

XXV Riunione Nazionale di Elettromagnetismo

RiNEm 2024

Viareggio (LU), September 30 – October 02, 2024








Final Technical Program

(September 29, 2024)



XXV RiNEm 2024 SCIENTIFIC PROGRAM

		Sunday September 29	Monday September 30	Tuesday October 1st			Wednesday October 2nd							
08:30	08:45		Registration desk opens at 08:30			Registration desk opens at 08:30			Registration desk opens at 08:30			08:30	08:45	
08:45	09:00		OPENING CEREMONY Plenary, Room Cinema			Oral Session Room Cinema	Oral Session Room Tirreno Monti	Oral Session Room Tirreno Mare	Oral Session Room Cinema	Oral Session Room Tirreno Monti	Co-Located event Room Tirreno Mare 2024 Meeting of the URSI Italian National Committee 		08:45	09:00
09:00	09:15		<u>Industry meets young EM researchers</u> Plenary, Room Cinema			Metasurfaces and Reconfigurable Intelligent Surfaces	RFID & Energy Harvesting	Forward and Inverse Scattering Problems	Optics and Photonics I	Sensing Systems for Smart EM Environments			09:00	09:15
09:15	09:30											09:15	09:30	
09:30	09:45											09:30	09:45	
09:45	10:00											09:45	10:00	
10:00	10:15											10:00	10:15	
10:15	10:30											10:15	10:30	
10:30	10:45											10:30	10:45	
10:45	11:00		COFFEE BREAK			COFFEE BREAK			COFFEE BREAK			10:45	11:00	
11:00	11:15		<u>Industry meets young EM researchers (cont'd)</u> Plenary, Room Cinema			ROUND TABLE SIEm & ICT Societies: The Role of Information and Communication Technologies (ICT) and the Country System Plenary, Room Cinema			KEYNOTE SPEECHES on <u>QUANTUM COMPUTING & MICROWAVES</u> Massimo Macucci, University of Pisa, Italy Joseph Bardin, University of Massachusetts Amherst, MA, USA Plenary, Room Cinema			11:00	11:15	
11:15	11:30											11:15	11:30	
11:30	11:45											11:30	11:45	
11:45	12:00											11:45	12:00	
12:00	12:15		KEYNOTE SPEAKER Roberto Flamini, Huawei Technologies Italia Research Center Plenary, Room Cinema			Young Women Researchers and New Frontiers of the Electromagnetism Plenary, Room Cinema			POSTER SESSION Latmiral Award & Regular Posters Plenary, Room Vangi			12:00	12:15	
12:15	12:30											12:15	12:30	
12:30	12:45											12:30	12:45	
12:45	13:00											12:45	13:00	
13:00	13:15											13:00	13:15	
13:15	13:30		LUNCH Room Vangi			LUNCH Room Vangi			POSTER SESSION (cont'd) & LUNCH Latmiral Award & Regular Posters Plenary, Room Vangi			13:15	13:30	
13:30	13:45										13:30	13:45		
13:45	14:00										13:45	14:00		
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14:45	15:00										14:45	15:00		
15:00	15:15	Oral Session Room Cinema Antenna Theory and Design		Oral Session Room Tirreno Monti Barzilai Award	KEYNOTE SPEAKER Enrico Sangiorgi, Alma Mater Studiorum Università di Bologna Plenary, Room Cinema			ROUND TABLE SIEm meets international professional societies Plenary, Room Cinema			15:00	15:15		
15:15	15:30			Oral Session Room Tirreno Mare Electromagnetics for Applications							15:15	15:30		
15:30	15:45			Oral Session Room Tirreno Mare Sannino Award Someda Award							15:30	15:45		
15:45	16:00			Oral Session Room Cinema Electromagnetic Wave Propagation		Oral Session Room Tirreno Monti Antenna Arrays and Beamforming Techniques	Co-Located event Room Tirreno Mare 2024 Meeting of the URSI Italian National Committee Oral Session Sorrentino Award 			Oral Session Room Cinema Optics and Photonics II			Oral Session Room Tirreno Monti Microwave, Mm-Wave and THz Components and Circuits	Oral Session Room Tirreno Mare Radar and Remote Sensing
16:00	16:15											16:00	16:15	
16:15	16:30											16:15	16:30	
16:30	16:45											16:30	16:45	
16:45	17:00									16:45	17:00			
17:00	17:15									17:00	17:15			
17:15	17:30									17:15	17:30			
17:30	17:45	Registration desk opens at 17:30		ROUND TABLE Electromagnetic fields: experiences of a cross-cutting discipline Plenary, Room Tirreno Monti			CLOSING CEREMONY Room Cinema			17:30	17:45			
17:45	18:00	Welcome Cocktail at Principino Event								17:45	18:00			
18:00	18:15			SIEm Meeting , Room Tirreno Monti						18:00	18:15			
18:15	18:30			YOUNG SCIENTIST HAPPY HOUR						18:15	18:30			
18:30	18:45									18:30	18:45			
18:45	19:00										18:45	19:00		
19:00	19:15										19:00	19:15		
19:15	19:30										19:15	19:30		
19:30	19:45										19:30	19:45		
19:45	20:00										19:45	20:00		
After 20:00					SOCIAL DINNER Principino Event						After 20:00			



