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Monday, June 27

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Alberto Martín-Ortega, Instituto Nacional de Técnica Aeroespacial, Spain
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Simone Silvestro, INAF – Osservatorio Astronomico di Capodimonte, Italy
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Giampiero Naletto, University of Padova, Italy
Massimiliano Tordi, Eie Group, Italy

SESSION 5.4 - Manufacturing and Metrology in the Aerospace Industry - Part 2

Room: Room E - Le Benedettine Congress Center
Chairs: Magdalena Zawada Michałowska, *Lublin University of Technology, Poland*
Ireneusz Zagórski, *Lublin University of Technology, Poland*

317 **Selected properties of the surface layer of objects made of various construction materials after vibratory shot peening**
Agnieszka Skoczylas, Lublin University of Technology, Poland

323 **Measurement Uncertainty of a Coordinate Measuring Machine Applied to a Thin-Walled Aircraft Structure in Relation to the Assessment of Dimensional and Shape Accuracy**
Magdalena Zawada-Michałowska, Lublin University of Technology, Poland
Paweł Pieśko, Lublin University of Technology, Poland
Józef Kuczmaszewski, Lublin University of Technology, Poland
Jerzy Józwik, Lublin University of Technology, Poland

328 **Geometric accuracy of deep holes drilled with various strategies and technological parameters**
Damian Moń, Lublin University of Technology, Poland
Paweł Pieśko, Lublin University of Technology, Poland
Magdalena Zawada-Michałowska, Lublin University of Technology, Poland
Jerzy Józwik, Lublin University of Technology, Poland

333 **Experiment on Repetition Rate Locking of a Fiber Optical Frequency Comb**
Zhitao Zhang, Beijing Aerospace Institute for Metrology and Measurement Technology, China
Yajun Liang, Beijing Aerospace Institute for Metrology and Measurement Technology, China
Tieli Zhang, Beijing Aerospace Institute for Metrology and Measurement Technology, China
Xiaoqiang Gao, Beijing Aerospace Institute for Metrology and Measurement Technology, China
Lin Liu, Beijing Aerospace Institute for Metrology and Measurement Technology, China

337 **Research On Absolute Distance Measurement using Inter-mode Beat of Optical Frequency Comb**
Xiaoxu Liu, Beijing Aerospace Institute for Metrology and Measurement Technology, China
Lin Liu, Beijing Aerospace Institute for Metrology and Measurement Technology, China
Yongchao Zhang, Beijing Aerospace Institute for Metrology and Measurement Technology, China
Zhitao Zhang, Beijing Aerospace Institute for Metrology and Measurement Technology, China
Xiaoqiang Gao, Beijing Aerospace Institute for Metrology and Measurement Technology, China
Yang Xie, Beijing Aerospace Institute for Metrology and Measurement Technology, China

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SESSION 6.2 - Structural Health Monitoring and Nondestructive Testing for Aerospace

Room: Room B - Le Benedettine Congress Center
Chairs: Leandro Maio, *University of Naples Federico II, Italy*
Vittorio Memmolo, *University of Naples Federico II, Italy*
Marco Laracca, *Sapienza University of Rome, Italy*

341 **An integrated structural health monitoring system based on Lamb waves**
Raffaele Vallifuoco, University of Campania Luigi Vanvitelli, Italy
Luigi Zeni, University of Campania Luigi Vanvitelli, Italy
Aldo Minardo, University of Campania Luigi Vanvitelli, Italy
Donato Perfetto, University of Campania Luigi Vanvitelli, Italy
Francesco Caputo, University of Campania Luigi Vanvitelli, Italy
Alessandro De Luca, University of Campania Luigi Vanvitelli, Italy

346 **Lamb waves detection through phi-OTDR for structural health monitoring**
Raffaele Vallifuoco, University of Campania Luigi Vanvitelli, Italy
Enis Cerri, University of Campania Luigi Vanvitelli, Italy
Aldo Minardo, University of Campania Luigi Vanvitelli, Italy
Luigi Zeni, University of Campania Luigi Vanvitelli, Italy
Rizwan Zahoor, University of Campania Luigi Vanvitelli, Italy
Donato Perfetto, University of Campania Luigi Vanvitelli, Italy
Francesco Caputo, University of Campania Luigi Vanvitelli, Italy
Alessandro De Luca, University of Campania Luigi Vanvitelli, Italy

