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## Welcome to 2<sup>nd</sup> IEEE International Workshop on Metrology for AeroSpace

On behalf of the organizing committee, we cordially welcome you to the 2<sup>nd</sup> IEEE Workshop on Metrology for AeroSpace (MetroAeroSpace).

The second edition of MetroAeroSpace will be held again in Benevento, a small town in Southern Italy with a significant historical heritage. 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 touristic 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 6th to 8th centuries.

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 thanks to Italian Air Force for supporting with several actions the Workshop. This year Italian Air Force offers us the static exhibition of the System "Strix C" by the 16th Wing and speakers from Group for Aerospace Engineering of Flight Test Department.

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.

We received 157 abstracts from all over the world, with an increase of about 8% compared with the first edition. Despite the increase of the received abstracts, we decided to keep almost the same number of presentations, to make room to the Round Table on "*Opportunities and Projects for Metrology in Aerospace*", which can represent a further occasion to share ideas and start collaborations. A special thank to Patrizia Tavella and Stefano Debei for the organization of this Round Table.

The technical program encompasses several events and activities. The keynote speeches will be held by experts in the field of metrology for aerospace; Dr Shant Kenderian, The Aerospace Corporation, USA, will present the *Nondestructive Evaluation as a Tool for Mission Success*, Dr Marcello Coradini, ESA / JPL, will describe the *Measurements in Space and their Impact on Mission Design*.

We are honored to have them as plenary speakers and thank them in advance for coming to our conference to share their knowledge and experiences with us.

This edition of the Workshop includes for the first time a full day of tutorials offering four subjects;

- *Space Environment and Mission Requirements*, Stefano Debei, University of Padova, Italy
- *Design of a Deep Space Science Mission*, Marcello Coradini, ESA / JPL
- *Launch Systems*, Enrico Flamini, ASI - Italian Space Agency, Italy
- *Astrodynamics: an Overview*, Enrico Lorenzini, University of Padova, Italy

Furthermore, attendees have the possibility to follow a full day of seminars at Italian Air Force Academy on *Military Metrology for AeroSpace*.

With the aim of providing a common ground for researches to share their findings about the metrology for aerospace, the Workshop this year was improved by adding a significant number of Special Sessions. A first reason is that so many are the application fields of the metrology for aerospace that a single track could have been too much dispersive. A second reason is that, in spite of a centralized research address definition, a spontaneous aggregation of well-focused themes has been gathered, with specific aim of providing a forum of specific debate very close to the single research field. Therefore, several application-oriented Special Sessions have been organized this year. We wish to thank the organizers of these Special Sessions for their cooperation and support to the Workshop organization.

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,  
Italy



**General Co-Chair**  
Robert RASSA,  
Raytheon,  
United States of America



**Technical Program Co-Chair**  
Stephen DYER,  
Kansas State University,  
United States of America



**Technical Program Co-Chair**  
Alfonso FARINA  
IEEE BoG AESS VP for Industry Relations,  
CTIF Industry Advisory Chair

## **MetroAeroSpace 2015 Committee**

### **HONORARY CHAIR**

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

### **GENERAL CHAIRS**

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Paolo Carbone, *University of Perugia, Italy*

Luigi Carrino, *Distretto Aerospaziale Campania, Italy*

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Pietro Ferraro, *INO-CNR, Italy*

Jesus Garcia, *University Carlos III, Spain*

Domenico Giunta, *ESA - ESTEC, Netherlands*

Maria S. Greco, *University of Pisa, Italy*

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Satoshi Ikezawa, *Waseda University, Japan*

Stephen Johnson, *ARAMIS Engineering, US*

Karel Kudela, *Institute for Experimental Physics, Slovak Rep.*

Chin E. Lin, *National Cheng Kung University, Taiwan*

Walter Matta, *Vitrociset, Italy*

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

Pavel Paces, *Czech Technical University, Czech*

Jacek Pieniazek, *Rzeszow University of Technology, Poland*

Vasily Popovich, *Russian Academy of Science, Russia*

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Artur L. Ribeiro, *Instituto Superior Técnico - Universidade de Lisboa, Portugal*

Roberto Sabatini, *RMIT University, Australia*

Nicolas Sklavos, *Technological Educational Institute of Western Greece, Greece*

Patrizia Tavella, *INRIM, Italy*  
Fabrizio Francesco Vinaccia, *MDBA Italia, Italy*  
Graham Wild, *RMIT University, Australia*  
Ruqiang Yan, *P.R. China*  
Ho-Soon Yang, *KRISS, Republic of Korea*  
Mark Yeary, *University of Oklahoma, US*  
David Zucconi, *SAB Aerospace, Italy*

#### **LOCAL COMMITTEE**

Pasquale Arpaia, *University of Naples Federico II, Italy*  
Eulalia Balestrieri, *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*  
Carmine Sementa, *University of Sannio, Italy*  
Silvia Ullo, *University of Sannio, Italy*  
Judy Scharmann (IEEE AESS Executive Assistant)