TECHNICAL PROGRAM

Sunday September 29

17:30 – Registration desk opens

18:00 – Welcome Cocktail & SIEm Life Members celebration



TECHNICAL PROGRAM

Monday September 30

08:30 – Registration desk opens

09:00 – 09:45 Institutional Greetings, Room Cinema

- Giuseppe Iannaccone, *Vice President of University of Pisa*
- Alessandro Toscano, *SIEm President*
- Giuliano Manara, *XXV RiNEm General Chair*

09:45 – 10:45 Plenary Session: Industry meets young EM researchers, Room Cinema

Organizer: Paolo Nepa, *University of Pisa*

- Annunziata Rispoli, *HRBP of Huawei Italy Research Centers*
- Alfredo Salvatore, *CEO of Sensor ID srl*
- Stefano Mortello, *R&D Manager at MTA Antenne srl*
- Suresh Giyad, *Polomarconi.it*

10:45 – 11:15 Coffee Break (sponsored by Huawei)

11:15 – 12:45 Plenary Session: Industry meets young EM researchers, Room Cinema

- Cosima Fiaschi, *Account Manager at Exemplar*
- Elisa Giusti, *Head of Research at CNIT RaSS*
- Marco Fantuzzi, *Director, PN & DoD Design Engineering Team at JMA Wireless*
- Roberto Filippone, *PA/QA Manager at Alma Sistemi srl*
- Stefano Coluccini, *General Manager of CAEN RFID srl*
- Francesco Greco, *CEO of ANTECNICA srls*
- Carolina Miozzi, *System Engineer at RADIO6ENSE srl*
- Sara Lazzari, *RF System Engineer at MBDA Italy spa*

12:45 – 13:30 Keynote Speech, Room Cinema

*The Importance of the Research in Advanced Electromagnetics for 5G and 6G
Wireless Communication Systems: An Industry View*