351 **Design and realisation of a Wind Tunnel model for ice protection system demonstration**
Salvatore Ameduri, Centro Italiano Ricerche Aerospaziali, Italy
Angela Brindisi, Centro Italiano Ricerche Aerospaziali, Italy
Antonio Concilio, Centro Italiano Ricerche Aerospaziali, Italy
Giovangiuseppe Giusto, Centro Italiano Ricerche Aerospaziali, Italy
Leandro Maio, University of Naples Federico II, Italy
Vittorio Memmolo, University of Naples Federico II, Italy
Lorenzo Notarnicola, Centro Italiano Ricerche Aerospaziali, Italy
Lorenzo Pellone, Centro Italiano Ricerche Aerospaziali, Italy
Filomena Piscitelli, Centro Italiano Ricerche Aerospaziali, Italy
Fabrizio Ricci, University of Naples Federico II, Italy

356 **Use of piezoelectric patches in Health Usage and Monitoring Systems: a preliminary assessment**
Mario R. Chiarelli, University of Pisa, Italy
Gianpietro Di Rito, University of Pisa, Italy
Benedetto Luciano, AESIS srl, Italy
Ivan J. Miralles Irles, University of Pisa, Italy
Enrico Liberatori, University of Pisa, Italy
Luca Bancallari, MBDA Italia S.p.A., Italy

362 **Shape Sensing of a Doubly Curved Aft Fuselage Panel using Inverse Finite Element Method**
Mohammad A. Abdollahzadeh, Sabanci University, Turkey
Adnan Kefal, Sabanci University, Turkey
Mehmet Yildiz, Sabanci University, Turkey

368 **Optimization of an ECT-based method for the thickness measurement of metallic plates**
Giulia Di Capua, University of Cassino and Southern Lazio, Italy
Luigi Ferrigno, University of Cassino and Southern Lazio, Italy
Marco Laracca, Sapienza University of Rome, Italy
Alessandro Sardellitti, University of Cassino and Southern Lazio, Italy
Antonello Tamburrino, University of Cassino and Southern Lazio, Italy
Salvatore Ventre, University of Cassino and Southern Lazio, Italy

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SESSION 6.3 - Complex systems operational availability: Measurements, Methodologies and Requirements

Room: Room C - Le Benedettine Congress Center
Chair: Fabio Leccese, *Roma Tre University of Rome, Italy*
Manuel Greco, *Roma Tre University of Rome, Italy*

374 **COTS Components for Space Applications: the Evaluation of Apparent Activation Energy (Eaa)**
Enrico Petritoli, Università degli Studi "Roma Tre", Italy
Fabio Leccese, Università degli Studi "Roma Tre", Italy

379 **Proposal of NFC Type Access Structure for Sensors Configuration in Aerospace Scenario**
Mariagrazia Leccisi, Università degli Studi "Roma Tre", Italy
Marco Cagnetti, Università degli Studi "Roma Tre", Italy
Fabio Leccese, Università degli Studi "Roma Tre", Italy

384 **A THz Imaging Scanner to Detect Structural and Fire Damage on Glass Fiber Composite**
Manuel Greco, Università degli Studi "Roma Tre", Italy
Emilio Giovenale, ENEA, Fusion and Nuclear Dept, Italy
Fabio Leccese, Università degli Studi "Roma Tre", Italy
Andrea Doria, ENEA, Fusion and Nuclear Dept, Italy
Eduardo De Francesco, SeTeL s.r.l, Italy
Gian Piero Gallerano, ENEA, Fusion and Nuclear Dept, Italy

390 **CO2 Recycling into CH4 and H2O over Ru/CeO2 Catalyst Prepared by one-pot Synthesis**
Simonetta Tuti, "Roma Tre" University, Rome, Italy
Umberto Pasqual Laverdura, "Roma Tre" University, Rome, Italy
Igor Luisetto, Dept. of Energy Technologies, ENEA, Italy
Sergio Lo Mastro, "Roma Tre" University, Rome, Italy
Stefano Stendardo, Dept. of Energy Technologies, ENEA, Italy

396 **Physical and chemical flexible sensors as valuable tool for monitoring space activities**
Francesco Maita, CNR - IMM, Italy
I.vano Lucarini, CNR - IMM, Italy
Marco Scatto, University of Ca' Foscari, Italy
Massimiliano Ruggeri, CNR - STEMS, Italy
Luca Maiolo, CNR - IMM, Italy