#### **LOCAL ARRANGEMENTS**



## MetroAeroSpace 2015 Keynote Speakers

### Shant Kenderian

*Fellow of the American Society for Nondestructive Testing (ASNT)  
Manager, Materials Physics and Nondestructive Evaluation Section  
at The Aerospace Corporation, El Segundo, CA*



*Keynote Thursday, June 4<sup>th</sup>, 2015*

**"Nondestructive Evaluation as a Tool for Mission Success"**

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### Marcello Coradini

*ESA / JPL*



*Keynote Friday, June 5<sup>th</sup>, 2015*

**"Measurements in Space and their Impact on Mission Design"**

## Program Schedule - Tutorials - Wednesday, June 3<sup>rd</sup>, 2015

Tutorials are organized and managed by Stefano Debei and Patrizia Tavella.

PROGRAM SCHEDULE - Wednesday, 3 <sup>rd</sup> June, 2015	
9:00 - 18:00	REGISTRATION - Palazzo San Domenico
10:00 - 11:30	<b>SESSION 1</b> <b>Space Environment and Mission Requirements</b> Stefano Debei, <i>Center of Studies and Activities for Space (CISAS), Italy</i>  Blue Hall, Palazzo San Domenico
11:30 - 12:00	COFFEE BREAK
12:00 - 13:30	<b>SESSION 2</b> <b>Design of a Deep Space Science Mission</b> Marcello Coradini, <i>ESA / JPL</i>  Blue Hall, Palazzo San Domenico
13:30 - 14:30	LUNCH
14:30 - 16:00	<b>SESSION 3</b> <b>Launch Systems</b> Enrico Flamini, <i>ASI - Italian Space Agency, Italy</i>  Blue Hall, Palazzo San Domenico
16:00 - 16:30	COFFEE BREAK
16:30 - 18:00	<b>SESSION 4</b> <b>Aerodynamics: an Overview</b> Enrico Lorenzini, <i>University of Padova, Italy</i>  Blue Hall, Palazzo San Domenico
19:00 - 21:00	WELCOME PARTY - Palace of the Prefecture of Benevento

Tutorial participation is free of charge for all the attendees.

Lunch and coffee breaks are at your expense.

## Program Schedule - Thursday, June 4<sup>th</sup>, 2015

PROGRAM SCHEDULE - Thursday, 4 <sup>th</sup> June, 2015			
8:30 - 18:00	REGISTRATION – Palazzo San Domenico		
9:00 - 9:30	Welcome Addressess- Museum of Sannio		
9:30 - 10:30	Invited Speech - Dr. Shant Kenderian Museum of Sannio		
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>SS1 (Part 1)</b> Navigation Technologies and Related Applications	<b>SS2</b> Complex Systems Operational Availability: Measurements, Methodologies and Requirements	<b>SS3 (Part1)</b> Relativistic Metrology
12:40 - 14:00	LUNCH - Second Floor, Palazzo San Domenico		
14:00 - 14:40	Round Table “Opportunities and Projects for Metrology in Aerospace” Museum of Sannio		
14:40 - 16:00	<b>SS1 (Part 2)</b> Navigation Technologies and Related Applications	<b>SS4</b> Aerospace Photonics Sensors	<b>SS3 (Part 2)</b> Relativistic Metrology
16:00 - 16:20	COFFEE BREAK - Palazzo San Domenico		
16:20 - 18:00	<b>SS5</b> Measurement for Improving Quality, Reliability And Safety in Aerospace Applications	<b>SS6</b> Non Destructive Testing and Evaluation for Aerospace	<b>SS3 (Part 3)</b> Relativistic Metrology
20:00 - 22:00	GALA DINNER - Restaurant “La Fortezza”, Torrecuso (BN)		



## Program Schedule - Friday, June 5<sup>th</sup>, 2015

PROGRAM SCHEDULE - Friday, 5 <sup>th</sup> June, 2015			
<b>8:30 - 18:00</b>	<b>REGISTRATION</b> – Palazzo San Domenico		
<b>9:00 - 9:50</b>	<b>Invited Speech</b> - Dr. Marcello Coradini Museum of Sannio		
	Red Hall Palazzo San Domenico	Blue Hall Palazzo San Domenico	Library of Province of Benevento
<b>10:00 - 11:40</b>	<b>SS7</b> Wave Chaos Metrology and Modeling in EMC and Acoustics	<b>SS8</b> Systems and Measurements for Aerial Vehicles, Intelligent Transportation and Automatic (online) Inspection	<b>SS9 (Part1)</b> Measurement and Instrumentation for Aerospace Application
<b>11:40 - 13:15</b>	<b>COFFEE BREAK - POSTER SESSION</b> - Palazzo San Domenico		
<b>13:15 - 14:30</b>	<b>LUNCH</b> - Second Floor, Palazzo San Domenico		
<b>14:30 - 16:10</b>	<b>SS10</b> Meteorological Sensors and Sensor Systems for Flight Support	<b>SS11 (Part 1)</b> Sensors, Measurements, and Information Fusion for Air Space Security and Defense	<b>SS9 (Part 2)</b> Measurement and Instrumentation for Aerospace Application
<b>16:10 - 16:30</b>	<b>COFFEE BREAK</b> - Palazzo San Domenico		
<b>16:30 - 18:10</b>	<b>Session on Advanced Measurement Systems and Sensors for Aerospace</b>	<b>SS11 (Part 2)</b> Sensors, Measurements, and Information Fusion for Air Space Security and Defense	<b>SS9 (Part 3)</b> Measurement and Instrumentation for Aerospace Application
<b>18:15 - 18:30</b>	<b>CLOSING AND AWARD CEREMONY</b> - Blue Hall, Palazzo San Domenico		

