

# TABLE OF CONTENT

|  |    |
|--|----|
| Welcome Message from the Chairpersons .....                | 2  |
| MetroAeroSpace 2018 Committee .....                        | 5  |
| MetroAeroSpace 2018 Keynote Speakers.....                  | 7  |
| Awards and Distinctions.....                               | 8  |
| Social Functions.....                                      | 10 |
| Maps .....   | 11 |
| MetroAeroSpace 2018 Supports .....                         | 12 |
| MetroAeroSpace 2018 Patronages .....                       | 14 |
| Program Schedule - Wednesday, June 20 .....                | 16 |
| Program Schedule - Wednesday, June 20 .....                | 17 |
| Program Schedule – Thursday, June 21.....                  | 18 |
| Program Schedule - Friday, June 22 .....                   | 19 |
| Wednesday, June 20 – Military Metrology for AeroSpace..... | 20 |
| Wednesday, June 20 - Tutorials - Track 1.....              | 21 |
| Wednesday, June 20 - Tutorials - Track 2.....              | 22 |
| Thursday, June 21 - Technical Sessions .....               | 23 |
| Friday, June 22 - Technical Sessions .....                 | 41 |



## Welcome Message from the Chairpersons

On behalf of the whole Organizing Committee, we cordially welcome you to the 5<sup>th</sup> IEEE Workshop on Metrology for AeroSpace (**MetroAeroSpace**) in Roma, Italy.

This city is renowned for its long history, its prestigious monuments and its welcoming social and cultural life. We think this makes it the ideal venue for the 2018 edition of MetroAeroSpace and we hope that our attendees will enjoy the conference, the city and its surroundings!

The increasing number of scientists attending MetroAeroSpace and coming from fields that can be very far from engineering, led to a positive hybridization of the conference that now presents the state of the art of the research in measurement for aerospace. The community joining the MetroAeroSpace year after year, in fact, has in common the interest in measurement, although from different points of view.

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.

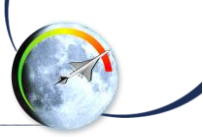
Special thanks goes to Athena Srl for their day by day collaboration and precious support in the many complex details of the conference.

A special thanks to Italian Navy and Air Force for supporting with several actions the Workshop.

The MetroAeroSpace Technical Program consists of 25 oral and poster sessions scheduled over three 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 fifth Workshop 168 abstracts from all over the world. Due to the time limits of the conference, only 133 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.

Authors of all the above contributions are also welcome to submit an extended version to the Special Issue of three Journals.



The technical program encompasses several events and activities. The keynote speeches will be held by experts in the field of metrology for aerospace;

Prof. Ephraim Suhir, Portland State University, OR, USA will describe the *Probabilistic Design for Reliability of Instrumentation for Aerospace Applications*, Prof. Stefano Vitale, University of Trento, Italy, will present *Sub-femto-g free-fall with LISA Pathfinder*.

We are honoured 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;

- "**Military Metrology for AeroSpace**", is organized by *Associazione Arma Aeronautica - Centro Studi Militari Aeronautici (CESMA)* and *AFCEA Naples Chapter*, with the Patronage of *AFCEA EUROPE* and *AFCEA Rome Chapter*, Roma (Italy), **June 20<sup>th</sup>, 2018**.
- a half day of **tutorials** offering three subjects:
  - Introduction to Metamaterials, Vincenzo Galdi, *University of Sannio, Italy*;
  - Metamaterials for Measurements, Alessio Monti, *Niccolò Cusano University, Italy*;
  - Measurements on Metamaterials, Mirko Barbuto, *Niccolò Cusano University, Italy*.

These events give more opportunities to contact Institutions and experts operating in different fields of Metrology for AeroSpace.

MetroAeroSpace will include a Demo Session, organized as "Live Demonstration" track to allow an interactive and tangible form of presentation, which is quite different from the oral and poster sessions. Conference delegates are invited to experience the demonstrations directly, to interact with, play with, and challenge them. For this edition, we received four *live demonstration* proposals, during which presenters will have the opportunity to show direct proof of their working systems and to create a lasting impression.

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. We wish to thank the organizers of these SpecialSessions for their cooperation and support to the Workshop organization.

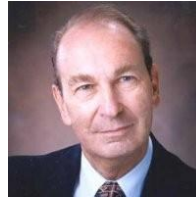
Several Awards offered by International Institution and Companies will be assigned, in particular to young researchers. In particular, the best contributions will be awarded, including the "*Best Paper Award*", the "*Best Paper Presented by a Young Researcher*" offered by SETEL Company, the "*Best Paper Authored and Presented by a Woman*" offered by FederLazio, the "*Best Demonstration Award*" offered by AFCEA Chapter of Naples, the "*Best Paper of the Poster Session*" offered by CESMA - Centro Studi Militari Aeronautici and the "*Best Radar Paper Award*" offered by IEEE AES Chapter.



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, USA*



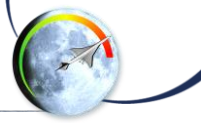
**Technical Program Co-Chair**  
Stephen DYER  
*Kansas State University, USA*



**Technical Program Co-Chair**  
Fabio LECCESE  
*Roma Tre University, Italy*



**Technical Program Co-Chair**  
Roberto PERON  
*IAPS-INAF, Italy*



## MetroAeroSpace 2018 Committee

### HONORARY CHAIR

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

### GENERAL CHAIRS

Pasquale Daponte, *University of Sannio, Italy*

Robert Rassa, *Raytheon, US*

### TECHNICAL PROGRAM CO-CHAIRS

Stephen Dyer, *Kansas State University, US*

Fabio Leccese, *University of ROMA TRE, Italy*

Roberto Peron, *IAPS-INAF, Italy*

### PUBLICATION CHAIR

Francesco Picariello, *University of Sannio, Italy*

### TREASURY CHAIR

Cosimo Stallo, *University of Rome "Tor Vergata", Italy*

### INTERNATIONAL PROGRAM COMMITTEE

Domenico Acierno, *University of Naples, Italy*

Carlo Albanese, *Telespazio, Italy*

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

Erik P. Blasch, *US Air Force Research Lab, US*

Paolo Carbone, *University of Perugia, Italy*

Luigi Carrino, *Distretto Aerospaziale Campania, Italy*

Goutam Chattopadhyay, *NASA, US*

Xiyuan Chen, *Southeast University, China*

Marcello Coradini, *ASI/JPL*

Stefano Debei, *University of Padua, Italy*

Murat Efe, *Ankara University, Turkey*

Pietro Ferraro, *ISASI-CNR, Italy*

Jesus Garcia, *University Carlos III, Spain*

Domenico Giunta, *ESA - ESTEC, Netherlands*

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

Richard Hochberg, *Lanmark Technologies, US*



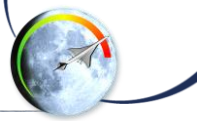
Satoshi Ikezawa, *Waseda University, Japan*  
Stephen Johnson, *ARAMIS Engineering, US*  
Marian K Kazimierczuk, *Wright State University, US*  
Karel Kudela, *Institute for Experimental Physics, Slovak Rep.*  
Chin E. Lin, *National Cheng Kung University, Taiwan*  
Walter Matta, *Vitrociset, Italy*  
Daniele Mortari, *Texas A&M University, US*  
Aldo Napoli, *Centre de reserche sur les Risques et les Crises, France*  
Pavel Paces, *Czech Technical University, Czech*  
William Prosser, *NASA, US*  
Jacek Pieniasek, *Rzeszow University of Technology, Poland*  
Marco Pisani, *INRIM, Italy*  
Vasily Popovich, *Russian Academy of Science, Russia*  
Helena G. Ramos, *Instituto Superior Técnico - Universidade de Lisboa, Portugal*  
Artur L. Ribeiro, *Instituto Superior Técnico - Universidade de Lisboa, Portugal*  
Roberto Sabatini, *RMIT University, Australia*  
Nicolas Sklavos, *University of Patras, 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**

Enrico Silva, *University of ROMA TRE, Italy*  
Salvatore Andrea Sciuto, *University of ROMA TRE, Italy*  
Andrea Scorza, *University of ROMA TRE, Italy*  
Nicola Pompeo, *University of ROMA TRE, Italy*  
Kostiantyn Torokhtii, *University of ROMA TRE, Italy*  
Emanuele Piuze, *La Sapienza University, Rome, Italy*  
Judy Scharmann, *IEEE AESS Executive Assistant*

#### **LOCAL ARRANGEMENTS**





---

## MetroAeroSpace 2018 Keynote Speakers

**Stefano Vitale**

*University of Trento, Italy*



Keynote - Thursday, June 21, 2018

**“Sub-femto-g free-fall with LISA Pathfinder”**

---

**Ephraim Suhir**

*Portland State University, USA*



Keynote - Friday, June 22, 2018

**“Probabilistic Design for Reliability of Instrumentation  
for Aerospace Applications”**



## Awards and Distinctions

### BEST CONFERENCE PAPER AWARD

**Description:** To recognize the most outstanding paper presented at the annual IEEE International Workshop on Metrology for AeroSpace.

**The award is sponsored by Thales Alenia Space Italia**



### BEST PAPER PRESENTED BY A WOMAN

**Description:** An exclusive plaque will be given for the best paper authored and presented by a woman.

**The award is sponsored by FederLazio**



### BEST PAPER PRESENTED BY A YOUNG RESEARCHER

**Description:** An exclusive plaque will be given for the best paper authored and presented by a researcher younger than 35 years.

**The award is sponsored by SeTeI**



### BEST PAPER OF THE POSTER SESSION

**Description:** An exclusive plaque will be given for the best poster presented.

**The award is sponsored by CESMA**



### BEST DEMO

**Description:** To highlight the importance of the Demo Session, AFCEA Chapter of Naples offers an exclusive plaque that will be given for the best demo.

**The award is sponsored by AFCEA Naples Chapter**



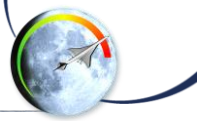
### BEST RADAR PAPER AWARD

**Description:** To recognize the most outstanding paper presented at the annual IEEE International Workshop on Metrology for AeroSpace as part of the *Special Session on Metrology for Radar Systems*.

**The award is sponsored by IEEE AES Italy Chapter**







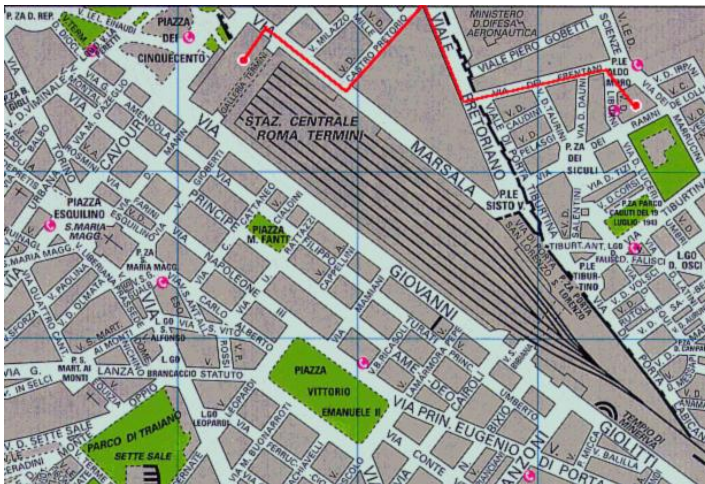
# Location

The Workshop sessions will take place in the **Italian National Research Council Headquarters**, Piazzale Aldo Moro 7, Rome.



## HOW TO REACH US

Cnr headquarters are about 1,5 Km from Termini Station (15-minutes walk following the itinerary indicated in this map).