Tuesday, June 29

SESSION 7.1 - Space to Space: Scientific and Technological Challenges for Human and Robotic Space Exploration - Part 1

Room: Room A - Le Benedettine Congress Center
Chairs: Vittorio Ancona, *Thales Alenia Space, Italy*
Pietro Ferraro, *CNR - Institute of Applied Sciences and Intelligent Systems, Italy, CTS ASI*

Paolo Maggiore, *Politecnico di Torino, Italy*
Piero Messidoro, *Politecnico di Torino, Italy*

402 **Adaptive Vertical Farm for Fresh Food Production in Orbital Stations and Future Lunar Settlements**
Patrizia Bagnerini, University of Genoa, Italy
Mauro Gaggero, National Research Council, Italy
Marco Ghio, Space V S.r.l., Italy
Franco Malerba, Space V S.r.l., Italy
Michele Angelo Malerba, Space V S.r.l., Italy

408 **Design, fabrication and test of functional panels for multi-mission modular satellite platform**
Sara Coppola, CNR - Institute of Applied Sciences and Intelligent Systems, Italy
Ciro Tortora, CNR - Institute of Applied Sciences and Intelligent Systems, Italy
Massimo Rippa, CNR - Institute of Applied Sciences and Intelligent Systems, Italy
Pietro Pasolini, S.R.S. Engineering Design s.r.l., Italy
Giovanni D'Aniello, S.R.S. Engineering Design s.r.l., Italy
Annalaura Fabbricatore, University of Salerno, Italy
Vittorio Alfieri, University of Salerno, Italy
Fabrizia Caiazzo, University of Salerno, Italy
Pietro Ferraro, CNR - Institute of Applied Sciences and Intelligent Systems, Italy

413 **Customized Free-standing Thin Liquid Film Forming Based On Controllable Iris**
Vincenzo Ferraro, University of Naples Federico II, Italy
Zhe Wang, University of Naples Federico II, Italy
Sara Coppola, CNR - Institute of Applied Sciences and Intelligent Systems, Italy
Veronica Vespini, CNR - Institute of Applied Sciences and Intelligent Systems, Italy
Volodymyr Tkachenko, CNR - Institute of Applied Sciences and Intelligent Systems, Italy
Lisa Miccio, CNR - Institute of Applied Sciences and Intelligent Systems, Italy
Pier Luca Maffettone, University of Naples Federico II, Italy

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SESSION 7.2 - General Session - Part 4

Room: Room B - Le Benedettine Congress Center
Chair: Gianluca Caposciutti, *University of Pisa, Italy*

418 **Design of Enhanced Adaptive Filter for Integrated Navigation System of FOG-SINS and Star Tracker**
Design of Enhanced Adaptive Filter for Integrated Navigation System of FOG-SINS and Star Tracker
Nassim Bessaad, Tong University, China
Qilian Bao, Tong University, China
Zhao Jiangkang, Tong University, China

424 **Navigation Under Abrupt Motion Disturbances: A Convex Programming Perspective**
Natnael S. Zewge, KAIST, South Korea
Taeho Kim, KAIST, South Korea
Hyochoong Bang, KAIST, South Korea

430 **Hera Inter-Satellite link Doppler characterization for Didymos Gravity Science experiments**
Edoardo Gramigna, University of Bologna, Italy
Jeppe Grædal Johansen, GomSpace A/S, Denmark
Riccardo Lasagni Manghi, University of Bologna, Italy
José Magalhães, GomSpace Luxembourg SARL, Luxembourg
Marco Zannoni, University of Bologna, Italy
Paolo Tortora, University of Bologna, Italy
Etienne Le Bras, GomSpace Luxembourg SARL, Luxembourg
Andrea Togni, University of Bologna, Italy

436 **Design of an optical Butler matrix for beamforming in satellite communications**
Luca Rodio, Politecnico di Bari, Italy
Vincenzo Devito, Politecnico di Bari, Italy
Marco Grande, Politecnico di Bari, Italy
Giovanna Calò, Politecnico di Bari, Italy
Antonella D'Orazio, Politecnico di Bari, Italy

SESSION 7.3 - Terrestrial and In-Flight Verification of the Guidance, Navigation and Control Systems for Aerospace Vehicles