## Social Functions

### WELCOME PARTY

The Welcome Party will be held on Wednesday, June 3<sup>rd</sup>, at the end of the Tutorials, in the Palace of the Prefecture of Benevento (Corso Garibaldi).

A buffet with traditional and regional cuisine will be offered to all MetroAeroSpace 2015 attendees. During the party a musical entertainment will be organized.

### GALA DINNER

The MetroAeroSpace 2015 Gala Dinner will be held on Thursday, June 4<sup>th</sup>, at “**La Fortezza**” restaurant, in Torrecuso. The area around Torrecuso stretches along the eastern side of the Taburno-Camposauro regional Park. The vegetation all around is an uninterrupted sequence of vineyards, woods, and small glades that are blessed by sunlight from dawn to dusk, when Mount Taburno stretches its shadow.

During the dinner a music entertainment is included.

The buses for “La Fortezza” restaurant leave on Thursday, June 4<sup>th</sup>, from Benevento Bus Terminal (see map) at **19:15**.

For attendees hosted at **Grand Hotel Italiano**, the bus will leave at **19:20** in front of the hotel.



## Location



**Museum of Sannio**  
*Piazza Santa Sofia*

Welcome Addresses  
Plenary Sessions



**Palazzo San Domenico**  
(Red Hall, Blue Hall)  
*Piazza Guerrazzi*

Registration  
Conference Rooms  
Poster Session  
Lunches and Coffee Breaks  
Exhibitors



Library of Province of Benevento  
*Corso Garibaldi*

Conference Room



**Palace of the Prefecture of Benevento**  
*Corso Garibaldi*

Welcome Reception  
Static exhibition of the STRIX-C

## Wednesday, June 3<sup>rd</sup>

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**10:00 – 18:00**

**Registration**

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### **Tutorials**

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

Patrizia Tavella, *National Institute of Metrological Research, Italy*

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

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**10:00 – 11:30**

**Session 1**

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### **Space Environment and Mission Requirements**

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

**11:30 – 12:00**

**Coffee Break**

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**12:00 – 13:30**

**Session 2**

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### **Design of a Deep Space Science Mission**

Marcello Coradini, *ESA / JPL*

**13:30 – 14:30**

**Lunch**

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**14:30 – 16:00**

**Session 3**

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### **Launch Systems**

Enrico Flamini, *ASI - Italian Space Agency, Italy*

**16:00 – 16:30**

**Coffee Break**

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**16:30 – 18:00**

**Session 3**

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### **Astrodynamics: an Overview**

Enrico Lorenzini, *University of Padova, Italy*

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**19:00 – 22:00**

**Welcome Reception**

**Place:** *Palace of the Prefecture of Benevento*

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## Thursday, June 4<sup>th</sup>

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**08:30 – 18:00**

**Registration**

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**09:00 – 09:30**

**Welcome Addresses**

**Room:** *Museum of Sannio*

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**09:30 – 10:30**

**Plenary Opening Session**

**Chair:** Ruth Dyer, *Kansas State University, US*

**Room:** *Museum of Sannio*

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### **Nondestructive Evaluation as a Tool for Mission Success**

*Shant Kenderian, PhD*

*Fellow of the American Society for Nondestructive Testing (ASNT)*

*Manager, Materials Physics and Nondestructive Evaluation Section at The Aerospace Corporation, El Segundo, CA*

**10:30 – 11:00**

**Coffee Break**

**Place:** *Palazzo San Domenico*

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**11:00 – 12:40**

**SS1 (Part 1): Special Session on Navigation Technologies and Related Applications**

**Chairs:** Bingbo Cui, *Southeast University, China*

*Antonio Paolozzi, Sapienza University of Rome & Centro Fermi, Italy*

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

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### **11:00    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*

### **11:20    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*

**11:40 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 Vultaggio, *Italian Institute of Navigation, Italy*

**12:00 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*

**12:20 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*

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**11:00 – 12:40**

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

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

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

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**11:00 Operational Availability (Ao) of Warships**