Roberto Flamini, Huawei Technologies Italia Research Center



13:30 – 15:00 Lunch Break, Room Vangi

15:00 – 17:45 Scientific Sessions



SCIENTIFIC SESSION – Antenna Theory and Design

Session Chairs: *R. Cicchetti, R. Solimene*

Room Cinema

- 15:00-15:15 [MOa-R1_01] **A Low Profile Shared Aperture Antenna for 5G Communications**
Marco Simone, Santi Concetto Pavone, Gino Sorbello (University of Catania, National Inter-University Consortium for Telecommunications)
- 15:15-15:30 [MOa-R1_02] **Plug-In Antennas for Telematic Control Unit**
Enrico Toniolo (MTA Antenne), Andrea Michel (University of Pisa), Paolo Nepa (University of Pisa)
- 15:30-15:45 [MOa-R1_03] **Multifocal Approach for the Design of Simultaneous Multibeam Transmitarray Antennas**
Francesco Alessio Dicandia (National Research Council of Italy), Simone Genovesi (University of Pisa)
- 15:45-16:00 [MOa-R1_04] **Two-Dimensional Scanning of Circularly Polarized Beams Via Array-Fed Fabry–Perot Cavity Antennas**
Mikhail Madji (University of Rome “La Sapienza”), Edoardo Negri (University of Rome “La Sapienza”), Walter Fuscaldo (National Research Council of Italy), Davide Comite (University of Rome “La Sapienza”), Alessandro Galli (University of Rome “La Sapienza”), Paolo Burghignoli (University of Rome “La Sapienza”)
- 16:00-16:15 [MOa-R1_05] **Fabry-Perot Cavity with High Permittivity Grounded Walls for Radiation Performance Enhancement**
Edoardo Giusti, Danilo Brizi, Agostino Monorchio (University of Pisa)
- 16:15-16:30 [MOa-R1_06] **A Dielectric Resonator Antenna for Through The Wall Imaging Vital Sensing and Wimax Applications**
Renato Cicchetti, Angelo Forte, Stefano Pisa, Emanuele Piuze, Orlandino Testa (University of Rome “La Sapienza”)
- 16:30-16:45 [MOa-R1_07] **A Novel Approach to the Design of Inhomogeneous Dielectric Lens Antennas based on an explicit inversion of Geometrical Optics**
Matteo Albani, Ilir Gashi (University of Siena)
- 16:45-17:00 [MOa-R1_08] **A Modified Scattering Matrix Method for Parallel Cylinders Positioned Within an Orthogonal Dihedral Perfect Electric Conductor**
Renat Abdullin (University “Mediterranea” of Reggio Calabria), Giada M. Battaglia (University “Mediterranea” of Reggio Calabria), Andrea F. Morabito (University “Mediterranea” of Reggio Calabria), Tommaso Isernia (University “Mediterranea” of Reggio Calabria, IREA National Research Council), Lorenzo Crocco (IREA National Research Council), Roberta Palmeri (University “Mediterranea” of Reggio Calabria, IREA National Research Council)
- 17:00-17:15 [MOa-R1_09] **Spectral Factorization and Warping Sampling for the Synthesis of 1-D Shaped Beams on a Near Field Line**
Giada M. Battaglia (University “Mediterranea” of Reggio Calabria), Tommaso Isernia (University “Mediterranea” of Reggio Calabria), Roberta Palmeri (University “Mediterranea” of Reggio Calabria), Maria A. Maisto (University of Campania “Luigi Vanvitelli”), Raffaele Solimene (University of Campania “Luigi Vanvitelli”), Andrea F. Morabito (University “Mediterranea” of Reggio Calabria)
- 17:15-17:30 [MOa-R1_10] **An Effective Method to Correct Known 3-D Position Errors in a Non-Redundant Helicoidal NF–FF Transformation**
Francesco D’Agostino, Flaminio Ferrara, Claudio Gennarelli, Rocco Guerriero, Massimo Migliozi, Luigi Pascarella (University of Salerno)
- 17:30-17:45 [MOa-R1_11] **Evaluating the efficiency and sidelobe impact of the improved strut modelling of the European Space Agency Deep Space Antennas**
Davide Arenare (University of Pavia), Fabio Pelorossi (European Space Agency), Filippo Concaro (European Space Agency), Marco Pasian (University of Pavia)

SESSION PRIZE – Barzilai Award (sponsored by CNIT)