Room: Room C - Le Benedettine Congress Center
Chairs: Yevgeny Somov, *Samara State Technical University, Russia*
Paolo Castaldi, *University of Bologna, Italy*

441 **Intelligent hybrid robust fault detection and isolation of reaction wheels in satellite attitude control system**
Paolo Castaldi, University of Bologna, Italy
H. A. Nozari, Babol Noshirvani University of Technology, Iran
Jalil Sadati-Rostami, Babol Noshirvani University of Technology, Iran
H. D. Banadaki, Islamic Azad University, Iran
Silvio Simani, University of Ferrara, Italy

447 **Analysis of the Space Robot Control Accuracy at Checking a Geostationary Satellite State**
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

453 **Checking Autonomous Control of a Geostationary Satellite during Long-term Conservation**
Yevgeny Somov, Samara State Technical University, Russia
Sergey Butyrin, Samara State Technical University, Russia
Sergey Somov, Samara State Technical University, Russia
Nikolay Rodnishchev, Kazan National Research Technical University named after A.N. Tupolev – KAI, Russia
Tatyana Somova, Samara State Technical University, Russia

459 **Design of passive fault-tolerant attitude controller for a fractional order flexible satellite model**
Siva Kumar Mallipeddi, University of Bologna, Italy
Paolo Castaldi, University of Bologna, Italy
Hasan Abbasi Nozari, Babol Noshirvani University of Technology, Iran
Silvio Simani, University of Ferrara, Italy

465 **Minimizing the Trajectory of a Low Flying Unmanned Aerial Vehicles without Information about the Earth Physical Fields**
Alexander Knyazhsky, Saint Petersburg State University of Aerospace Instrumentation, Russia
Alexander Nebylov, Saint Petersburg State University of Aerospace Instrumentation, Russia

470 **Efficiency of Ekranoplanes Application for Chemical Processing of Agricultural Fields**
Alexander Nebylov, Saint Petersburg State University of Aerospace Instrumentation, Russia
Vladimir Nebylov, Saint Petersburg State University of Aerospace Instrumentation, Russia
Alexander Panferov, Saint Petersburg State University of Aerospace Instrumentation, Russia

SESSION 7.4 - University satellites and aerospace research and development

Room: Room E - Le Benedettine Congress Center
Chair: Vladimir Saetchnikov, *Belarusian State University, Belarus*

475 **Hardware Accelerated Digital Signal Processing for Weather Satellite University Ground Station**
Siarhei Liashkevich, Belarusian State University, Belarus
Vasilina Baranova, Belarusian State University, Belarus
Vladimir Saetchnikov, Belarusian State University, Belarus
Oh Suchan, Belarusian State University, Belarus

480 **Shared CubeSat Bus Approach for the design and development of the Sapienza S5Lab nano satellites**
Lorenzo Frezza, DIMA - Sapienza University of Rome, Italy
Paolo Marzioli, DIMA - Sapienza University of Rome, Italy
Alessandro Moretti, DIMA - Sapienza University of Rome, Italy
Sidhant Kumar, DIMA - Sapienza University of Rome, Italy
Michela Boscia, DIMA - Sapienza University of Rome, Italy
Emanuele Bedetti, DIMA - Sapienza University of Rome, Italy
Niccolò Picci, DIMA - Sapienza University of Rome, Italy
Andrea Gianfermo, DIMA - Sapienza University of Rome, Italy
Diego Amadio, DIMA - Sapienza University of Rome, Italy
Federico Curianò, DIMA - Sapienza University of Rome, Italy
Fabrizio Piergentili, DIMA - Sapienza University of Rome, Italy
Luca Gugliermetti, DIAEE - Sapienza University of Rome, Italy
Fabio Santoni, DIAEE - Sapienza University of Rome, Italy

486 **Orbital Parameters Pre-launch Calculation Methods for a Piggyback Launched University Small Satellite**
Alexander Spiridonov, Belarusian State University, Belarus
Vasilina Baranova, Belarusian State University, Belarus
Dmitrii Ushakov, Belarusian State University, Belarus
Vladimir Saetchnikov, Belarusian State University, Belarus
Vladimir Cherny, Belarusian State University, Belarus