## Social Functions

### WELCOME PARTY

The Welcome Party will be held at "**La Casa dell'Aviatore**" on **June 20, 2018 - 19.00.**



**Address: *Casa dell'Aviatore***  
Viale dell'Università, 20  
Rome



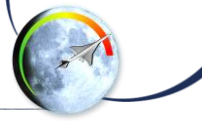
### GALA DINNER

The Gala Dinner will be held at "**Caserma Pio IX**" on **June 21, 2018 - 19.00.**

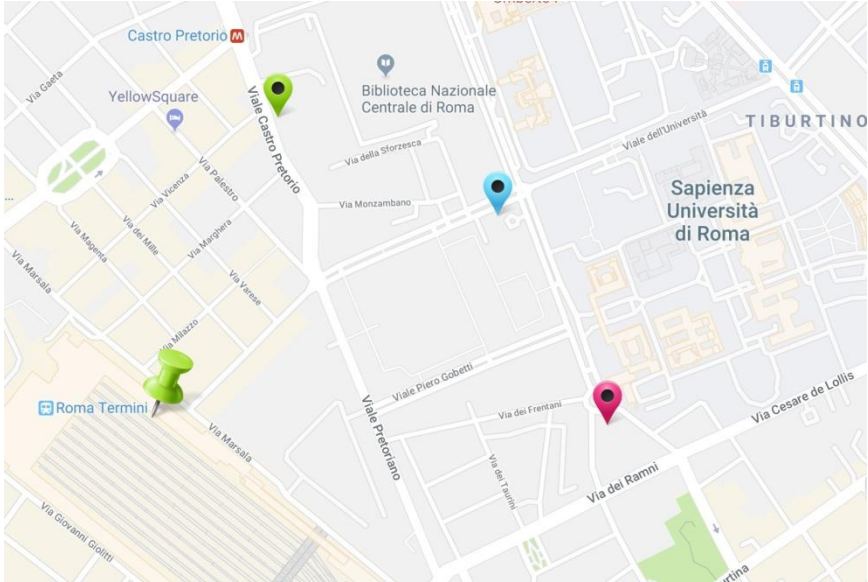


**Address: *Caserma Pio IX***  
Viale Castro Pretorio, 95  
Rome





## Maps



**CNR Headquarter**  
*Piazzale Aldo Moro, 7*  
**WORKSHOP VENUE**



**ROMA TERMINI**  
**RAILWAY STATION**



**Casa dell'Aviatore**  
*Viale dell'Università, 20*  
**MILITARY METROLOGY FOR AEROSPACE**  
**WELCOME PARTY**

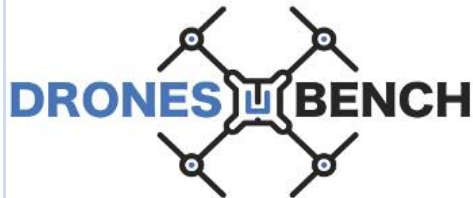


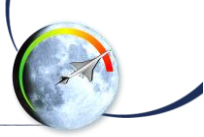
**Caserma Pio IX**  
*Viale Castro Pretorio, 95*  
**GALA DINNER**



## MetroAeroSpace 2018 Supports

### PLATINUM SPONSORS





## GOLD SPONSOR



## SILVER SPONSORS



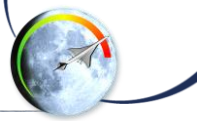
## BRONZE SPONSORS





## MetroAeroSpace 2018 Patronages





## CIPMaG

Centro Interdipartimentale  
del Politecnico di Bari  
"Magna Grecia" – Taranto





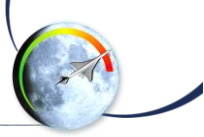
## Program Schedule - Wednesday, June 20

### **Military Metrology for AeroSpace**

CASA DELL'AVIATORE, ROME (ITALY)

|                      |   |
|----------------------|---|
| <b>08:45 - 08:55</b> | <b>WELCOME ADDRESSES</b><br>Lt. Gen. IAF (r) Pietro Finocchio, <i>CESMA Director</i><br>Prof. Pasquale Daponte, <i>University of Sannio</i>   |
| <b>09:00 - 09:20</b> | <b>GENERAL KEYNOTE</b><br><b>Gen. D. A. Fabio MOLteni, Italian Air Force Logistic Command</b><br>"IAF 5th Generation Logistic"  |
| <b>09:25 - 09:45</b> | <b>Brig. Gen. Maurizio ASTOLFI, Italian Air Force Logistic Command</b><br>"The logistic support evolution for the Italian Air Force fleet - The choice of maintenance policy to optimize aircraft availability and resources" |
| <b>09:50 - 10:10</b> | <b>CC (AN) Paolo TRESCA, Italian Navy</b><br>"Life Cycle Management: Life Cycle Cost of Warships in Naval Programs of Italian Navy"   |
| <b>10:15 - 10:35</b> | <b>Lt. Col. Walter VILLADEI, Italian Air Force Staff</b><br>"The Evolution of the Aerospace Sector"   |
| <b>10:35 - 10:55</b> | <b>COFFEE BREAK</b>   |
| <b>11:00 - 11:20</b> | <b>Eng. Leonardo MAZZINI, Thales Alenia Space Italia</b><br>"Logistical Support Scenarios of Space Military Assets"   |
| <b>11:25 - 11:45</b> | <b>Eng. Angelo DELL'ISOLA, Orizzonti Sistemi Navali</b><br>"Life Cycle Management: Operational Availability (Ao) in Naval Programs of Italian Navy"   |
| <b>11:50 - 12:10</b> | <b>Eng. Eduardo DE FRANCESCO, FederLazio Aerospazio e Difesa</b><br>"Life Cycle Management: Use of the European Aerospace & Defence (ASD) Data Model to standardize LCM data sources"   |
| <b>12:15 - 12:55</b> | <b>Speakers Round Table and Conclusions</b><br><b>Chairman Lt. Gen. IAF Basilio Di Martino, National Armament Directorate</b>   |
| <b>13:00 - 14:00</b> | <b>LUNCH</b>  |





## Program Schedule - Wednesday, June 20

### TUTORIALS

| <b>TUTORIALS</b><br><b>TRACK 1</b><br>Place: <i>Casa dell'Aviatore</i> |  |
|--|--|
| <b>14:00 - 15:00</b>   | <b>Life Cycle Management</b><br><i>Attilio Parri, Systecon</i> |
| <b>15:00 - 15:20</b>   | <b>COFFEE BREAK</b>  |
| <b>15:20 - 18:00</b>   | <b>Opus Suite User Group</b>                                   |

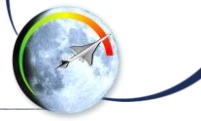
| <b>TUTORIALS</b><br><b>TRACK 2</b><br>Place: <i>CNR Headquarter, Marconi Hall</i> |   |
|---|---|
| <b>15:00 - 17:15</b>  | <b>REGISTRATION</b><br>Place: CNR Headquarter   |
| <b>15:00 - 15:45</b>  | <b>Introduction to Metamaterials</b><br><i>Vincenzo Galdi</i><br><i>University of Sannio</i>      |
| <b>15:45 - 16:30</b>  | <b>Metamaterials for Measurements</b><br><i>Alessio Monti</i><br><i>Niccolò Cusano University</i> |
| <b>16:30 - 17:15</b>  | <b>Measurements on Metamaterials</b><br><i>Mirko Barbuto</i><br><i>Niccolò Cusano University</i>  |

|                      |  |
|----------------------|--|
| <b>19:00 - 21:00</b> | <b>WELCOME RECEPTION</b><br><i>Casa dell'Aviatore, Viale dell'Università, 20, Rome</i> |
|----------------------|--|



## Program Schedule – Thursday, June 21

|               |  |   |  |   |                     |
|---------------|--|---|--|---|---------------------|
| 8:30 - 17:30  | <b>REGISTRATION</b> – National Research Council (CNR) Headquarter              |   |  |   |                     |
| 9:00 - 9:30   | <b>Welcome Addresses</b> – CNR Headquarter - Auditorium                        |   |  |   |                     |
| 9:30 - 10:30  | <b>Invited Speech</b> - Dr. Stefano Vitale<br>CNR Headquarter - Auditorium     |   |  |   |                     |
| 10:30 - 11:00 | <b>COFFEE BREAK</b> - CNR Headquarter  |   |  |   |                     |
|               | CNR Headquarter<br>Auditorium  | CNR Headquarter<br>Marconi Hall                           | CNR Headquarter<br>Giacomello Hall   | CNR Headquarter<br>Bisogno Hall                                   | Digital<br>Corridor |
| 11:00 - 12:40 | General Session<br>PART I  | Metrology for<br>Future Space<br>Exploration<br>PART I    | Non Destructive<br>Testing and<br>Evaluation for<br>Aerospace                              | GARFIELD<br>Green,<br>Accessible and<br>Safe Grassy<br>Airfields. | Poster              |
| 12:40 - 14:00 | <b>LUNCH</b> - CNR Headquarter   |   |  |   |                     |
| 14:00 - 15:40 | Metrology and<br>Instrumentation<br>for Unmanned<br>Aerial Vehicles<br>PART I  | Metrology for<br>Future Space<br>Exploration<br>PART II   | Terrestrial and In-<br>flight Verification of<br>the GNC systems for<br>Aerospace Vehicles | Relativistic<br>Metrology   |                     |
| 15:40 - 16:00 | <b>COFFEE BREAK</b> - CNR Headquarter  |   |  |   | Exhibitors          |
| 16:00 - 17:40 | Metrology and<br>Instrumentation<br>for Unmanned<br>Aerial Vehicles<br>PART II | Metrology for<br>Future Space<br>Exploration.<br>PART III | General Session<br>PART II   | General Session<br>PART III                                       |                     |
| 19:00 - 23:00 | <b>GALA DINNER</b><br>Caserma Pio IX<br>Viale Castro Pretorio, 95 - Rome       |   |  |   |                     |



## Program Schedule - Friday, June 22

|               |  |   |  |   |
|---------------|--|---|--|---|
| 8:30 - 16:00  | <b>REGISTRATION – National Research Council (CNR) Headquarter</b>                                |   |  |   |
| 9:00 - 9:50   | <b>Invited Speech - Dr. Ephraim Suhir</b><br><i>CNR Headquarter - Auditorium</i>                 |   |  |   |
|               | <i>CNR Headquarter</i><br>Auditorium   | <i>CNR Headquarter</i><br>Marconi Hall  | <i>CNR Headquarter</i><br>Giacomello Hall  | Digital<br>Corridor                             |
| 10:00 - 11:40 | Metrology for Radar<br>Systems<br><br>PART I   | Measurement for<br>Improving Quality,<br>Reliability And Safety<br>in Aerospace<br>Applications       | Measurement and<br>Instrumentation for<br>Aerospace Application.<br><br>PART I   | Poster<br><br>Demo<br>Session<br><br>Exhibitors |
| 11:40 -12:45  | <b>COFFEE BREAK</b><br><b>POSTER SESSION / DEMO SESSION</b>                                      |   |  |   |
| 12:45 - 13:10 | The Copernicus Earth Observation and Monitoring programme<br><i>CNR Headquarter - Auditorium</i> |   |  |   |
| 13:10 - 14:30 | <b>LUNCH - CNR Headquarter</b>   |   |  |   |
| 14:30 - 16:10 | Metrology for Radar<br>Systems.<br><br>PART II   | Complex Systems<br>Operational<br>Availability:<br>Measurements,<br>Methodologies and<br>Requirements | Measurement and<br>Instrumentation for<br>Aerospace Application.<br><br>PART II  |   |
| 16:10 - 16:30 | <b>COFFEE BREAK - CNR Headquarter</b>  |   |  |   |
| 16:30 - 17:50 | General Session.<br><br>PART IV  | General Session.<br><br>PART V  | Measurement and<br>Instrumentation for<br>Aerospace Application.<br><br>PART III |   |
| 18:00 - 18:15 | <b>CLOSING AND AWARD CEREMONY - CNR Headquarter - Auditorium</b>                                 |   |  |   |