Angelo Dell'Isola, *Orizzonte Sistemi Navali S.p.A., Italy*  
Armando Vendittelli, *Orizzonte Sistemi Navali S.p.A., Italy*

**11:15 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*

**11:30 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*

**11:45 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*

**12:00 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*

**12:15 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*

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**11:00 – 12:40**

**SS3 (Part 1): Special Session on Relativistic Metrology**

**Chairs:** Roberto Peron, *Institute for Space Astrophysics and Planetology, Italy*

Enrico Lorenzini, *Center of Studies and Activities for Space (CISAS), Italy*

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

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**11:00 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 Magnifico, *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*



**11:20      Orbital predictions for the LARES satellite mission**

Giampiero 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*

**11:40      Fundamental physics in the Field of the Earth with the LASER Ranged 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*

**12:00      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 Tusciano, *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*

**12:20      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*

**12:40 – 14:00**

**Lunch**

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

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**14:00 – 14:40**

**Round Table “Opportunities and Projects for Metrology in Aerospace”**

**Room:** *Museum of Sannio*

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**14:30 – 17:30**

**SYSTECON’s OPUS SUITE USER GROUP ITALIA\***

\* "Opus Suite" User Group meeting - please mail to [setel@setelgroup.it](mailto:setel@setelgroup.it) to attend it

**Room:** *Palazzo San Domenico, “Sala del Consiglio”*

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**14:30 - 15:30** The updated releases of OPUS Suite (OPUS10, SIMLOX, CATLOC)

**15:30 - 16:30** Logistic support data: optimization and integration with OPUS Suite

**16:30 - 17:30** Questions, answers, discussion

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**14:40 – 16:00**

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

**Chairs:** Bingbo Cui, *Southeast University, China*

Ferdinando Dolce, *Italian Air Force, Italy*

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

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**14:40 Experimental Activity for 3D Coordinates Mensuration from COSMO-SkyMed SAR Data through Radargrammetry: 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*

**15:00 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*

**15:20 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 Rotiroti, *ANTARES, Italy*  
 Antonella Simonetti, *ANTARES, Italy*  
 Alberto Colombo, *ANTARES, Italy*  
 Pascale Defraigne, *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*  
 Janusz Uzycki, *ELPROMA, Poland*  
 Krzysztof Borgulski, *ELPROMA, Poland*  
 Piotr Olbrysz, *ELPROMA, Poland*  
 Jerzy 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*

## **15:40     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*

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**14:40 – 16:00**

**SS4: Special Session on Aerospace Photonics Sensors**

**Chairs:** Graham Wild, *RMIT University, Australia*

Matthew Marino, *RMIT University, Australia*

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

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**14:40 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 Panzeri, *Politecnico di Milano, Italy*

Marco Tarabini, *Politecnico di Milano, Italy*

Giuseppe Piccioni, *Institute for Space Astrophysics and Planetology, Italy*

**15:00 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*

**15:20 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*

**15:40 Optimising the Design of a Pressure Transducer for Aircraft Altitude Measurement using Optical Fibre Bragg Grating Sensors**

Graham Wild, *RMIT University, Australia*

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**14:40 – 16:00**

**SS3 (Part 2): Special Session on Relativistic Metrology**

**Chairs:** Roberto Peron, *Institute for Space Astrophysics and Planetology, Italy*

Enrico Lorenzini, *Center of Studies and Activities for Space (CISAS), Italy*

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

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**14:40 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*

**15:00      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*

**15:20      GALILEO with high eccentricity and equipped by Accelerometers: a tool for GR experiments**

Francesco Vespe, *Italian Space Agency, Italy*

**15:40      Pure gravitational orbits of GNSS - the tool for the relativistic space geodesy**

Janusz B. Zieliński, *Institute of Navigation, Airforce Academy, Poland*

**16:00 – 16:20      Coffee Break**

**Place:** *Palazzo San Domenico*

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**16:20 – 18:00**

**SS5: Special Session on Measurement for Improving Quality, Reliability And Safety in Aerospace Applications**

**Chairs:** Marcantonio Catelani, *University of Florence, Italy*  
Lorenzo Ciani, *University of Florence, Italy*

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

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**16:20      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 Camatto, *Compagnia Generale per lo Spazio, Italy*  
Tim Wittrock, *indi-IT GmbH, Germany*  
Bernhard Bruenjes, *OHB System AG, Germany*  
Luigi Glielmo, *University of Sannio, Italy*

**16:40      Thermovacuum Tests on TIGRIsat structure**

Claudio Paris, *Sapienza University of Rome and Centro Fermi, Italy*  
Maurizio Parrisè, *Sapienza University of Rome, Italy*  
Whatiq Aziz Allawi, *Ministry of Science and Technology, Iraq*

**17:00 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 Innac, *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*