491 **Formulation and Experimental design of Reusable launchers through Multiple Investigations (FERMI) : preliminary study of single stage to orbit concept**
Sanjay Lakshminarayana, University of Pisa, Italy
Mario Rosario Chiarelli, University of Pisa, Italy

497 **A preliminary feasibility analysis of a new data-relay small satellites constellation**
Carla Cicala, University of Naples Federico II, Italy
Chiara Abbundo, University of Naples Federico II, Italy
Stefano Cannavacciuolo, University of Naples Federico II, Italy
Maria Daniela Graziano, University of Naples Federico II, Italy
Valerio Striano, Distretto Aerospaziale Campano, Italy
Roberto Del Prete, University of Naples Federico II, Italy

SESSION 8.1 - Space to Space: Scientific and Technological Challenges for Human and Robotic Space Exploration - Part 2

Room: Room A - Le Benedettine Congress Center
Chairs: Vittorio Ancona, *Thales Alenia Space, Italy*
Pietro Ferraro, *CNR - Institute of Applied Sciences and Intelligent Systems, Italy, CTS ASI*
Paolo Maggiore, *Politecnico di Torino, Italy*
Piero Messidoro, *Politecnico di Torino, Italy*

503 **Innovative sensor networks for massive distributed thermal measurements in space applications under different environmental testing conditions**
Alessandro Aimasso, Politecnico di Torino, Italy
Matteo D.L. Dalla Vedova, Politecnico di Torino, Italy
Paolo Maggiore, Politecnico di Torino, Italy

509 **Topological optimization and additive manufacturing of a metal functional panel for multimission modular satellite platform**
Fabrizia Caiazzo, University of Salerno, Italy
Vittorio Alfieri, University of Salerno, Italy
Annalaura Fabbricatore, University of Salerno, Italy
Paolo Argenio, University of Salerno, Italy

POSTER SESSION 1

Room: Le Benedettine Congress Center
Chair: Gianluca Caposciutti, *University of Pisa, Italy*

Bernardo Tellini, *University of Pisa, Italy*

514 **Mass and volume consumption of selected polymer composites under dry friction conditions**
Jerzy Józwik, Lublin University of Technology, Poland
Katarzyna Biruk-Urban, Lublin University of Technology, Poland

520 **Influence of Technological Parameters on Vibrations During Cutting of Difficult-to-Cut Materials with Using Water-Jet Machine**
Michał Leleń, Lublin University of Technology, Poland
Jerzy Józwik, Lublin University of Technology, Poland

526 **I-Box: An Automated Remote Sensing System for Space Scientific Instrumentation**
Felipe Serrano, National Institue of Aerospace of Technology, Spain
Javier Martínez Oter, National Institue of Aerospace of Technology, Spain
Victor Apestigue, National Institue of Aerospace of Technology, Spain
Jesus Nuñez, National Institue of Aerospace of Technology, Spain
Saturnino Montalbo, National Institue of Aerospace of Technology, Spain
Jose R. de Mingo, National Institue of Aerospace of Technology, Spain
Isaías Carrasco, National Institue of Aerospace of Technology, Spain
Daniel Toledo, National Institue of Aerospace of Technology, Spain
Ignacio Arruego, National Institue of Aerospace of Technology, Spain

532 **Point contact spectroscopy: a powerful technique for the low temperature characterization of superconducting materials**
Paola Romano, University of Sannio, Italy
Francesco Avitabile, University of Sannio, Italy
Antonio Di Bartolomeo, University of Salerno, Italy
Filippo Giubileo, CNR-SPIN Salerno, Italy

538 **Measurement of the fluidic resistance of the MicroMED optical particle counter**
Diego Scaccabarozzi, Politecnico di Milano, Italy
Bortolino Saggin, Politecnico di Milano, Italy
Elimar Vieira Vaz Junior, Politecnico di Milano, Italy
Marco Giovanni Corti, Politecnico di Milano, Italy
Pietro Valnegri, Politecnico di Milano, Italy
Francesca Esposito, INAF - Osservatorio Astronomico di Capodimonte, Italy
Fabio Cozzolino, INAF - Osservatorio Astronomico di Capodimonte, Italy
Giuseppe Mongelluzzo, INAF - Osservatorio Astronomico di Capodimonte, Italy
Gabriele Franzese, INAF - Osservatorio Astronomico di Capodimonte, Italy
Carmen Porto, INAF - Osservatorio Astronomico di Capodimonte, Italy
Alan Cosimo Ruggeri, INAF - Osservatorio Astronomico di Capodimonte, Italy
Cesare Molfese, INAF - Osservatorio Astronomico di Capodimonte, Italy
Daniele Brienza, INAF – Institute for Space Astrophysics and Planetology, Italy
Fausto Cortecchia, INAF – Osservatorio di astrofisica e scienza dello spazio, Italy
Alberto Martin-Ortega, Instituto Nacional de Técnica Aeroespacial (INTA), Spain
Ignacio Arruego, Instituto Nacional de Técnica Aeroespacial (INTA), Spain
Nuria Andrés Santiuste, Instituto Nacional de Técnica Aeroespacial (INTA), Spain