## Wednesday, June 20 – Military Metrology for AeroSpace

**Casa dell'Aviatore**  
*Viale dell'Università, 20 - Rome*

---

**08:45 WELCOME ADDRESSES**

Lt. Gen. IAF (r) Pietro Finocchio, *CESMA Director*  
Prof. Pasquale Daponte, *University of Sannio*

**09:00 GENERAL KEYNOTE - "IAF 5th Generation Logistic"**

Gen. D. A. Fabio MOLTENI, *Italian Air Force Logistic Command*

**09:25 "The logistic support evolution for the Italian Air Force fleet - The choice of maintenance policy to optimize aircraft availability and resources"**

Brig. Gen. Maurizio ASTOLFI, *Italian Air Force Logistic Command*

**09:50 "Life Cycle Management: Life Cycle Cost of Warships in Naval Programs of Italian Navy"**

CC (AN) Paolo TRESCA, *Italian Navy*

**10:15 "The Evolution of the Aerospace Sector"**

Lt. Col. Walter VILLADEI, *Italian Air Force Staff*

---

**10:35 COFFEE BREAK**

**11:00 "Logistical Support Scenarios of Space Military Assets"**

Eng. Leonardo MAZZINI, *Thales Alenia Space Italia*

**11:25 "Life Cycle Management: Operational Availability (Ao) in Naval Programs of Italian Navy"**

Eng. Angelo DELL'ISOLA, *Orizzonti Sistemi Navali*

**11:50 "Life Cycle Management: Use of the European Aerospace & Defence (ASD) Data Model to standardize LCM data sources"**

Eng. Eduardo DE FRANCESCO, *FederLazio Aerospazio e Difesa*

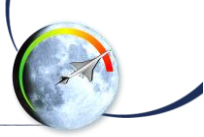
**12:15 Speakers Round Table and Conclusions**

Chairman Lt. Gen. IAF Basilio Di Martino, *National Armament Directorate*

---

**13:00 LUNCH**

---



## Wednesday, June 20 - Tutorials - Track 1

**Casa dell'Aviatore**  
*Viale dell'Università, 20 - Rome*

**14:00 - 15:00**

### **SESSION 1**

**Place:** *Casa dell'Aviatore - Viale dell'Università, 20*

### **Life Cycle Management**

*Attilio Parri, Systecon*

**15:00 - 15:20**

### **COFFEE BREAK**

**Place:** *Casa dell'Aviatore*

**15:20 - 18:00**

Opus Suite User Group

**19:00 - 21:00**

### **WELCOME RECEPTION**

*Casa dell'Aviatore - Viale dell'Università, 20 - Rome*



## Wednesday, June 20 - Tutorials - Track 2

**National Research Council (CNR) Headquarter**

**Room: Marconi Hall**

*Piazzale Aldo Moro, 7 - Rome*

**15:00 - 17:15**

**REGISTRATIONS**

Place: CNR Headquarter

**15:00 - 15:45**

**SESSION 1**

**Introduction to Metamaterials**

Vincenzo Galdi, *University of Sannio, Italy*

**15:45 - 16:30**

**SESSION 2**

**Metamaterials for Measurements**

Alessio Monti, *Niccolò Cusano University, Italy*

**16:30 - 17:15**

**SESSION 3**

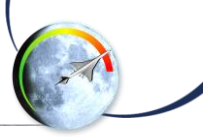
**Measurement on Metamaterials**

Mirko Barbuto, *Niccolò Cusano University, Italy*

**19:00 - 21:00**

**WELCOME RECEPTION**

*Casa dell'Aviatore - Viale dell'Università, 20 - Rome*



## Thursday, June 21 - Technical Sessions

---

**08:30 - 17:30**

**REGISTRATIONS**

**Place:** *National Research Council (CNR) Headquarter*

---

---

**09:00 - 09:30**

**Welcome Addresses**

**Room:** *CNR Headquarter, Auditorium*

---

---

**09:30 - 10:30**

**Plenary Opening Session**

**Chair:** *Marcello Coradini, FRAS, IAA Academician, ASI Associate*

**Room:** *CNR Headquarter, Auditorium*

---

### **Sub-femto-g free-fall with LISA Pathfinder**

Stefano Vitale

*University of Trento, Italy*

*INFN Trento, Italy*

*Italian Space Agency, Italy*

---

**10:30 - 11:00**

**COFFEE BREAK**

**Room:** *CNR Headquarter*

---



**11:00 - 12:40**

**General Session - PART I**

**Chairs:** Lorenzo Ciani, *University of Florence, Italy*  
Ephraim Suhir, *Portland State University, USA*

**Room:** *CNR Headquarter, Auditorium*

**11:00 Preliminary design of an innovative aircraft weight & balance measurement system based on fiber optic sensors**

Angela Brindisi, *CIRA Italian Aerospace Research Centre, Italy*  
Salvatore Ameduri, *CIRA Italian Aerospace Research Centre, Italy*  
Antonio Concilio, *CIRA Italian Aerospace Research Centre, Italy*  
Monica Ciminello, *CIRA Italian Aerospace Research Centre, Italy*  
Marco Leone, *University of Sannio, Italy*  
Antonio Iele, *University of Sannio, Italy*  
Marco Consales, *University of Sannio, Italy*  
Andrea Cusano, *University of Sannio, Italy*

**11:20 An Optimization Method for The Monopole Antenna Placement of a Low-Orbit Small Satellite**

Davide Cinarelli, *Sitael S.p.A., Italy*  
Gilles Mariotti, *Sitael S.p.A., Italy*  
Vito Centonze, *Sitael S.p.A., Italy*  
Antonio Lovascio, *Politecnico di Bari, Italy*  
Antonella D'Orazio, *Politecnico di Bari, Italy*

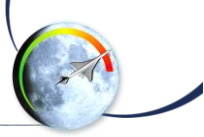
**11:40 Differential GNSS and double difference approaches comparison for high integrity railway Location Determination System**

Pietro Salvatori, *RadioLabs, Italy*  
Cosimo Stallo, *RadioLabs, Italy*  
Andrea Coluccia, *RadioLabs, Italy*  
Francesco Rispoli, *Ansaldo STS, Italy*  
Alessandro Neri, *Università degli Studi Roma TRE, Italy*

**12:00 Rice Coding-Based Lite Compression Algorithm with Controlled Error for Sensor Data**

Serhiy Avramenko, *Politecnico di Torino, Italy*  
Stefano Esposito, *Politecnico di Torino, Italy*  
Massimo Violante, *Politecnico di Torino, Italy*





**12:20 CubeSat-Life ground test facility**

Paolo Marzioli, *Sapienza University of Rome, Italy*  
Andrea Delfini, *Sapienza University of Rome, Italy*  
Luca Gugliermetti, *Sapienza University of Rome, Italy*  
Fabio Santoni, *Sapienza University of Rome, Italy*  
Fabio Bisegna, *Sapienza University of Rome, Italy*  
Luca Nardi, *ENEA, Italy*  
Eugenio Benvenuto, *ENEA, Italy*  
Silvia Massa, *ENEA, Italy*  
Elisabetta Bennici, *ENEA, Italy*

**11:00 - 12:40**

**SPECIAL TRACK ON METROLOGY FOR FUTURE SPACE EXPLORATION**

**Special Session on Future Techniques for Extra-Solar Planets Exploration**

**Chairs:** Marcello Coradini, *FRAS, IAA Academician, ASI Associate*  
Enrico Flamini, *ASI, Italy*

**Room:** *CNR Headquarter, Marconi Hall*

**11:00 The CHEOPS Mission**

Andrea Fortier, *Physikalisches Institut and CSH, University of Bern, Switzerland*  
Willy Benz, *Physikalisches Institut and CSH, University of Bern, Switzerland*  
Christopher Broeg, *Physikalisches Institut and CSH, University of Bern, Switzerland*

**11:16 Finding Earth Analogs: Extreme Precision Radial Velocities From Space**

Gautam Vasisht, *California Institute of Technology, USA*  
Peter Plavchan, *George Mason Uni., USA*  
Charles Beichaman, *NASA Exoplanet Science Inst., California Inst. of Technology, USA*

**11:32 The ARIEL Space Mission**

Enzo Pascale, *Sapienza University of Rome, Italy*  
Paul Eccleston, *RAL Space, UK*  
Giovanna Tinetti, *University College London, UK*

**11:48 The LUVUOIR coronagraph instrument**

Laurent Pueyo, *Space telescope Science Institute, USA*  
Neil Zimmermann, *NASA Goddard Space Flight Center, USA*  
Matthew Bolcar, *NASA Goddard Space Flight Center, USA*



**12:04 Micro-pixel Metrology for Precision Astrometry Detection on Nearby Exoplanets**

Anthony Ding Chen, *Chinese Academy of Space Technology, China*

Haitao Wang, *Chinese Academy of Space Technology, China*

Yao Zhang, *Chinese Academy of Space Technology, China*

**12:20 The PLATO Mission**

H. Michaelis, *Deutsches Zentrum für Luft- und Raumfahrt, Germany*

H. Rauer, *Berlin University of Technology, Germany*

D. Pollacco, *University of Warwick, UK*

J. Cabrera, *Deutsches Zentrum für Luft- und Raumfahrt, Germany*

---

**11:00 - 12:40**

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

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

Marco Ricci, *University of Calabria, Italy*

**Room:** *CNR Headquarter, Giacomello Hall*

---

**11:00 Probe localization by Magnetic Measurements in Eddy-Current Nondestructive Testing Environment**

Gianni Cerro, *University of Cassino and Southern Lazio, Italy*

Luigi Ferrigno, *University of Cassino and Southern Lazio, Italy*

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

Filippo Milano, *University of Cassino and Southern Lazio, Italy*

Paolo Carbone, *University of Perugia, Italy*

Antonella Comuniello, *University of Perugia, Italy*

Alessio De Angelis, *University of Perugia, Italy*

Antonio Moschitta, *University of Perugia, Italy*

**11:20 Testing an electronic nose for pre-bond NDT in realistic CFRP parts assembly and repair**

S. De Vito, *ENEA, Italy*

M. Salvato, *ENEA, Italy*

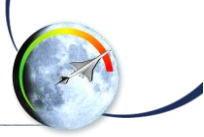
E. Massera, *ENEA, Italy*

F. Formisano, *ENEA, Italy*

M. L. Miglietta, *ENEA, Italy*

E. Esposito, *ENEA, Italy*

G. Di Francia, *ENEA, Italy*



**11:40 Auto Regressive Exogenous modeling of pseudonoise thermography for the nondestructive evaluation of aerospace materials**

