Applications**

*Gaia Berruti (University of Sannio, Italy)*

*Marco Consales (University of Sannio, Italy)*

*Antonello Cutolo (University of Sannio, Italy)*

*Andrea Cusano (University of Sannio, Italy)*

*Giovanni Breglio (University of Naples "Federico II", Italy)*

*Salvatore Buontempo (National Institute for Nuclear Physics, Italy)*

*Michele Giordano (Istituto per i Materiali Compositi e Biomedici, CNR, Italy)*

*Alajos Makovec (University of Debrecen, Hungary)*

**17:10      A Laser Obstacle Warning and Avoidance System for Manned and Unmanned Aircraft**

*Roberto Sabatini (RMIT University - SAMME, Australia)*

*Alessandro Gardi (RMIT University - SAMME, Australia)*

*Subramanian Ramasamy (RMIT University - SAMME, Australia)*

*Mark A. Richardson (Cranfield University - DAUK, UK)*

**17:30      Investigating strain transfer in polymer coated structures for the health monitoring of aerospace vehicles using polymer photonic waveguides**

*Graham Wild (RMIT University, Australia)*

*Steven Hinckley (Edith Cowan University, Australia)*

*Bronwyn Fox (Deakin University, Australia)*

*Kevin Magniez (Deakin University, Australia)*

*Scott Wade (Swinburne University of Technology, Australia)*

*Greg Carman (Henry Samueli School of Engineering, UCLA, USA)*

**17:50 Investigation on modal noise in ZBLAN fiber**

*Andrea Tozzi (INAF - Osservatorio Astrofisico di Arcetri, Italy)*

*Ernesto Oliva (INAF - Osservatorio Astrofisico di Arcetri, Italy)*

*Marcella Iuzzolino (INAF - Osservatorio Astrofisico di Arcetri, Italy)*

*Nicoletta Sanna (INAF - Osservatorio Astrofisico di Arcetri, Italy)*

*Fabrizio Massi (INAF - Osservatorio Astrofisico di Arcetri, Italy)*

*Gilberto Falcini (INAF - Osservatorio Astrofisico di Arcetri, Italy)*

*Mauro Sozzi (INAF - Osservatorio Astrofisico di Arcetri, Italy)*

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**18:15 - 18:30**

**Closing and awards ceremony**

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

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