544 **Experimental Evaluation of Pose Initialization Methods for Relative Navigation Between Non-Cooperative Satellites**
Sebastiano Chiodini, CISAS "Giuseppe Colombo", University of Padova, Italy
Marco Pertile, University of Padova, Italy
Pierdomenico Fracchiolla, University of Padova, Italy
Andrea Valmorbida, University of Padova, Italy
Enrico Lorenzini, University of Padova, Italy
Stefano Debei, University of Padova, Italy

550 **DORA telescope project: preliminary characterization of the deployment mechanism**
Pietro Valnegri, Politecnico di Milano, Italy
Bortolino Saggin, Politecnico di Milano, Italy
Diego Scaccabarozzi, Politecnico di Milano, Italy
Stefano Arrigoni, Politecnico di Milano, Italy
Fabrizio Capaccioni, INAF – Istituto di Astrofisica e Planetologia Spaziali, Italy
Giancarlo Bellucci, INAF – Istituto di Astrofisica e Planetologia Spaziali, Italy
Giovanna Rinaldi, INAF – Istituto di Astrofisica e Planetologia Spaziali, Italy

556 **Surface Ice Detection and Accretion Monitoring on Composite Structures employing Electromechanical Impedance Method**
Nicolas Christophel, University of Frankfurt, Germany
Sebastian Kohl, University of Frankfurt, Germany
Leandro Maio, University of Naples Federico II, Italy
Vittorio Memmolo, University of Naples Federico II, Italy
Jochen Moll, University of Frankfurt, Germany

POSTER SESSION 2

Room: Le Benedettine Congress Center
Chair: Gianluca Caposciutti, *University of Pisa, Italy*
Bernardo Tellini, *University of Pisa, Italy*

560 **Beamriding Homing Systems for UAV: New Approaches and Applications**
Enrico Petritoli, Roma Tre University, Italy
Fabio Leccese, Roma Tre University, Italy

566 **University Mobile Optical Surveillance System For Low-Earth Space Object Orbit Determination**
Alexander Spiridonov, Belarusian State University, Belarus
Vasilina Baranova, Belarusian State University, Belarus
Dmitrii Ushakov, Belarusian State University, Belarus
Vladimir Saetchnikov, Belarusian State University, Belarus
Zoya Kenko, Belarusian State University, Belarus
Dzianis Zasmuzhats, Belarusian State University, Belarus
Vitaly Mechinsky, Belarusian State University, Belarus

571 **Simple and Economical Shearography System for Testing of Aeronautical Composite Material**
Giuseppe Schirripa Spagnolo, Roma Tre University, Italy
Mariagrazia Leccisi, Roma Tre University, Italy
Fabio Leccese, Roma Tre University, Italy

577 **Design of the optical bench for the DORA telescope**
Stefano Arrigoni, Politecnico di Milano, Italy
Diego Scaccabarozzi, Politecnico di Milano, Italy
Pietro Valnegri, Politecnico di Milano, Italy
Bortolino Saggin, INAF – Istituto di Astrofisica e Planetologia Spaziali, Italy
Fabrizio Capaccioni, INAF – Istituto di Astrofisica e Planetologia Spaziali, Italy
Giancarlo Bellucci, INAF – Istituto di Astrofisica e Planetologia Spaziali, Italy
Giovanna Rinaldi, INAF – Istituto di Astrofisica e Planetologia Spaziali, Italy

582 **Coverage optimization of satellite formations using Instantaneous overlap area**
Karthick Dharmarajan, Sapienza University of Rome, Italy