S. Laureti, *University of Perugia, Italy*

P. Burrascano, *University of Perugia, Italy*

H. Malekhomadi, *University of Perugia, Italy*

M. Ricci, *University of Calabria, Italy*

S. Sfarra, *University of L'Aquila, Italy*

**12:00 Shimming analysis of Carbon-Fiber Composite Materials with Eddy Current Testing**

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

Giovanni Cavaccini, *DARES Srls, Italy*

Salvatore Rampone, *University of Sannio, Italy*

**12:20 Inspection of Aircraft Wing Panels Using Unmanned Aerial Vehicles**

Konstantinos Malandrakis, *Cranfield University, UK*

Al Savvaris, *Cranfield University, UK*

Jose Angel Gonzalez Domingo, *Cranfield University, UK*

Nick Avdelidis, *Cranfield University, UK*

Panagiotis Tsilivis, *Cranfield University, UK*

Florence Plumacker, *Cranfield University, UK*

Luca Zanotti Fragonara, *Cranfield University, UK*

Antonios Tsourdos, *Cranfield University, UK*

---

**11:00 - 12:40**

**Special Session on GARFIELD - Green, Accessible and Safe Grassy Airfields**

**Chairs:** Jarosław Pytka, *Lublin University of Technology, Poland*

Jerzy Józwik, *Lublin University of Technology, Poland*

**Room:** *CNR Headquarter, Bisogno Hall*

---

**11:00 Embedded Wheel Force Sensor For Aircraft Landing Gear Testing**

Jarosław Pytka, *Lublin University of Technology, Poland*

Jerzy Józwik, *Lublin University of Technology, Poland*

Tomasz Łyszczczyk, *Lublin University of Technology, Poland*

Ernest Gnapowski, *University College of Enterprise and Administration, Poland*



- 11:20 Method for Determination of Airplane Takeoff and Landing Distance**  
Jarosław Pytka, *Lublin University of Technology, Poland*  
Jerzy Józwick, *Lublin University of Technology, Poland*  
Tomasz Łyszczczyk, *Lublin University of Technology, Poland*  
Ernest Gnapowski, *University College of Enterprise and Administration, Poland*
- 11:40 Experimental Identification of Grassy Airfield Surface Geometry for the GARFIELD Database**  
Jerzy Józwick, *Lublin University of Technology, Poland*  
Jarosław Pytka, *Lublin University of Technology, Poland*  
Arkadiusz Tofil, *The Institute of Technical Sciences and Aviation, Poland*
- 12:00 Monitoring Grass Airfield Conditions for the GARFIELD System**  
Jarosław Pytka, *Lublin University of Technology, Poland*  
Tomasz Łyszczczyk, *Lublin University of Technology, Poland*  
Ernest Gnapowski, *University College of Enterprise and Administration, Poland*
- 12:20 Influence of the Gas Medium on the Metrological Characteristics of Shock Tubes**  
Chenchen Wang, *Changcheng Institute of Metrology and Measurement, China*  
Hongbo Wang, *Changcheng Institute of Metrology and Measurement, China*  
Bo Shi, *Changcheng Institute of Metrology and Measurement, China*

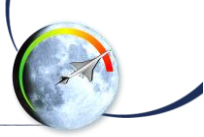
---

**12:40 - 14:00**

**LUNCH**

**Room: CNR Headquarter**

---



**14:00 - 15:40**

**Special Session on Metrology and Instrumentation for Unmanned Aerial Vehicles - PART I**

**Chairs:** Bartosz Brzozowski, *Military University of Technology, Poland*  
Graham Wild, *RMIT University, Australia*

**Room:** *CNR Headquarter, Auditorium*

**14:00 A Secondary Surveillance Radar with Miniaturized Transponders for Localization of Small-Sized UAVs in Controlled Air Space**

Martin Schütz, *Friedrich-Alexander-University Erlangen-Nuremberg, Germany*

Yassen Dobrev, *Symeo GmbH, Germany*

Tatiana Pavlenko, *Friedrich-Alexander-University Erlangen-Nuremberg, Germany*

Martin Vossiek, *Friedrich-Alexander-University Erlangen-Nuremberg, Germany*

**14:20 Comparative Performance of Simultaneous Localization and Mapping Algorithms for Unmanned Aircraft Based Navigation Systems**

Graham Wild, *RMIT University, Australia*

Lance Fang, *RMIT University, Australia*

Thomas Newnham, *RMIT University, Australia*

Alex Fisher, *RMIT University, Australia*

Jennifer Palmer, *Defense Science and Technology Group, Australia*

Chatura Nagahawatt, *Defense Science and Technology Group, Australia*

**14:40 Safe avoidance path detection using multi sensor integration for small Unmanned Aerial Vehicle**

Muhammad Faiz Bin Ramli, *Universiti Tun Hussein Onn, Malaysia*

Syariful Syafiq Shamsudin, *Universiti Tun Hussein Onn, Malaysia*

Ari Legowo, *International Islamic University, Malaysia*

**15:00 Assessment of the tracking accuracy for the air Vehicle Tracking System supporting the CIRA Optionally Piloted Aircraft**

Vittorio Castrillo, *C.I.R.A. (Italian Aerospace Research Center), Italy*

Francesco Fusco, *C.I.R.A. (Italian Aerospace Research Center), Italy*

Michele Inverno, *C.I.R.A. (Italian Aerospace Research Center), Italy*

Roberto V. Montaquila, *C.I.R.A. (Italian Aerospace Research Center), Italy*

Gianpiero Buzzo, *C.I.R.A. (Italian Aerospace Research Center), Italy*



**15:20 UAV Intelligent Chemical Multisensor payload for Networked and Impromptu Gas monitoring tasks**

M. Carrozzo, *ENEA, Italy*  
S. De Vito, *ENEA, Italy*  
E. Esposito, *ENEA, Italy*  
M. Salvato, *ENEA, Italy*  
F. Formisano, *ENEA, Italy*  
E. Massera, *ENEA, Italy*  
G. Di Francia, *ENEA, Italy*  
P. Delli Veneri, *ENEA, Italy*  
M. Iadaresta, *TOPVIEW s.r.l., Italy*  
A. Mennella, *TOPVIEW s.r.l., Italy*

**14:00 - 15:40**

**SPECIAL TRACK ON METROLOGY FOR FUTURE SPACE EXPLORATION**

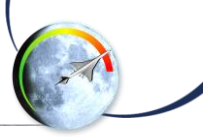
**Special Session on In-situ Instruments and Devices**

**Chairs:** Elisabetta Mattei, *“Roma Tre” University, Italy*  
Gianrico Filacchione, *INAF-IAPS, Italy*

**Room:** *CNR Headquarter, Marconi Hall*

**14:00 Ma\_MISS flight model calibration target: spectral characterization**

Paola Tinivelli, *IAPS INAF, Italy*  
Simone De Angelis, *IAPS INAF, Italy*  
Marco Ferrari, *IAPS INAF, Italy*  
Maria Cristina De Sanctis, *IAPS INAF, Italy*  
Francesca Altieri, *IAPS INAF, Italy*  
Eleonora Ammannito, *Italian Space Agency, Italy*  
Raffaele Mugnuolo, *Italian Space Agency, Italy*  
Simone Pirrotta, *Italian Space Agency, Italy*  
Samuele Novi, *Leonardo Company, Italy*  
Francesco Antonacci, *Leonardo Company, Italy*  
Francesco Villa, *Leonardo Company, Italy*  
Giuseppe Mondello, *Leonardo Company, Italy*  
Riccardo Paolinetti, *Leonardo Company, Italy*



**14:16 Optimization of the fluid dynamic design of the Dust Suite-MicroMED sensor for the ExoMars 2020 mission**

Giuseppe Mongelluzzo, *INAF - Osservatorio Astronomico di Capodimonte, Italy*  
Francesca Esposito, *INAF - Osservatorio Astronomico di Capodimonte, Italy*  
Fabio Cozzolino, *INAF - Osservatorio Astronomico di Capodimonte, Italy*  
Cesare Molfese, *INAF - Osservatorio Astronomico di Capodimonte, Italy*  
Simone Silvestro, *INAF - Osservatorio Astronomico di Capodimonte, Italy*  
Ciprian Ionut Popa, *INAF - Osservatorio Astronomico di Capodimonte, Italy*  
Massimo Dall'Ora, *INAF - Osservatorio Astronomico di Capodimonte, Italy*  
Marek Lubieniecki, *Delft University of Technology, The Netherlands*  
Fausto Cortecchia, *INAF - Osservatorio Astronomico di Bologna, Italy*  
Bortolino Saggini, *Politecnico di Milano, Italy*  
Diego Scaccabarozzi, *Politecnico di Milano, Italy*  
Alexander Zakharov, *IKI, Russia*

**14:32 Synthetic plagioclases as support for future "in-situ" missions: iron's influence on VNIR reflectance**

Cristian Carli, *INAF-IAPS, Italy*  
Andrea Orlando, *IGG-CNR, Italy*  
Daniele Borrini, *University of Florence, Italy*  
Giovanna Serventi, *University of Parma, Italy*  
Giovanni Pratesi, *University of Florence, Italy*  
Maria Sgavetti, *University of Parma, Italy*

**14:48 Dielectric spectroscopy measurements of saline aqueous solutions in the VHF-UHF bands: toward a dielectric model of icy satellite water reservoirs**

Yann Brouet, *Physics Institute, University of Bern, Switzerland*  
Luisa Neves, *Multiwave Innovation, France*  
Pierre Sabouroux, *Aix-Marseille Univ., CNRS, France*  
Romain Cerubini, *Physics Institute, University of Bern, Switzerland*  
Patricio Becerra, *Physics Institute, University of Bern, Switzerland*  
Cyril Grima, *University of Texas at Austin, USA*  
Kristian Chan, *University of Texas at Austin, USA*  
Antoine Pommerol, *Physics Institute, University of Bern, Switzerland*  
Nicolas Thomas, *Physics Institute, University of Bern, Switzerland*



- 15:04 VISTA instrument: a PCM-based sensor for organics and volatiles characterization by using Thermogravimetric technique**  
Fabrizio Dirri, *IAPS-INAF, Italy*  
Ernesto Palomba, *IAPS-INAF, Italy*  
Andrea Longobardo, *IAPS-INAF, Italy*  
David Biondi, *IAPS-INAF, Italy*  
Angelo Boccaccini, *IAPS-INAF, Italy*  
Anna Galiano, *IAPS-INAF, Italy*  
Emiliano Zampetti, *IIA-CNR, Italy*  
Bortolino Saggin, *Politecnico di Milano*  
Diego Scaccabarozzi, *Politecnico di Milano*  
J. Martin-Torres, *Luleå University of Technology, Sweden, CSIC-UGR, Spain*
- 15:20 Relative pointing error verification of the Telescope Mount Assembly subsystem for the Large Synoptic Survey Telescope**  
Unai Mutilba, *IK4-TEKNIKER, Spain*  
Gorka Kortaberria, *IK4-TEKNIKER, Spain*  
Fernando Egaña, *IK4-TEKNIKER, Spain*  
José A. Yagüe-Fabra, *Universidad de Zaragoza, Spain*

---

**14:00 - 15:40**

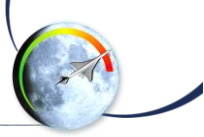
**Special Session on Terrestrial and In-flight Verification of GNC Systems for Aerospace Vehicle**

**Chairs:** Yevgeny Somov, *Samara State Technical University, Russia*  
Alexander Nebylov, *State University of Aerospace Instrumentation, Russia*  
**Room:** *CNR Headquarter, Giacomello Hall*

---

- 14:00 Concept of high-precision relative navigation of micro-satellites in their formation**  
Alexander V. Nebylov, *International Institute for Advanced Aerospace Technologies, State University of Aerospace Instrumentation, Russia*  
Vladimir Nebylov, *State University of Aerospace Instrumentation, Russia*  
Alexander I. Panferov, *State University of Aerospace Instrumentation, Russia*
- 14:16 Alignment Verification of a Star Tracker Cluster and a Space Telescope for Land-survey Satellite**  
Yevgeny Somov, *Samara State Technical University, Russian Academy of Sciences, Russia*





Sergey Butyrin, *Samara State Technical University, Russian Academy of Sciences, Russia*

Sergey Somov, *Samara State Technical University, Russian Academy of Sciences, Russia*