Session Chairs: *S. Costanzo, A. D’Orazio, L. Pierantoni*

Room Tirreno Monti

- 15:00-15:15 [MOa-R2_B-01] **Optimal Planning Strategy for Building Heterogeneous Smart Electromagnetic Environments**
Arianna Benoni (ELEDIA Research Center)
- 15:15-15:30 [MOa-R2_B-02] **Physics-Informed AI Feature Selection for Parameter Estimation from Earth Observation Data**
Davide De Santis, Lorenzo Giuliano Papale (University of Rome “Tor Vergata”)
- 15:30-15:45 [MOa-R2_B-03] **Tissue-Mimicking Skin Phantom up to 40 GHz**
Simona Di Meo (University of Pavia)
- 15:45-16:00 [MOa-R2_B-04] **A Novel and Efficient GO Analysis Tool of GRIN Lens Antennas based on the Lax-Friedrichs Sweeping Method**
Ilir Gashi (University of Siena)
- 16:00-16:15 [MOa-R2_B-05] **Mm-Wave and Sub-THz Characterization of Various Building Materials**
Silvi Kodra (University of Bologna), Jiaohao Hu (Durham University), Elena Bernardi (University of Bologna), Nicolò Cenni (University of Bologna)
- 16:15-16:30 [MOa-R2_B-06] **Microwave Monitoring of Hyperthermia Therapy Using Magneto-Dielectric Implants**
Matteo B. Lodi (University of Cagliari)
- 16:30-16:45 [MOa-R2_B-07] **Preliminary Results on Dielectric-Only Transmitting Surfaces for Outdoor to Indoor Communications**
Pio Francesco Lupinacci, Michele Beccaria (Polytechnic University of Turin)
- 16:45-17:00 [MOa-R2_B-08] **Rotating SAR for Fine-Scale Localization of Passive Backscattering Devices at UHF-band**
Andrea Motroni (University of Pisa)
- 17:00-17:15 [MOa-R2_B-09] **Nondiffractive Range Enhancement in Leaky-Wave Wideband Bessel-Beam Launchers through an Open-Stopband Mitigation Technique**
Edoardo Negri (University of Rome “La Sapienza”), Federico Giusti (University of Siena)
- 17:15-17:30 [MOa-R2_B-10] **Pulsed Frequency Diverse Arrays for Far-Field WPT**
Tommaso Tiberi, Enrico Fazzini (University of Bologna)



SCIENTIFIC SESSION – Electromagnetics for Applications

Session Chairs: *F. Andriulli, P. Tognolatti*

Room Tirreno Mare

- 15:00-15:15 [MOa-R3_01] **Design of a Circularly Polarized Stacked Patch Antenna for Satcom Applications**
C. Polo-Del Vecchio (University of Trieste), G. Buttazzoni (University of Trieste), M. Vlacci (U-Blox Italia SpA)
- 15:15-15:30 [MOa-R3_02] **Analysis of Bessel-Shaped Beam Interaction with Planar Multilayer Structures for WPT Maximization**
Santi C. Pavone, Gino Sorbello (University of Catania)
- 15:30-15:45 [MOa-R3_03] **Polarization-Agile Applicators in Radiofrequency Hyperthermia of the Head**
A. Di Carlofelice (University of L'Aquila), P. Tognolatti (University of L'Aquila), F. Bardati (University of Rome "Tor Vergata")
- 15:45-16:00 [MOa-R3_04] **Numerical Study of Magnetic Hyperthermia Using SPIO-Micelles for the Treatment of Brain Tumors**
E. M. A. Corda, M. B. Lodi, A. Perra, L. Saba, A. Fanti, G. Mazzarella (University of Cagliari)

SESSION PRIZE – Sannino Award & Someda Award

Room Tirreno Mare

Someda Award (sponsored by CNIT)

Session Chairs: *A. Cucinotta, G. Sorbello, L. Vincetti*

- 16:00-16:15 [MOa-R3_SS-01] **Fabrication and Characterization of Micro-Tapered Long Period Gratings on Zirconium Fluoride Optical Fiber for Mid-Infrared Applications**
Francesco Anelli, Vito Vincenzo Francione, Imran Khan, Antonella Maria Loconsole (Polytechnic University of Bari)
- 16:15-16:30 [MOa-R3_SS-02] **Twist-Compensated Shape Sensing Via Polarization Sensitive Reflectometry**
Martina Cappelletti, Arman Aitkulov, Daniele Orsuti (University of Padova)
- 16:30-16:45 [MOa-R3_SS-03] **Low-Cost and High Precision Interferometric System for Monitoring the Fiber Transfer Delay in Antenna Arrays**
Jacopo Nanni (University of Bologna), Iris Rizzi (University of Bologna), Federica Caputo (Institute for Radioastronomy-National Institute for Astrophysics)
- 16:45-17:00 [MOa-R3_SS-04] **Second Harmonic Generation with High-Order Mie Resonances in Dielectric Optical-Antennas in the Visible Regime**
Andrea Tognazzi (University of Palermo), Paolo Franceschini (National Research Council of Italy, University of Brescia)

Sannino Award (sponsored by MECSA)