588 **Development of highly reliable UVM-based Verification Environment for SpaceWire Codec**
Simone Vagaggini, University of Pisa, IngeniArs S.r.l, Italy
Roberto Ciardi, University of Pisa, IngeniArs S.r.l, Italy
Marco Trafeli, IngeniArs S.r.l, Italy
Luca Fanucci, University of Pisa, Italy

593 **Design of a Test Equipment Prototype for SpaceWire Data Generation and Processing in a Specific Time-Constrained Test Scenario**
Roberto Ciardi, University of Pisa, IngeniArs S.r.l, Italy
Simone Vagaggini, University of Pisa, IngeniArs S.r.l, Italy
Antonino Marino, IngeniArs S.r.l, Italy
Luca Fanucci, University of Pisa, Italy

598 **Temperature Compensation Strategies for Lamb Wave Inspection using Distributed Sensor Networks**
Massimiliano Olino, University of Naples Federico II, Italy
Yevgeniya Lugovtsova, Federal Institute for Materials Research and Testing, Germany
Vittorio Memmolo, University of Naples Federico II, Italy
Jens Prager, Federal Institute for Materials Research and Testing, Germany

602 **Optical Alignment of DORA Telescope: design and description of the laboratory setup**
Igor Di Varano, INAF - Institute for Space Astrophysics and Planetology, Italy
Fabrizio Capaccioni, INAF - Institute for Space Astrophysics and Planetology, Italy
Gianrico Filacchione, INAF - Institute for Space Astrophysics and Planetology, Italy
Giovanna Rinaldi, INAF - Institute for Space Astrophysics and Planetology, Italy
Giancarlo Bellucci, INAF - Institute for Space Astrophysics and Planetology, Italy
Vincenzo della Corte, INAF - Institute for Space Astrophysics and Planetology, Italy
Bortolino Saggin, Politecnico di Milano, Italy
Pietro Valnegri, Politecnico di Milano, Italy

607 **Remote sensing by drones of areas infected by Xylella Fastidiosa by using multispectral techniques**
Francesco Adamo, Politecnico di Bari, Italy
Gregorio Andria, Politecnico di Bari, Italy
Filippo Attivissimo, Politecnico di Bari, Italy
Attilio Di Nisio, Politecnico di Bari, Italy

SESSION 8.1 - Space to Space: Scientific and Technological Challenges for Human and Robotic Space Exploration - Part 3

Room: Room A - Le Benedettine Congress Center
Chairs: Vittorio Ancona, *Thales Alenia Space, Italy*
Pietro Ferraro, *CNR - Institute of Applied Sciences and Intelligent Systems, Italy, CTS ASI*
Paolo Maggiore, *Politecnico di Torino, Italy*
Piero Messidoro, *Politecnico di Torino, Italy*

612 **LuNaDrone: Small Autonomous Spacecraft for Lunar Lava Tubes Exploration**
Stefano Pescaglia, Politecnico di Torino, Italy
Giuseppe Bortolato, Politecnico di Torino, Italy
Paolo Maggiore, Politecnico di Torino, Italy
Piero Messidoro, Politecnico di Torino, Italy

618 **Innovative biosensor for testing the astronaut health during spaceflight**
Danila del Giudice, CNR - Institute of Applied Sciences and Intelligent Systems, Italy
Simona Itri, CNR - Institute of Applied Sciences and Intelligent Systems, Italy
Martina Mugnano, CNR - Institute of Applied Sciences and Intelligent Systems, Italy
Silvia Mari, Italian Space Agency, Italy
Francesca Ferranti, Italian Space Agency, Italy
Volodymyr Tkachenko, CNR - Institute of Applied Sciences and Intelligent Systems, Italy
Simonetta Grilli, CNR - Institute of Applied Sciences and Intelligent Systems, Italy
Pier Luca Maffettone, University of Naples Federico II, Italy

622 **Development and exploration of space weightlessness physiological effect tester**
Yongchao Zhang, Beijing Aerospace Institute for Metrology and Measurement Technology, China
Tieli Zhang, Beijing Aerospace Institute for Metrology and Measurement Technology, China
Xiaoxu Liu, Beijing Aerospace Institute for Metrology and Measurement Technology, China
Lin Liu, Beijing Aerospace Institute for Metrology and Measurement Technology, China
Yulu Wang, Beijing Aerospace Institute for Metrology and Measurement Technology, China
Fan Yang, Beijing Aerospace Institute for Metrology and Measurement Technology, China