Tatyana Somova, *Samara State Technical University, Russia*

**14:32    Algorithm for relative navigation and control systems for closely spaced satellite in a group**

Alexander I. Panferov, *State University of Aerospace Instrumentation, Russia*

Alexander V. Nebylov, *International Institute for Advanced Aerospace Technologies, State University of Aerospace Instrumentation, Russia*

Sergey A. Brodsky, *International Institute for Advanced Aerospace Technologies, Russia*

**15:48    Control Optimization in Aerospace Engineering at Stochastic Perturbations and Stream of Faults**

Nikolay Rodnishchev, *Kazan National Research Technical University, Russia*

Yevgeny Somov, *Samara State Technical University, Russia*

**15:04    Guidance and Control of a Free-flying Robot at Rendezvous with Noncooperative Space Vehicle**

Yevgeny Somov, *Samara State Technical University, Russian Academy of Sciences, Russia*

Sergey Butyrin, *Samara State Technical University, Russian Academy of Sciences, Russia*

Sergey Somov, *Samara State Technical University, Russian Academy of Sciences, Russia*

Tatyana Somova, *Samara State Technical University, Russia*

**15:20    Active Fault Tolerant Gyromoment Control of Information Satellites and Free-flying Robots**

Yevgeny Somov, *Samara State Technical University, Russia*

Nikolay Rodnishchev, *Kazan National Research Technical University, Russia*



**14:00 - 15:40**

**Special Session on Relativistic Metrology**

**Chairs:** Roberto Peron, *Istituto di Astrofisica e Planetologia Spaziali, Italy*  
Enrico C. Lorenzini, *University of Padua, Italy*

**Room:** *CNR Headquarter, Bisogno Hall*

**14:00 METRIC: a dedicated Earth-orbiting spacecraft for fundamental physics and geophysics**

Enrico C. Lorenzini, *University of Padua, Italy*  
Roberto Peron, *Istituto di Astrofisica e Planetologia Spaziali, Italy*

**14:16 Using Galileo for detecting the gravito-magnetic field of the earth**

Angelo Tartaglia, *Politecnico di Torino, Italy*  
David Lucchesi, *IAPS-INAF, Italy*  
Enrico C. Lorenzini, *University of Padua, Italy*  
Giuseppe Pucacco, *University of Rome Tor Vergata, Italy*  
Matteo Luca Ruggiero, *Politecnico di Torino, Italy*

**14:32 Covariance analysis applied to the MESSENGER and BepiColombo Relativity experiments**

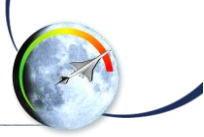
Fabrizio De Marchi, *Sapienza University of Rome, Italy*  
Luciano Iess, *Sapienza University of Rome, Italy*

**14:48 New Measurements of Gravitation in the Field of the Earth and the LARASE Experiment**

David M. Lucchesi, *Istituto di Astrofisica e Planetologia Spaziali, INFN, Italy*  
Carmelo Magnafico, *Istituto di Astrofisica e Planetologia Spaziali, INFN, Italy*  
Roberto Peron, *Istituto di Astrofisica e Planetologia Spaziali, INFN, Italy*  
Massimo Visco, *Istituto di Astrofisica e Planetologia Spaziali, INFN, Italy*  
Luciano Anselmo, *ISTI-CNR, Italy*  
Carmen Pardini, *ISTI-CNR, Italy*  
Massimo Bassan, *University of Rome Tor Vergata, Italy*  
Giuseppe Pucacco, *University of Rome Tor Vergata, Italy*  
Ruggero Stanga, *University of Florence, INFN, Italy*

**15:05 A planet-wide astrometric network for science and astronautics**

Alberto Vecchiato, *INAF - Astrophysical Observatory of Torino, Italy*



**15:22 The ISA accelerometer for BepiColombo: data processing and operations in view of BepiColombo launch**

Francesco Santoli, *INAF-IAPS, Italy*  
Valerio Iafolla, *INAF-IAPS, Italy*  
Emiliano Fiorenza, *INAF-IAPS, Italy*  
Carlo Lefevre, *INAF-IAPS, Italy*  
David M. Lucchesi, *INAF-IAPS, Italy*  
Marco Lucente, *INAF-IAPS, Italy*  
Carmelo Magnafico, *INAF-IAPS, Italy*  
Roberto Peron, *INAF-IAPS, Italy*

---

**15:40 - 16:00**

**COFFEE BREAK**

**Room:** *CNR Headquarter*

---

---

**16:00 - 17:20**

**Special Session on Metrology and Instrumentation for Unmanned Aerial Vehicles - PART II**

**Chairs:** Bartosz Brzozowski, *Military University of Technology, Poland*  
Graham Wild, *RMIT University, Australia*

**Room:** *CNR Headquarter, Auditorium*

---

**16:00 Upstream Wind Sensing for Small Unmanned Aerial Vehicles**

Simon Watkins, *RMIT University, Australia*  
Mohamed Abdulghani, *RMIT University, Australia*  
Sam Prudden, *RMIT University, Australia*  
David Tennent, *RMIT University, Australia*  
Matthew Marino, *RMIT University, Australia*  
Alex Fisher, *RMIT University, Australia*

**16:20 ARIA: Air Pollutants Monitoring Using UAVs**

Gian Marco Bolla, *University of Padova, Italy*  
Marco Casagrande, *University of Padova, Italy*  
Antonio Comazzetto, *University of Padova, Italy*  
Riccardo Dal Moro, *University of Padova, Italy*  
Matteo Destro, *University of Padova, Italy*  
Edoardo Fantin, *University of Padova, Italy*



Giacomo Colombatti, *University of Padova, Italy*

Alessio Aboudan, *University of Padova, Italy*

Enrico C. Lorenzini, *University of Padova, Italy*

**16:40 A Passive Cloud Detection System for UAV: Analysis of Issues, Impacts and Solutions**

Franziska Funk, *University of the Bundeswehr Munich, Germany*

Peter Stütz, *University of the Bundeswehr Munich, Germany*

**17:00 Detection of moving heat-emitting object using single IR camera**

Igor Morawski, *Military University of Technology, Poland*

Zdzisław Rochala, *Military University of Technology, Poland*

Konrad Wojtowicz, *Military University of Technology, Poland*

**16:00 - 17:45**

**SPECIAL TRACK ON METROLOGY FOR FUTURE SPACE EXPLORATION**

**Special Session on Advanced Remote Sensing for Exploration**

**Chairs:** Gianrico Filacchione, *INAF-IAPS, Italy*

Sebastian E. Lauro, *Università degli Studi Roma Tre, Italy*

**Room:** *CNR Headquarter, Marconi Hall*

**16:00 Super Resolution and Interferences Suppression Technique applied to SHARAD Data**

Maria Carmela Raguso, *Sapienza University of Rome, Italy*

Marco Mastrogiuseppe, *Sapienza University of Rome, Italy*

Roberto Seu, *Sapienza University of Rome, Italy*

Lorenzo Piazza, *Sapienza University of Rome, Italy*

**16:15 The advanced optical and thermomechanical design of the JUICE/MAJIS spectrometer**

Leonardo Tommasi, *Leonardo SpA, Italy*

Giulio Bugetti, *Leonardo SpA, Italy*

Anna Fabbri, *Leonardo SpA, Italy*

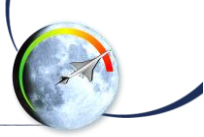
Irene Guerri, *Leonardo SpA, Italy*

Nazzareno Tonetti, *Leonardo SpA, Italy*

Marilena Amoroso, *ASI Italian Space Agency, Italy*

Raffaele Mugnuolo, *ASI Italian Space Agency, Italy*

Giuseppe Piccioni, *INAF-IAPS, Italy*



Gianrico Filacchione, *INAF-IAPS, Italy*  
Sergio Fonti, *Università del Salento, Italy*  
Bortolino Saggin, *Politecnico di Milano, Italy*  
Federico Tosi, *INAF-IAPS, Italy*  
Massimo Zambelli, *INAF-IAPS, Italy*  
Luca Bocchini, *Thales Alenia Space, Italy*  
Savino De Palo, *Thales Alenia Space, Italy*  
Martina Giraud, *Thales Alenia Space, Italy*  
Valter Perotto, *Thales Alenia Space, Italy*

**16:30 How science can benefit from synergies with human space exploration: the case for Near Earth Asteroids (NEAs)**

Marco Tantardini, *Italian Space Agency, Italy*

**16:45 The measurement of the noise-equivalent spectral radiance of SIMBIO-SYS/VIHI spectrometer**

Gianrico Filacchione, *INAF-IAPS, Italy*  
Fabrizio Capaccioni, *INAF-IAPS, Italy*  
Francesca Altieri, *INAF-IAPS, Italy*  
Cristian Carli, *INAF-IAPS, Italy*  
Leonardo Tommasi, *Leonardo SpA, Italy*  
Iacopo Fikai Veltroni, *Leonardo SpA, Italy*  
Michele Dami, *Leonardo SpA, Italy*  
Gianluca Aroldi, *Leonardo SpA, Italy*  
Donato Borrelli, *Leonardo SpA, Italy*  
Alessandra Barbis, *Leonardo SpA, Italy*  
Marco Baroni, *Leonardo SpA, Italy*  
Guia Pastorini, *Leonardo SpA, Italy*  
Raffaele Mugnuolo, *ASI Italian Space Agency, Italy*  
Gabriele Cremonese, *INAF-Osservatorio Astronomico Padova, Italy*

**17:00 Performances of the SIMBIO-SYS Stereo Imaging Channel (STC) on board BepiColombo/ESA spacecraft**

Alessandra Slemer, *INAF-OAPD, Italy*  
Emanuele Simioni, *INAF-OAPD, Italy*  
Vania Da Deppo, *CNR-IFN, Italy*  
Michele Zusi, *INAF-IAPS, Italy*  
Cristina Re, *INAF-OAPD, Italy*  
Alice Lucchetti, *INAF-OAPD, Italy*  
Michele Dami, *Leonardo S.p.A., Italy*



Donato Borrelli, *Leonardo S.p.A., Italy*  
Iacopo Fikai Veltroni, *Leonardo S.p.A., Italy*  
Maria Teresa Capria, *INAF-IAPS, Italy*  
Gabriele Cremonese, *INAF-OAPD, Italy*

**17:10 Dielectric characterization of ice/ $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$  mixtures: implications for radar investigations of icy satellites**

Barbara Cosciotti, *Università degli Studi Roma Tre, Italy*  
Elisabetta Mattei, *Università degli Studi Roma Tre, Italy*  
Elena Pettinelli, *Università degli Studi Roma Tre, Italy*  
Francesco Gabbai, *Università degli Studi Roma Tre, Italy*  
Federico Di Paolo, *Istituto di Radioastronomia, INAF, Italy*  
Sebastian E. Lauro, *Università degli Studi Roma Tre, Italy*

**17:30 How the Moon Village Association is fostering the return to the Moon**

Giuseppe Reibaldi, *Moon Village Association*  
John C. Mankins, *Moon Village Association*

---

**16:00 - 17:20**

**General Session - PART II**

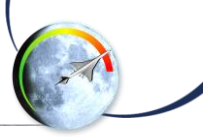
**Chairs:** Marco Laracca, *University of Cassino and Southern Lazio, Italy*  
Sergio Rapuano, *University of Sannio, Italy*

**Room:** *CNR Headquarter, Giacomello Hall*

---

**16:00 MINLU: an instrumental suite for monitoring light pollution from drones or airballoons**

Pietro Fiorentin, *University of Padova, Italy*  
Carlo Bettanini, *University of Padova, Italy*  
Enrico Lorenzini, *University of Padova, Italy*  
Alessio Aboudan, *CISAS "Giuseppe Colombo", Italy*  
Giacomo Colombatti, *CISAS "Giuseppe Colombo", Italy*  
Sergio Ortolani, *University of Padova, Italy*  
Andrea Bertolo, *Regional Environmental Prevention and Protection Agency of Veneto, Italy*