**17:20 A testing method for the Lunar Rover path planning performance**

Zaihua Yang, *Beijing Institute of Spacecraft Environment Engineering, China*

Wangmin Yi, *Beijing Institute of Spacecraft Environment Engineering, China*

Li Tao, *Beijing Institute of Spacecraft Environment Engineering, China*

Tingyao Pan, *Information Engineering University, China*

**17:40 Haptic Touchscreen Display for Avionics: demonstrator characterization measurements**

Marcantonio Catelani, *University of Florence, Italy*

Lorenzo Ciani, *University of Florence, Italy*

Giovanni Barile, *Sirio Panel S.p.A., Italy*

Fabio Liberatori, *Sirio Panel S.p.A., Italy*

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**16:20 – 18:00**

**SS6: Special Session on Non Destructive Testing and Evaluation for Aerospace**

**Chairs:** Helena G. Ramos, *University of Lisboa, Portugal*

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

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

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**16:20 INVITED TALK**

**Microwave and Millimeter Wave Nondestructive Testing for Metrology of Aerospace Structures**

Reza Zoughi, *Missouri University of Science & Technology, US*

**17:00 Lock-In Thermography 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 Acierno, *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*

**17:20 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 D. Adewale, *University of Perugia, Italy & Newcastle University, UK*

Gui Yun Tian, *Newcastle University, UK*

**17:40 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*

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**16:20 – 18:00**

**SS3 (Part 3): Special Session on Relativistic Metrology**

**Chairs:** Roberto Peron, *Institute for Space Astrophysics and Planetology, Italy*

Enrico Lorenzini, *Center of Studies and Activities for Space (CISAS), Italy*

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

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**16:20 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*

**16:40 Dark Matter: a Problem in Relativistic Metrology?**

Luca Lusanna, *INFN Firenze, Italy*

**17:00 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*

**17:20 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*

**17:40 Switching times in Fabry-Perot Measurements**

Giovanni Filatrella, *University of Sannio, Italy*

Paolo Addesso, *University of Salerno, Italy*

Vincenzo Pierro, *University of Sannio, Italy*

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**20:00 – 22:00**

**Gala Dinner**

**Restaurant *La Fortezza* – Torrecuso (BN)**

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## Friday, June 5<sup>th</sup>

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**08:30 – 18:00**

**Registration**

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**09:00 – 09:50**

**Plenary Opening Session**

**Chair:** Stephen Dyer, *Kansas State University, US*

**Room:** *Museum of Sannio*

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**Measurements in space and their impact on mission design**

*Marcello Coradini*

*ESA / JPL*

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**10:00 – 11:40**

**SS7: Special Session on Wave Chaos Metrology and Modeling in EMC and Acoustics**

**Chairs:** Innocenzo M. Pinto, *University of Sannio, Italy*

Olivier Legrand, *University of Nice Sophia Antipolis, France*

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

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**10:00      Application of the Random Coupling Model to Lossy Ports in Complex Enclosures**

Bisrat D. Addissie, *University of Maryland, US*

John C. Rodgers, *University of Maryland, US*

Thomas M. Antonsen, *University of Maryland, US*

**10:20      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*

**10:40      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*

**11:00 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*

**11:20 Three-Dimensional Polarimetry for Wave Chaos Description**

Maurizio Migliaccio, *University of Naples Parthenope, Italy*

José 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*

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**10:00 – 11:40**

**SS8: Special Session on Systems and Measurements for Aerial Vehicles, Intelligent Transportation and Automatic (online) Inspection**

**Chairs:** Francesco Adamo, *Politecnico di Bari, Italy*

Maurizio Spadavecchia, *Politecnico di Bari, Italy*

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

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**10:00 Space-aided Autonomous Sensor System for Hydrogeological Disaster Management**

Francesco Fedi, *Selex ES, Italy*

Sabino Cacucci, *Selex ES, Italy*

**10:20 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*

**10:40 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*

**11:00 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*

**11:20 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*

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**10:00 – 11:40**

**SS9 (Part 1): Special Session on Measurement and Instrumentation for Aerospace Application**

**Chairs:** Marco Pertile, *Center of Studies and Activities for Space (CISAS), Italy*

Enrico Lorenzini, *Center of Studies and Activities for Space (CISAS), Italy*

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

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**10:00 An Adaptive Method of Antenna Measurements in Outdoor Range**

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

**10:20 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*

**10:40 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*

**11:00 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*

**11:20 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*

**11:40 Coffee Break**  
**Place:** *Palazzo San Domenico*

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**11:40 – 13:15**

**Poster Session**

**Chairs:** Lorenzo Ciani, *University of Florence, Italy*  
Francesco Lamonaca, *University of Calabria, Italy*

**Place:** *Palazzo San Domenico*

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**PS-1 Hail detection in Naples urban area using singlepolaritazion X-band weather radar: preliminary results**