SESSION 9.3 - Sensors and Solutions for Autonomous Aerospace Systems

Room: Room C - Le Benedettine Congress Center

Chairs: Domenico Accardo, *University of Naples Federico II, Italy*
Giorgio de Alteriis, *University of Naples Federico II, Italy*
Verdiana Bottino, *University of Naples Federico II, Italy*

627 **System Architecture Design of a UAV for Automated Cinematography in GNSS-Challenging Scenarios**
Verdiana Bottino, University of Naples Federico II, Italy
Giorgio de Alteriis, University of Naples Federico II, Italy
Rosario Schiano Lo Moriello, University of Naples Federico II, Italy
Domenico Accardo, University of Naples Federico II, Italy

633 **Trajectory Prediction and Conflict Detection for Unmanned Traffic Management: a Performance Comparison of Neural Network-Based Approaches**
Dario De Dominicis, University of Naples Federico II, Italy
Claudia Conte, University of Naples Federico II, University of Bergamo, Italy
Fausta Mattei, University of Naples Federico II, Italy
Giancarlo Rufino, University of Naples Federico II, Italy
Domenico Accardo, University of Naples Federico II, Italy

639 **Development of an Embedded System-Based Dropper Payload for Drones**
Enzo Caputo, University of Naples Federico II, Italy
Giorgio de Alteriis, University of Naples Federico II, Italy
Claudia Conte, University of Naples Federico II, Italy
Martina Nocerino, University of Naples Federico II, Italy
Paola Pepe, University of Naples Federico II, Italy
Sonia Elia, University of Naples Federico II, Italy
Antonio Bosco, University of Naples Federico II, Italy
Giuseppe Cringoli, University of Naples Federico II, Italy
Laura Rinaldi, University of Naples Federico II, Italy
Giancarlo Rufino, University of Naples Federico II, Italy
Domenico Accardo, University of Naples Federico II, Italy

644 **Innovative Fusion Strategy for MEMS Redundant-IMU Exploiting Custom 3D Components**
Giorgio de Alteriis, University of Naples Federico II, Italy
Alessia Teresa Silvestri, University of Naples Federico II, Italy
Verdiana Bottino, University of Naples Federico II, Italy
Enzo Caputo, University of Naples Federico II, Italy
Francesco Bonavolontà, University of Naples Federico II, Italy
Rosario Schiano Lo Moriello, University of Naples Federico II, Italy
Antonino Squillace, University of Naples Federico II, Italy
Domenico Accardo, University of Naples Federico II, Italy

SESSION 9.4 - Measurements in the Research of Aerodynamics and Control of Unmanned Aerial Vehicles

Room: Room E - Le Benedettine Congress Center

Chair: Zbigniew Czyż, *Lublin University of Technology, Poland*
Jerzy Józwik, *Lublin University of Technology, Poland*

649 **Effect of fuel injection timing variation in a newly designed opposite piston diesel engine for unmanned aerial vehicles**
Karthick Chinnadurai, Vellore Institute of Technology, India
Nanthagopal Kasianantham, Vellore Institute of Technology, India
Michał Jan Gęca, Lublin University of Technology, Poland
Łukasz Stradomski, WSK PZL-KALISZ S.A., Poland

655 **Analysis of the energy balance of a newly designed opposite piston diesel engine for unmanned aerial vehicles in the event of a change in the fuel injection angle**
Paweł Magryta, Lublin University of Technology, Poland
Piotr Borowiec, WSK PZL-KALISZ S.A., Poland

661 **Temperature Measurement of the Selected UAV Electronic Components**
Zbigniew Czyż, Polish Air Force University, Poland
Paweł Karpiński, Lublin University of Technology, Poland
Krzysztof Skiba, Lublin University of Technology, Poland
Paweł Magryta, Lublin University of Technology, Poland

666 **Deformation measurement system for the fuselage of an unmanned aircraft vehicle**
Zbigniew Czyż, Polish Air Force University, Poland
Paweł Karpiński, Lublin University of Technology, Poland
Krzysztof Skiba, Lublin University of Technology, Poland
Patryk Jakubczak, Lublin University of Technology, Poland
Piotr Podolak, Lublin University of Technology, Poland
Magda Droździel-Jurkiewicz, Lublin University of Technology, Poland