**16:20 Quasi-Newton Cubature Kalman Filtering Method based on BFGS Correction Formula for Attitude Determination Applied to Underwater Glider**

Haoqian Huang, *Hohai University, China*

Jun Zhou, *Hohai University, China*

Zhiqiang Liu, *Hohai University, China*

Tie Huang, *Hohai University, China*

Kangrui Hong, *Hohai University, China*

Chen Qu, *Hohai University, China*

**16:40 Metamaterials for hypersonic flow control: experimental tests on novel ultrasonically absorptive coatings**

Tiziano Pagliaroli, *University Niccolò Cusano, Italy*

Fabrizio Patanè, *University Niccolò Cusano, Italy*

Andrea Pagliaro, *University Niccolò Cusano, Italy*

Peng Lv, *China Academy of Aerospace Aerodynamics, China*

Angelo Tati, *R.C. ENEA, Italy*

**17:00 Design of a flowrate measurement system for low-pressure gases**

Bortolino Saggin, *Politecnico di Milano, Italy*

Diego Scaccabarozzi, *Politecnico di Milano, Italy*

Christian Pagliara, *Politecnico di Milano, Italy*

Arash Valiesfahani, *Politecnico di Milano, Italy*

Francesca Esposito, *INAF - Astronomical Observatory of Capodimonte, Italy*

Cesare Molfese, *INAF - Astronomical Observatory of Capodimonte, Italy*

Fabio Cozzolino, *INAF - Astronomical Observatory of Capodimonte, Italy*

Fausto Cortecchia, *INAF - Astronomical Observatory of Capodimonte, Italy*

---

**16:00 - 17:20**

**General Session - PART III**

**Chairs:** Fabio Leccese, *“Roma Tre” University, Italy*

Roberto Sabatini, *RMIT University, Australia*

**Room:** *CNR Headquarter, Bisogno Hall*

---

**16:00 A System Engineering Tool for the Optimisation of a GNSS Constellation Design**

Marco Nugnes, *Politecnico di Milano, Italy*

Camilla Colombo, *Politecnico di Milano, Italy*

Massimo Tipaldi, *University of Sannio, Italy*



- 16:20 High update rate star tracker for gyroless spacecraft operation**  
Mikaël Marin, *Korea Advanced Institute of Science and Technology, Republic of Korea*  
Hyochoong Bang, *Korea Advanced Institute of Science and Technology, Republic of Korea*
- 16:40 PRBS Selection for Velocity Measurements with Compressive Sampling-Based DS-CDMA Radio Navigation Receivers**  
Susanna Spinsante, *Marche Polytechnic University, Italy*  
Luca De Vito, *University of Sannio, Italy*  
Grazia Iadarola, *University of Sannio, Italy*
- 17:00 Cognitive Human-Machine Interfaces and Interactions for Avionics and Air Traffic Management Systems**  
Yixiang Lim, *RMIT University, Australia*  
Alessandro Gardi, *RMIT University, Australia*  
Neta Ezer, *Northrop Grumman Corporation, USA*  
Trevor Kistan, *RMIT University, Thales Australia, Australia*  
Roberto Sabatini, *RMIT University, Australia*

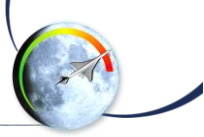
**19:00 - 23:00**

**GALA DINNER**

*Caserma Pio IX*

*Via Castro Pretorio, 95 - Rome*





## Friday, June 22 - Technical Sessions

**08:30 - 16:00**

### **REGISTRATIONS**

**Place:** *National Research Council (CNR) Headquarter*

**09:00 - 09:50**

### **Plenary Opening Session**

**Chair:** *Alfonso Farina, LFIEEE, Distinguished Lecturer of AESS*

**Room:** *CNR Headquarter, Auditorium*

### **Probabilistic Design for Reliability of Instrumentation for Aerospace Applications**

Ephraim Suhir

*Portland State University, USA*

**10:00 - 11:40**

### **Special Session on Metrology for Radar Systems - PART I**

**Chairs:** *Alfonso Farina, LFIEEE, Distinguished Lecturer of AESS*

*Silvia Ullo, IEEE Member, University of Sannio, Italy*

**Room:** *CNR Headquarter, Auditorium*

### **10:00 Receiver Operating Characteristics of a Passive Millimeter-wave Radiometric Sensor**

*Massimiliano Rossi, MBDA Italia S.p.A., Italy*

*Riccardo Maria Liberati, MBDA Italia S.p.A., Italy*

*Marco Frasca, MBDA Italia S.p.A., Italy*

*Mauro Angelini, MBDA Italia S.p.A., Italy*



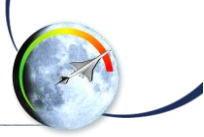
- 10:20    Methods for testing military radars produced in Poland**  
Mariusz Pakowski, *Air Force Institute of Technology (AFIT), Poland*  
Marek Brzozowski, *Air Force Institute of Technology (AFIT), Poland*  
Mirosław Michalczewski, *Air Force Institute of Technology (AFIT), Poland*  
Mirosław Myszk, *Air Force Institute of Technology (AFIT), Poland*
- 10:40    Test Tool for Detection and Tracking Capability Verification in Early Warning Radar**  
Emanuele Bisogni, *Leonardo S.p.A., Italy*  
Emanuele Vacca, *Leonardo S.p.A., Italy*
- 11:00    Detection of Multiple Noise-like Jammers for Radar Applications**  
Vincenzo Carotenuto, *Università degli Studi di Napoli Federico II, Italy*  
Chengpeng Hao, *Institute of Acoustics, Chinese Academy of Sciences, China*  
Danilo Orlando, *Università degli Studi "Niccolò Cusano", Italy*  
Antonio De Maio, *Università degli Studi di Napoli Federico II, Italy*  
Salvatore Iommelli, *Ente di Formazione Professionale Maxwell, Italy*
- 11:20    Evolution of Cognitive Radars toward Intelligent Systems Architectures**  
Silvia Liberata Ullo, *IEEE Member, University of Sannio, Italy*

**10:00 - 11:40**

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

- Chairs:** Lorenzo Ciani, *University of Florence, Italy*  
Marcantonio Catelani, *University of Florence, Italy*
- Room:** *CNR Headquarter, Marconi Hall*

- 10:00    Test Data Modeling and Implementation with Enhanced Accuracy for the Diagnosis of a DUT provided with Real-World Failure Models**  
Gürkan Uygur, *Friedrich-Alexander-University Erlangen-Nuremberg, Germany*  
Wolfgang Sörgel, *Friedrich-Alexander-University Erlangen-Nuremberg, Germany*  
Wolfgang Magerl, *Friedrich-Alexander-University Erlangen-Nuremberg, Germany*  
Sebastian M. Sattler, *Friedrich-Alexander-University Erlangen-Nuremberg, Germany*



- 10:20 Model-based prognostic health-management algorithms for the freeplay identification in electromechanical flight control actuators**  
Gianpietro Di Rito, *Università di Pisa, Italy*  
Francesco Schettini, *Università di Pisa, Italy*  
Roberto Galatolo, *Università di Pisa, Italy*
- 10:40 Dependable MPSoC-Based Mixed-Criticality Systems for Space Applications**  
Stefano Esposito, *Politecnico di Torino, Italy*  
Massimo Violante, *Politecnico di Torino, Italy*
- 11:00 Study and ground simulations of outgassing and hypervelocity impacts on carbon-based materials for space applications**  
Antonio Vricella, *Sapienza University of Rome, Italy*  
Andrea Delfini, *Sapienza University of Rome, Italy*  
Marta Albano, *Italian Space Agency, Italy*  
Fabio Santoni, *Sapienza University of Rome, Italy*  
Mario Marchetti, *Sapienza University of Rome, Italy*  
Roberto Pastore, *Sapienza University of Rome, Italy*  
Giulio Rubini, *Sapienza University of Rome, Italy*
- 11:20 Applications for Diagnosis of Real Electromagnetic Behaviors in Hybrid Electronic Architectures**  
Jean-Marc Dienot, *Labceem - Institute Of Technology Université P. Sabatier, France*  
G. Vine, *Institut National Polytechnique Toulouse, France*

---

**10:00 - 11:40**

**Special Session on Measurement and Instrumentation for Aerospace Applications - PART I**

**Chairs:** Stefano Debei, *University of Padua, Italy*  
Marco Pertile, *University of Padua, Italy*

**Room:** *CNR Headquarter, Giacomello Hall*

---

- 10:00 Optical pressure sensor for landing gear**  
Alberto Sposito, *Oxsensis Ltd., UK*  
Ralf D. Pechstedt, *Oxsensis Ltd., UK*



**10:20    Micro-thrust Measurement of a MEMS Based Cold Gas Micro-thruster in Vacuum Conditions**

Xingchen Li, National University of Defense Technology, China  
Yiyong Huang, Academy of Military Sciences PLA China, China  
Xiang Zhang, National University of Defense Technology, China  
Wei Han, Academy of Military Sciences PLA China, China  
Xianqian Chen, Academy of Military Sciences PLA China, China

**10:40    An Experimental Comparison of ROS-compatible Stereo Visual SLAM Methods for Planetary Rovers**

Riccardo Giubilato, CISAS, University of Padova, Italy  
Sebastiano Chiodini, CISAS, University of Padova, Italy  
Marco Pertile, CISAS, University of Padova, Italy  
Stefano Debei, CISAS, University of Padova, Italy

**11:00    Stereoscopic vision-based relative navigation for spacecraft proximity operations**

Mattia Mazzucato, CISAS, University of Padova, Italy  
Andrea Valmorbida, CISAS, University of Padova, Italy  
Alberto Guzzo, University of Padova, Italy  
Enrico C. Lorenzini, CISAS, University of Padova, Italy

**11:20    Characterization and testing of a high-resolution Time-of-Flight camera for autonomous navigation**

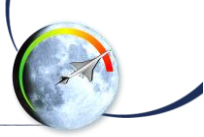
Roberto Opromolla, University of Naples Federico II, Italy  
Giancarmine Fasano, University of Naples Federico II, Italy  
Giancarlo Rufino, University of Naples Federico II, Italy  
Michele Grassi, University of Naples Federico II, Italy

---

**11:40    COFFEE BREAK**

**Room:** *CNR Headquarter*

---



**11:40 - 12:45**

**POSTER SESSION**

**Chairs:** Gregorio Andria, *Politecnico di Bari, Italy*  
Alessandro Gardi, *RMIT University, Australia*  
**Room:** *CNR Headquarter, Digital Corridor*

**Dynamic Measurement of Spindle Errors of CNC Machine Tools by Capacitive Sensors During Aircraft Parts Machining**

Jerzy Jóźwik, *Lublin University of Technology, Poland*

**First tests of the altimetric and thermal accuracy of an UAV landfill survey**

Valerio Baiocchi, *Sapienza University of Rome, Italy*  
Quintilio Napoleoni, *Sapienza University of Rome, Italy*  
Martina Tesei, *Sapienza University of Rome, Italy*  
Domenica Costantino, *Polytechnic University of Bari, Italy*  
Gregorio Andria, *Polytechnic University of Bari, Italy*  
Francesco Adamo, *Polytechnic University of Bari, Italy*

**Design and performance evaluation of drone propellers**

Gregorio Andria, *Polytechnic University of Bari, Italy*  
Attilio Di Nisio, *Polytechnic University of Bari, Italy*  
Anna Maria Lucia Lanzolla, *Polytechnic University of Bari, Italy*  
Maurizio Spadevecchia, *Polytechnic University of Bari, Italy*  
Giuseppe Pascazio, *Polytechnic University of Bari, Italy*  
Fabio Antonacci, *Polytechnic University of Bari, Italy*  
Gaetano Mirko Sorrentino, *Polytechnic University of Bari, Italy*