Vincenzo Capozzi, *University of Naples "Parthenope", Italy*  
Vincenzo Mazzearella, *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*

**PS-2 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*

**PS-3 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*

**PS-4 Metrology for drone and drone for metrology: a review of measurement systems on 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*

**PS-5 An Adaptive Estimation Algorithm for GNSS Simulators Calibration by Using the Least Mean Squares Method**

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

- PS-6      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 Lucchesi, *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*
- PS-7      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*
- PS-8      A transportable optical lattice clock**  
 Stefan Vogt, *Physikalisch-Technische Bundesanstalt (PTB), Germany*  
 Sebastian Häfner, *Physikalisch-Technische Bundesanstalt (PTB), Germany*  
 Jacopo Grotti, *Physikalisch-Technische Bundesanstalt (PTB), Germany*  
 Silvio Koller, *Physikalisch-Technische Bundesanstalt (PTB), Germany*  
 Uwe Sterr, *Physikalisch-Technische Bundesanstalt (PTB), Germany*  
 Christian Lisdat, *Physikalisch-Technische Bundesanstalt (PTB), Germany*
- PS-9      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*
- PS-10      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*

- PS-11 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*
- PS-12 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*
- PS-13 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*
- PS-14 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*
- PS-15 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*
- PS-16 Operational Flow of Twin Satellite Mission**  
 Kamal Lamichhane, *Nitte Meenakshi Institute of Technology, India*  
 Kiran M, *Nitte Meenakshi Institute of Technology, India*  
 Kannat T, *Nitte Meenakshi Institute of Technology, India*  
 Divyanshu Sahay, *Nitte Meenakshi Institute of Technology, India*  
 S Sandya, *Nitte Meenakshi Institute of Technology, India*
- PS-17 Modeling and Filter Algorithm Analysis of All-Optical Atomic Spin Gyroscope's Random Drift**  
 Sheng Zou, *Southeast University, China*  
 Hong Zhang, *Southeast University, China*  
 Xi-Yuan Chen, *Southeast University, China*

- PS-18 Extended Coning Algorithms for Angular Rate Input**  
 Chuan Y. Tang, *Southeast University, China*  
 Xi-Yuan Chen, *Southeast University, China*  
 Bingbo Cui, *Southeast University, China*
- PS-19 4D-8PSK Trellis Coded Modulation: Implementation on Xilinx Virtex-6 FPGA**  
 Pia Addabbo, *University of Sannio, Italy*  
 Tiziana Beltramonte, *University of Sannio, Italy*  
 Maurizio di Bisceglie, *University of Sannio, Italy*  
 Carmela Galdi, *University of Sannio, Italy*  
 Generoso Giangregorio, *University of Sannio, Italy*  
 Silvia Liberata Ullo, *University of Sannio, Italy*
- PS-20 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*  
 Bruno Andrea François, *National Institute of Metrological Research, Italy*  
 Alberto Battisti, *Selex-ES, Italy*  
 Marina Gioia, *Selex-ES, Italy*  
 Aurelio Borella, *Selex-ES, Italy*
- PS-21 Low-cost relative navigation sensors for miniature spacecraft and drones**  
 Francesco Sansone, *Center of Studies and Activities for Space (CISAS), Italy*  
 Lorenzo Olivieri, *Center of Studies and Activities for Space (CISAS), Italy*  
 Alessandro Francesconi, *University of Padova, Italy*
- PS-22 Particle Filter Based Multi-Sensor Data Fusion Techniques for RPAS Navigation and Guidance**  
 Francesco Cappello, *RMIT University, Australia*  
 Roberto Sabatini, *RMIT University, Australia*  
 Subramanian Ramasamy, *RMIT University, Australia*  
 Matthew Marino, *RMIT University, Australia*
- PS-23 A multi-antenna approach for UAV's attitude determination**  
 Angelo Consoli, *Eclexys Sagl, Switzerland*  
 Jaouhar Ayadi, *Eclexys Sagl, Switzerland*  
 Germano Bianchi, *National Institute for Astrophysics - IRA, Italy*  
 Salvatore Pluchino, *National Institute for Astrophysics - IRA, Italy*  
 Francesco Piazza, *Saphyrion Sagl, Switzerland*  
 Rami Baddour, *Saphyrion Sagl, Switzerland*  
 M. Eulàlia Parés, *CTTC, Spain*  
 José Navarro, *CTTC, Spain*  
 Ismael Colomina, *CTTC, Spain*

Atilio Gameiro, *Brightcom Ida, Portugal*  
Vassileios Tsetsos, *Mobics SA, Greece*  
Odysseas Sekkas, *Mobics SA, Greece*  
Theodoros Gatsos, *Mobics SA, Greece*  
Roberto Navoni, *Laser Navigation srl, Italy*

**PS-24 Shape-based defect classification for Non Destructive Testing**

Gianni D'Angelo, *University of Sannio, Italy*  
Salvatore Rampone, *University of Sannio, Italy*