**Impact of the cooling technique on the voltage stability in thin superconducting microbridges**

Antonio Leo, *University of Salerno, Italy*  
Angela Nigro, *University of Salerno, Italy*  
Sandro Pace, *University of Salerno, Italy*  
Jean-Claude Villegier, *CEA, France*  
Gaia Grimaldi, *CNR-SPIN Institute, Italy*  
Nadia Martucciello, *CNR-SPIN Institute, Italy*  
Francesco Avitabile, *University of Sannio, Italy*  
Paola Romano, *University of Sannio, Italy*



### **Measurements Optimization for Control of Distributed Parameter Systems**

Sergey A. Brodsky, *International Institute for Advanced Aerospace Technologies, Russia*

Alexander V. Nebylov, *International Institute for Advanced Aerospace Technologies,  
State University of Aerospace Instrumentation, Russia*

Alexander I. Panferov, *State University of Aerospace Instrumentation, Russia*

### **Metrology problems of WIG-craft motion control**

Alexander V. Nebylov, *International Institute for Advanced Aerospace Technologies,  
State University of Aerospace Instrumentation, Russia*

Vladimir Nebylov, *State University of Aerospace Instrumentation, Russia*

Alexander Knyazhsky, *State University of Aerospace Instrumentation, Russia*

### **Reliability Degradation, Preventive and Corrective Maintenance of UAV Systems**

Enrico Petritoli, *"Roma Tre" University, Italy*

Fabio Leccese, *"Roma Tre" University, Italy*

Lorenzo Ciani, *University of Florence, Italy*

### **Nickel supported on Y2O3-ZrO2 as highly selective and stable CO2 methanation catalyst for in-situ propellant production on Mars**

Simonetta Tuti, *"Roma Tre" University, Italy*

Igor Luisetto, *"Roma Tre" University, Italy*

Fabio Leccese, *"Roma Tre" University, Italy*

Jagadesh K. Kesavan, *"Roma Tre" University, Italy*

Stefano Casciardi, *INAIL Research, Italy*

### **Electronic Nose: a First Sensors Array Optimization for Pesticides Detection based on Wilks' $\Lambda$ -statistic**

F. Leccese, *"Roma Tre" University, Italy*

M. Cagnetti, *"Roma Tre" University, Italy*

S. Giannetti, *"Roma Tre" University, Italy*

E. Petritoli, *"Roma Tre" University, Italy*

S. Tuti, *"Roma Tre" University, Italy*

I. Luisetto, *"Roma Tre" University, Italy*

A. Pecora, *IMM-CNR, Italy*

L. Maiolo, *IMM-CNR, Italy*

R. Đurović-Pejčev, *Institute of Pesticides and Environmental Protection, Serbia*

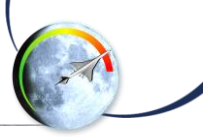
T. Đorđević, *Institute of Pesticides and Environmental Protection, Serbia*

A. Tomašević, *Institute of Pesticides and Environmental Protection, Serbia*

V. Bursić, *Institute of Pesticides and Environmental Protection, Serbia*

V. Arenella, *Fonderie Digitali s.r.l., Italy*

P. Gabriele, *Fonderie Digitali s.r.l., Italy*



### **Synthesis of amorphous Mg-carbonates for the application in the production of advanced materials**

Caterina De Vito, *Sapienza University of Rome, Italy*

Laura Medeghini, *Sapienza University of Rome, Italy*

Silvano Mignardi, *Sapienza University of Rome, Italy*

Fabio Leccese, *"Roma Tre" University, Italy*

### **A virtual test-bench for noise figure measurements of mismatched devices**

Emanuele Cardillo, *University of Messina, Italy*

Alina Caddemi, *University of Messina, Italy*

### **LEDSAT: a LED-based CubeSat for optical orbit determination methodologies improvement**

Giammarco Cialone, *Sapienza University of Rome, Italy*

Paolo Marzioli, *Sapienza University of Rome, Italy*

Silvia Masillo, *Sapienza University of Rome, Italy*

Andrea Gianfermo, *Sapienza University of Rome, Italy*

Lorenzo Frezza, *Sapienza University of Rome, Italy*

Alice Pellegrino, *Sapienza University of Rome, Italy*

Fabrizio Piergentili, *Sapienza University of Rome, Italy*

Fabio Santoni, *Sapienza University of Rome, Italy*

### **Dynamic Analysis of Aircraft Landing Gear Wheel**

Jerzy Jóźwik, *Lublin University of Technology, Poland*

Jarosław Pytka, *Lublin University of Technology, Poland*

Arkadiusz Tofil, *The Institute of Technical Sciences and Aviation, Poland*

### **Energy Saving Adaptive SDR Transmitters for Small Satellites and Their Metrological Characteristics**

Anatoliy Platonov, *Warsaw University of Technology, Poland*

### **Testing of airborne laser altimetry sensors**

Lorenzo Ciani, *University of Florence, Italy*

Matteo Venzi, *University of Florence, Italy*

### **UAS aided landing and obstacle detection through LIDAR-Sonar data**

Umberto Papa, *University of Naples Parthenope, Italy*

Gennaro Ariante, *University of Naples Parthenope, Italy*

Giuseppe Del Core, *University of Naples Parthenope, Italy*



**Miniaturized flight data recorder for unmanned aerial vehicles and ultralight aircrafts**

Przemysław Kordowski, *Air Force Institute of Technology, Poland*

Zbigniew Jakielaszek, *Air Force Institute of Technology, Poland*

Mirosław Nowakowski, *Air Force Institute of Technology, Poland*

Andrzej Panas, *Air Force Institute of Technology, Poland*

**Stereo vision module for UAV navigation system**

Bartosz Brzozowski, *Military University of Technology, Poland*

Natalia Szymanek, *Military University of Technology, Poland*

**Algorithms for the detection and compensation interference of magnetic field measurement**

Marcin Chodnicki, *Air Force Institute of Technology, Poland*

Michał Mazur, *Air Force Institute of Technology, Poland*

Mirosław Nowakowski, *Air Force Institute of Technology, Poland*

Grzegorz Kowaleczko, *Air Force Institute of Technology, Poland*

**Specific damping capacity of CuZn and CuZnAl metal foams, a preliminary study**

Diego Scaccabarozzi, *Politecnico di Milano, Italy*

Bortolino Saggini, *Politecnico di Milano, Italy*

Marianna Magni, *Politecnico di Milano, Italy*

Alessio Sesana, *Politecnico di Milano, Italy*

Marco Tarabini, *Politecnico di Milano, Italy*

Jacopo Fiocchi, *National Research Council, CNR, Italy*

Carlo Alberto Biffi, *National Research Council, CNR, Italy*

Ausonio Tuissi, *National Research Council, CNR, Italy*

**Volume scattering losses evaluation for radar sounding of Jovian icy moons**

Federico Di Paolo, *Istituto di Radioastronomia, INAF, Italy*

Roberto Orsei, *Istituto di Radioastronomia, INAF, Italy*

Sebastian E. Lauro, *Roma Tre University, Italy*

Barbara Cosciotti, *Roma Tre University, Italy*

Elisabetta Mattei, *Roma Tre University, Italy*

Elena Pettinelli, *Roma Tre University, Italy*

**Comparison of mixers and analog multipliers in Analog-to-Information Converters**

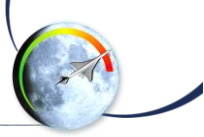
Pasquale Daponte, *University of Sannio, Italy*

Luca De Vito, *University of Sannio, Italy*

Grazia Iadarola, *University of Sannio, Italy*

Sergio Rapuano, *University of Sannio, Italy*





### **Baseline operation planning for the High Resolution Imaging Channel of BepiColombo mission to Mercury**

Michele Zusi, *INAF-IAPS, Italy*

Gaetano Di Achille, *INAF-OATe, Italy*

Valentina Galluzzi, *INAF-IAPS, Italy*

Elena Mazzotta Epifani, *INAF-OAR, Italy*

Vincenzo Della Corte, *Università Parthenope, Italy*

Pasquale Palumbo, *Università Parthenope, Italy*

Gabriele Cremonese, *INAF-OAPd, Italy*

Raffaele Mugnuolo, *ASI, Italy*

Milena Amoroso, *ASI, Italy*

### **Performances of the SIMBIO-SYS High Resolution Imaging Channel on board BepiColombo/ESA spacecraft**

V. Della Corte, *Parthenope University of Naples, IAPS-INAF, Italy*

P. Palumbo, *Parthenope University of Naples, IAPS-INAF, Italy*

M. Zusi, *IAPS-INAF, Italy*

M. Baroni, *Leonardo S.p.a., Italy*

G. Cremonese, *Osservatorio Astronomico di Padova, INAF, Italy*

R. Mugnuolo, *ASI, Italy*

### **GNSS performance modelling for positioning and navigation in urban environments**

Suraj Bijjahalli, *RMIT University, Australia*

Alessandro Gardi, *RMIT University, Australia*

Roberto Sabatini, *RMIT University, Australia*

---

**11:40 - 12:45**

#### **DEMO SESSION**

**Chairs:** Gianluca Mazzilli, *University of Sannio, Italy*

Ioan Tudosa, *University of Sannio, Italy*

**Room:** *CNR Headquarter, Digital Corridor*

---

### **Live Demonstration: Test bed for sensor data fusion application in indoor navigation and target following**

Marco Carratù, *University of Salerno, Italy*

Giuseppe Ciavolino, *University of Salerno, Italy*

Salvatore Dello Iacono, *University of Salerno, Italy*

Matteo Ferro, *University of Salerno, Italy*



**Live Demonstration: Advancement of an Online Platform for Inertial Sensor Calibration**

Gaetan Bakalli, *University of Geneva, Switzerland*

Ahmed Radi, *University of Calgary, Canada*

Naser El-Sheimy, *University of Calgary, Canada*

Stéphane Guerrier, *Penn State University, USA*

Roberto Molinari, *Penn State University, USA*

Philipp Clausen, *Ecole Polytechnique Fédérale de Lausanne, Switzerland*

Jan Skaloud, *Ecole Polytechnique Fédérale de Lausanne, Switzerland*

**Live Demonstration: Dronesbench. Ground Measurements and development techniques for professional drones**

Mauro Pompetti, *DPM electronics, Italy*

---

**12:45 - 13:10**

**The Copernicus Earth Observation and Monitoring Programme**

**Room:** *CNR Headquarter, Auditorium*

---

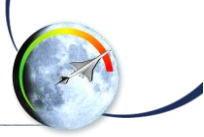
---

**12:40 - 14:00**

**LUNCH**

**Room:** *CNR Headquarter*

---



**14:30 - 16:10**

**Special Session on Metrology for Radar Systems - PART II**

**Chairs:** Alfonso Farina, *LFIEEE, Distinguished Lecturer of AESS*  
Marco Frasca, *MBDA Italia, Italy*

**Room:** *CNR Headquarter, Auditorium*

**14:30 Test Results of an innovative frustum of cone antenna sited in an outdoor Test Range**

Rossella Stallone, *SEASTEMA S.p.A, Italy*  
Marco Massardo, *SEASTEMA S.p.A, Italy*

**14:50 Assessing Spectral Compatibility Between Radar and Communication Systems on Measured Data**

Vincenzo Carotenuto, *University of Naples Federico II, Italy*  
Augusto Aubry, *University of Naples Federico II, Italy*  
Antonio De Maio, *University of Naples Federico II, Italy*  
Nicola Pasquino, *University of Naples Federico II, Italy*  
Alfonso Farina, *LFIEEE, Distinguished Lecturer of AESS*