**PS-25 Integration of satellite observations and ground-based measurements for landfill monitoring**

Pia Addabbo, *University of Sannio, Italy*  
Maurizio di Bisceglie, *University of Sannio, Italy*  
Mariano Focareta, *Mediterranean Agency for Remote Sensing and Environmental Control (MARSec), Italy*  
Carmine Maffei, *Mediterranean Agency for Remote Sensing and Environmental Control (MARSec), Italy*  
Silvia Liberata Ullo, *University of Sannio, Italy*

**PS-26 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*  
Aurimas Bezaras, *Birdmanas Ltd., Lithuania*

**PS-27 Environmental tests and Optical measurements in the validation process of TFT-LCD for avionics applications**

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*

**PS-28 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*

**PS-29 Integrated Measurement System for UAV**

Jacek Pieniążek, *Rzeszow University of Technology, Poland*  
Piotr Ciecinski, *Rzeszow University of Technology, Poland*  
Łukasz Walek, *Rzeszow University of Technology, Poland*  
Dariusz Nowak, *Rzeszow University of Technology, Poland*



**PS-30     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*

**PS-31     Free-Space Antenna Field/Pattern Retrieval in non-Ideal Reverberation Chambers**

Vincenzo Fiumara, *University of Basilicata, Italy*  
Adele Fusco, *University of Sannio, Italy*  
Grazia Iadarola, *University of Salerno, Italy*  
Vincenzo Matta, *University of Salerno, Italy*  
Innocenzo M. Pinto, *University of Sannio, Italy*

**PS-32     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*

**13:15 – 14:30**

**Lunch**

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

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**14:30 – 16:10**

**SS10: Special Session on Meteorological Sensors and Sensor Systems for Flight Support**

**Chairs:** Paola Mercogliano, *CIRA, Italian Aerospace Research Centre, Italy*  
Carmela Galdi, *University of Sannio, Italy*

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

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**14:30     Performance Assessment of Weather Forecast Augmentation Based on Airborne Sensors**

Roberto Palumbo, *CIRA, Italian Aerospace Research Centre, Italy*  
Paola Mercogliano, *CIRA, Italian Aerospace Research Centre, Italy*  
Antonio Vitale, *CIRA, Italian Aerospace Research Centre, Italy*  
Maria Paola Manzi, *CMCC, Euro-Mediterranean Centre for Climate Change, Italy*

**14:50 Short Range Fog Forecasting by applying Data Mining Techniques**

Gaetano Zazzaro, *CIRA, Italian Aerospace Research Centre, Italy*  
Gianpiero 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*

**15:10 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*

**15:30 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*

**15:50 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*

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**14:30 – 16:10**

**SS11 (Part 1): Special Session on Sensors, Measurements, and Information Fusion for Air Space Security and Defense**

**Chairs:** Domenico Accardo, *University of Naples Federico II, Italy*  
Leopoldo Angrisani, *University of Naples Federico II, Italy*

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

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**14:30 Infrared Signature - Theory and example of practical measurement methods**

Francesco Soldani, *Italian Air Force, Italy*

- 14:50 Unifying Cooperative and Non-Cooperative UAV Sense-and-Avoid**  
 Subramanian Ramasamy, *RMIT University, Australia*  
 Roberto Sabatini, *RMIT University, Australia*
- 15:10 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*
- 15:30 Polarization Distortions of the Terrestrial X-band Radar Side Lobe's Signals Received Be Satellite Equipment**  
 Viacheslav A. Gromov, *Tomsk State University of Control Systems and Radioelectronics, Russia*  
 Mikhail V. Mironov, *Tomsk State University of Control Systems and Radioelectronics, Russia*  
 Gegman S. Sharygin, *Tomsk State University of Control Systems and Radioelectronics, Russia*
- 15:50 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*

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**14:30 – 16:10**

**SS9 (Part 2): Special Session on Measurement and Instrumentation for Aerospace Application**

**Chairs:** Marco Pertile, *Center of Studies and Activities for Space (CISAS), Italy*  
 Enrico Lorenzini, *Center of Studies and Activities for Space (CISAS), Italy*

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

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- 14:30 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*
- 14:50 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*