**15:10 Localization of Gravitational Sources From Time-Frequency Maps**

Paolo Adesso, *University of Salerno, CNIT, INFN, Italy*  
Maurizio Longo, *University of Salerno, CNIT, Italy*  
Vincenzo Matta, *University of Salerno, CNIT, INFN, Italy*  
Vincenzo Pierro, *University of Sannio, INFN, Italy*

**15:30 On the use of ExoMars Radar Doppler Altimeter for Descent Module Attitude Reconstruction**

Marco Iorio, *Thale Alenia Space Italia, Italy*  
Pasquale Pepe, *Thale Alenia Space Italia, Italy*  
Michela Veredice, *Thale Alenia Space Italia, Italy*

**15:50 A MISO radar system for drone localization**

Giulia Sacco, *Sapienza University of Rome, Italy*  
Erika Pittella, *Sapienza University of Rome, Italy*  
Emanuele Piuze, *Sapienza University of Rome, Italy*  
Stefano Pisa, *Sapienza University of Rome, Italy*



**14:30 - 16:10**

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

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

Ilaria Carlomagno, *"Roma Tre" University, Italy*

**Room:** *CNR Headquarter, Marconi Hall*

**14:30 [INVITED] Synchrotron X-rays methodologies for Aerospace Materials**

Ilaria Carlomagno, *"Roma Tre" University, Italy*

**14:50 A New Reliability Approach for Additive Layers Manufactured Components: an Improvement**

Francesca Nanni, *University of Rome Tor Vergata, Italy*

Simona Nacamulli, *Unoauono Srl, Italy*

Ruggero De Francesco, *SeTeL s.r.l, Italy*

Enrico Petritoli, *"Roma Tre" University, Italy*

Rosario Morello, *University "Mediterranea" of Reggio Calabria, Italy*

**15:10 Radome Reliability**

Anna Paggi, *ItalConsul s.r.l., Italy*

Gian Luca Mariotti, *ItalConsul s.r.l., Italy*

Roberto Paggi, *ItalConsul s.r.l., Italy*

Ernesto F. Ghizzoni, *MBDA Spa, Italy*

Fabio Leccese, *"Roma Tre" University, Italy*

Andrea Calogero, *"Roma Tre" University, Italy*

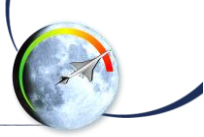
**15:30 Applicability of the Mixed Reality to Maintenance and Training Processes of C4I Systems in Italian Air Force**

Pompeo Piedimonte, *Logistic Command, Italian Air Force, Italy*

Silvia Liberata Ullo, *IEEE Member, University of Sannio, Italy*

**15:50 Measuring of Axis Errors and Their Prognosis During Aircraft Parts Machining**

Jerzy Józwiak, *Lublin University of Technology, Poland*



**14:30 - 16:10**

**Special Session on Measurement and Instrumentation for Aerospace Applications - PART II**

**Chairs:** Stefano Debei, *University of Padua, Italy*  
Marco Pertile, *University of Padua, Italy*

**Room:** *CNR Headquarter, Giacomello Hall*

**14:30 Smart Air-Data Probe for Fault-Tolerant Flow Measurements**

Francesco Schettini, *Università di Pisa, Italy*  
Gianpietro Di Rito, *Università di Pisa, Italy*  
Roberto Galatolo, *Università di Pisa, Italy*

**14:50 Design of a Wireless Passive Sensing System for Impact Detection of Aerospace Composite Structures**

Hailing Fu, *Imperial College London, UK*  
Aldyandra Hami Seno, *Imperial College London, UK*  
Zahra Sharif Khodaei, *Imperial College London, UK*  
M. H. Ferri Aliabadi, *Imperial College London, UK*

**15:10 Application of Piezoelectric Sensors for Structural Health Monitoring in Aerospace**

Filip Ksica, *Brno University of Technology, Czech Republic*  
Zdenek Hadas, *Brno University of Technology, Czech Republic*  
Jiri Hlinka, *Brno University of Technology, Czech Republic*

**15:30 Camera Rig Extrinsic Calibration Using a Motion Capture System**

Sebastiano Chiodini, *CISAS "Giuseppe Colombo", University of Padova, Italy*  
Marco Pertile, *CISAS "Giuseppe Colombo", University of Padova, Italy*  
Riccardo Giubilato, *CISAS "Giuseppe Colombo", University of Padova, Italy*  
Federico Salvioli, *ALTEC S.p.A., Italy*  
Marco Barrera, *ALTEC S.p.A., Italy*  
Paola Franceschetti, *Thales Alenia Space - Italia, Italy*  
Stefano Debei, *CISAS "Giuseppe Colombo", University of Padova, Italy*

**15:50 Shape Measurement of Large Structures in Space: Experiments**

Thibaud Talon, *California Institute of Technology, USA*  
Sergio Pellegrino, *California Institute of Technology, USA*



---

**16:10 - 16:30      COFFEE BREAK**

**Room:** *CNR Headquarter*

---

---

**16:30 - 17:50**

**General Session - PART IV**

**Chairs:** Silvia Ullo, *IEEE Member, University of Sannio, Italy*  
Konrad Wojtowicz, *Military University of Technology, Poland*

**Room:** *CNR Headquarter, Auditorium*

---

**16:30      MET4F: a tool for providing in near real-time weather information on board**

Myriam Montesarchio, *Italian Aerospace Research Center, Italy*  
Alessandra Lucia Zollo, *Italian Aerospace Research Center, Italy*  
Paola Mercogliano, *Italian Aerospace Research Center, Italy*

**16:50      Investigation of image based measurement for aircraft approach**

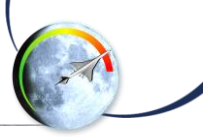
Jacek Pieniżek, *Rzeszow University of Technology, Poland*

**17:10      Design of a Microwave Sensor for Fuel Quality Monitoring**

Gregorio Andria, *Polytechnic University of Bari, Italy*  
Filippo Attivissimo, *Polytechnic University of Bari, Italy*  
Attilio Di Nisio, *Polytechnic University of Bari, Italy*  
Giuseppe Maria D'Aucelli, *Polytechnic University of Bari, Italy*  
Sergio Mario Camporeale, *Polytechnic University of Bari, Italy*  
Pietro Pappalardi, *Polytechnic University of Bari, Italy*

**17:30      Stochastic Flash ADC in Hardware Correlator for Very Long Baseline Interferometry**

Marjan Urekar, *University of Novi Sad, Serbia*  
Nemanja Gazivoda, *University of Novi Sad, Serbia*  
Jelena Đorđević-Kozarov, *University of Niš, Serbia*



**16:30 - 17:50**

**General Session - PART V**

**Chairs:** Ioan Tudosa, *University of Sannio, Italy*  
Graham Wild, *RMIT University, Australia*

**Room:** *CNR Headquarter, Marconi Hall*

**16:30 Temperature sensitivity of a quartz crystal microbalance for TGA in Space**

Marianna Magni, *Politecnico di Milano, Italy*  
Bortolino Saggin, *Politecnico di Milano, Italy*  
Diego Scaccabarozzi, *Politecnico di Milano, Italy*  
Marco Tarabini, *Politecnico di Milano, Italy*  
Ernesto Palomba, *IAPS-INAF, Italy*  
Andrea Longobardo, *IAPS-INAF, Italy*  
Fabrizio Dirri, *IAPS-INAF, Italy*  
Emiliano Zampetti, *IIA-CNR, Italy*

**16:50 Compressed Sensing Technologies and Challenges for Aerospace and Defense RF Source Localization**

Pasquale Daponte, *University of Sannio, Italy*  
Luca De Vito, *University of Sannio, Italy*  
Francesco Picariello, *University of Sannio, Italy*  
Sergio Rapuano, *University of Sannio, Italy*  
Ioan Tudosa, *University of Sannio, Italy*

**17:10 Study on Vacuum Leak Calibration Technology Based on Static Cumulative Comparison Method**

Lan Zhao, *Lanzhou Institute of Physics, Science and Technology, China*  
Yong-jun Cheng, *Lanzhou Institute of Physics, Science and Technology, China*  
Wen-jun Sun, *Lanzhou Institute of Physics, Science and Technology, China*  
Lian Chen, *Lanzhou Institute of Physics, Science and Technology, China*  
Ya-li Li, *Lanzhou Institute of Physics, Science and Technology, China*  
Tian-you Feng, *Lanzhou Institute of Physics, Science and Technology, China*

**17:30 A Novel Ultrasound Navigation Sensor for Indoor UAV Navigation**

Rohan Kapoor, *RMIT University, Australia*  
Alessandro Gardi, *RMIT University, Australia*  
Roberto Sabatini, *RMIT University, Australia*



**16:30 - 17:50**

**Special Session on Measurement and Instrumentation for Aerospace Applications - PART III**

**Chairs:** Stefano Debei, *University of Padua, Italy*  
Marco Pertile, *University of Padua, Italy*

**Room:** *CNR Headquarter, Giacomello Hall*

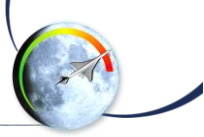
**16:30 Performance comparison among three optical fibre- based displacement sensors for Blade Tip Clearance measurements**

Rubén Fernández, *University of the Basque Country, Spain*  
Josu Amorebieta, *University of the Basque Country, Spain*  
Gaizka Durana, *University of the Basque Country, Spain*  
Josu Beloki, *Centro de Tecnologías Aeronáuticas, Spain*  
Joseba Zubia, *University of the Basque Country, Spain*

**16:50 OCEANS-18: monitoring undetected vessels in high risk maritime areas**

Angelo Dumitriu, *University of Padua, Italy*  
Giuliana Elena Miceli, *University of Padua, Italy*  
Sara Schito, *University of Padua, Italy*  
Davide Vertuani, *University of Padua, Italy*  
Pietro Cecchetto, *University of Padua, Italy*  
Luca Placco, *University of Padua, Italy*  
Giulia Callegaro, *University of Padua, Italy*  
Laura Marazzato, *University of Padua, Italy*  
Francesco Accattino, *University of Padua, Italy*  
Anselmo Bettio, *University of Padua, Italy*  
Elisa Conte, *University of Padua, Italy*  
Thomas Golfetto, *University of Padua, Italy*  
Enrico Cagnato, *University of Padua, Italy*  
Alberto Scomparin, *University of Padua, Italy*  
Rudy Roncato, *University of Padua, Italy*  
Lorenzo Rossi, *University of Padua, Italy*  
Gabriele Lombardo, *University of Padua, Italy*  
Michele Lucrezia, *University of Padua, Italy*  
Francesco Fontanot, *University of Padua, Italy*  
Carlo Bettanini, *University of Padua, Italy*





**17:10 Reconfigurable S-Band Patch Antenna Radiation Patterns for Satellite Missions**

Erika Pittella, *Sapienza University of Rome, Italy*

Stefano Pisa, *Sapienza University of Rome, Italy*

Augusto Nascetti, *Sapienza University of Rome, Italy*

**17:30 Position measurement and uncertainty analysis for the shutter mechanism mounted on the Rosetta mission**

Marco Pertile, *University of Padova, Italy*

Sebastiano Chiodini, *CISAS "G.Colombo", University of Padova, Italy*

Riccardo Giubilato, *CISAS "G.Colombo", University of Padova, Italy*

Mariolino De Cecco, *University of Trento, Italy*

Stefano Debei, *University of Padova, Italy*

---

**18:00 - 18:15**

**CLOSING AND AWARD CEREMONY**

**Room:** *CNR Headquarter, Auditorium*

---