- 15:10      MicroMIMA, a miniaturized spectrometer for planetary observation**  
 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*
- 15:30      The effects of tube deformities on the dynamic calibration of a tubing system**  
 Matthew Marino, *RMIT University, Australia*  
 Alex Fisher, *RMIT University, Australia*  
 Roberto Sabatini, *RMIT University, Australia*
- 15:50      Echo Simulator Systems For Exomars 2016 Radar Doppler Altimeters Tests**  
 Giuseppe Cirillo, *CO.RI.S.T.A., Consorzio di Ricerca su Sistemi di Telerilevamento Avanzati, Italy*  
 Massimo Gagliardi, *CO.RI.S.T.A., Consorzio di Ricerca su Sistemi di Telerilevamento Avanzati, Italy*  
 Gianfranco Palmese, *CO.RI.S.T.A., Consorzio di Ricerca su Sistemi di Telerilevamento Avanzati, Italy*  
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 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*  
 Maria Rosaria Santovito, *CO.RI.S.T.A., Consorzio di Ricerca su Sistemi di Telerilevamento Avanzati, Italy*  
 Giovanni Alberti, *CO.RI.S.T.A., Consorzio di Ricerca su Sistemi di Telerilevamento Avanzati, Italy*  
 Stefania Mattei, *CO.RI.S.T.A., Consorzio di Ricerca su Sistemi di Telerilevamento Avanzati, Italy*  
 Pasquale Pepe, *Thales Alenia Space Italia, Italy*

**16:10 – 16:30      Coffee Break**  
**Place:** *Palazzo San Domenico*

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**16:30 – 18:10**

**Session on Advanced Measurement Systems and Sensors for Aerospace**

**Chairs:** Alfonso Farina, *IEEE BoG AESS VP for Industry Relations, CTIF Industry Advisory Chair*  
Sergio Rapuano, *University of Sannio, Italy*

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

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**16:30      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*  
Gaetano Tartaglione, *University of Naples "Parthenope", Italy*

**16:50      Research Status and Prospect of Space Metrology**

Liu Min, *Beijing Oriental Institute of Measurement & Test, China*  
Xu Si-wei, *Beijing Oriental Institute of Measurement & Test, China*  
Su Xin-guang, *Beijing Oriental Institute of Measurement & Test, China*  
Lu Run-xi, *Beijing Oriental Institute of Measurement & Test, China*

**17:10      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*

**17:30      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*

**17:50      Embedded RTOS Implementation for Twin Nano-Satellite STUDSAT-2**

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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Ranjith H. G, *Nitte Meenakshi Institute of Technology, India*  
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**16:30 – 18:10**

**SS11 (Part 2): Special Session on Sensors, Measurements, and Information Fusion for Air Space Security and Defense**

**Chairs:** Domenico Accardo, *University of Naples Federico II, Italy*

Leopoldo Angrisani, *University of Naples Federico II, Italy*

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

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**16:30 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*

**16:50 Compact Millimeter Wave FMCW InSAR for UAS Indoor Navigation**

Antonio Fulvio Scannapieco, *University of Naples Federico II, Italy*

Alfredo Renga, *University of Naples Federico II, Italy*

Antonio Moccia, *University of Naples Federico II, Italy*

**17:10 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*

Francesco Verde, *University of Naples Federico II, Italy*

Ivan Iudice, *Italian Aerospace Research Centre, Italy*

**17:30 Evaluating GNSS Integrity Augmentation Techniques for Cooperative and Non-Cooperative Sense-and-Avoid**

Roberto Sabatini, *RMIT University, Australia*

Terry Moore, *University of Nottingham, UK*

Chris Hill, *University of Nottingham, UK*

**17:50 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*

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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 Lazzareschi 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*

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**16:30 – 18:10**

**SS9 (Part 3): Special Session on Measurement and Instrumentation for Aerospace Application**

**Chairs:** Marco Pertile, *Center of Studies and Activities for Space (CISAS), Italy*  
Enrico Lorenzini, *Center of Studies and Activities for Space (CISAS), Italy*  
**Room:** *Library of Province of Benevento*

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**16:30     Optical Flow Sensor based Localization System for a Cooperating Spacecraft Testbed**

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*

**16:50     A Sounding Rocket As A Test Bench For Cost Effective Measurements**

Matteo Poli, *Nimbus Project, Italy*  
Nicola Bressanin, *Nimbus Project, Italy*  
Alberto Madonna, *Nimbus Project, Italy*  
Mattia Pezzato, *Nimbus Project, Italy*  
Eugenio Di Iorio, *Nimbus Project, Italy*  
Andrea Mastrangelo, *Nimbus Project, Italy*  
Federico Rodighiero, *Nimbus Project, Italy*  
Giovanni Venturelli, *Nimbus Project, Italy*  
Stefano Debei, *Center of Studies and Activities for Space (CISAS), Italy*  
Carlo Bettanini, *Center of Studies and Activities for Space (CISAS), Italy*

**17:10     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 Silvestri, *Thales Alenia Space Italy, Italy*  
Fabio Di Giorgio, *Thales Alenia Space Italy, Italy*  
Mathias von Alberti, *Airbus DS GmbH, Germany*  
Stephen Diel, *Airbus DS GmbH, Germany*  
Sebastian Schwarz, *Airbus DS GmbH, Germany*

**17:30 MarsTEM field test in Mars analog environment**

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*  
Matteo Poli, *Center of Studies and Activities for Space (CISAS), Italy*  
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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*

**17:50 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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**18:15 – 18:30**

**Closing and Awards Ceremony**

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

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