Session Chairs: *G. Marrocco, G. Mazzarella, L. Perregrini*

- 17:00-17:15 [MOa-R3_SS-05] **A Portable and Stand-Alone Moisture Content Detector Based on a Loaded Self-Oscillating Antenna**
Alessandra Di Florio Di Renzo, Simone Trovarello (University of Bologna)
- 17:15-17:30 [MOa-R3_SS-06] **Design of a Tunable Bandpass Filter by Exploiting Dielectric Movable Elements**
Davide Guarnera (University "Mediterranea" of Reggio Calabria)
- 17:30-17:45 [MOa-R3_SS-07] **Mm-wave Passive and Wireless Pressure Sensors Based on Soft Substrate**
Sandra Rodini (University of Pisa)

19:00 Young Scientist Happy Hour, Bagno Corallo



Join us for an unforgettable evening at **Bagno Corallo!**

Just a few minutes' walk from Principino Eventi, Bagno Corallo will host us at its beachfront restaurant for a Happy Hour party. It will be an informal and enjoyable opportunity to bring together all the researchers in the field of electromagnetism over good wine, food, and music.



The event is free for the registered students, but additional tickets for all the other attendees can be purchased on the SIEm website.



TECHNICAL PROGRAM

Tuesday October 1

08:30 – Registration desk opens

09:00 – 10:45 Scientific Sessions

SCIENTIFIC SESSION – Metasurfaces and Reconfigurable Intelligent Surfaces

Session Chairs: G. Amendola, M. Raffetto

Room Cinema

- 09:00-09:15 [TUm-R1_01] **Are Reflectarrays Mature for Radio Astronomical Applications?**
Luca Olmi (National Institute for Astrophysics)
- 09:15-09:30 [TUm-R1_02] **A Novel Approach on the Synthesis of Advanced Electromagnetics Surfaces for mm-Wave Near-Field Coverages**
Álvaro F. Vaquero, Marcos R. Pino, Manuel Arrebola (University of Oviedo)
- 09:30-09:45 [TUm-R1_03] **Modulation of an Optical Metasurface at GHz Frequencies**
Alessandro Pitanti (University of Pisa), Gaia Da Prato (University of Pisa), Giorgio Biasiol (National Research Council of Italy), Alessandro Tredicucci (National Research Council of Italy), Simone Zanotto (National Research Council of Italy)
- 09:45-10:00 [TUm-R1_04] **Metalens Optimization: The Look-Up Table Approach and Beyond**
Marco Gandolfi (University of Brescia), Olga Sergaeva (University of Brescia), Davide Rocco (University of Brescia), Giuseppe Leo (Université Paris Cité), Costantino De Angelis (University of Brescia)
- 10:00-10:15 [TUm-R1_05] **Design and Application of Reflectarray-Based Passive Intelligent Reflecting Surfaces in Next-Generation Wireless Networks**
Francesca Venneri, Sandra Costanzo, Antonio Borgia (University of Calabria)
- 10:15-10:30 [TUm-R1_06] **Genetic Algorithm for the Design of Passive Huygens Coatings Beamforming Metasurfaces**
Michela Longhi (Niccolò Cusano University), Stefano Vellucci (Niccolò Cusano University), Mirko Barbuto (Niccolò Cusano University), Alessio Monti (Roma Tre University), Mohsen Karamirad (Roma Tre University), Luca Stefanini (Roma Tre University), Davide Ramaccia (Roma Tre University), Filiberto Bilotti (Roma Tre University), Alessandro Toscano (Roma Tre University)
- 10:30-10:45 [TUm-R1_07] **Graphene-Based Reconfigurable Intelligent Surfaces for THz Applications**
Ilaria Marasco, Carla Cantore, Antonella D'Orazio, Giovanni Magno (Polytechnic University of Bari)

SCIENTIFIC SESSION – RFID & Energy Harvesting

Session Chairs: A. Costanzo, A. Randazzo

Room Tirreno Monti

- 09:00-09:15 [TUm-R2_01] **Low-Frequency Metasurfaces for Magnetic Field Shaping in Wireless Power Transfer Applications**
Martina Falchi, Pierpaolo Usai, Danilo Brizi, Agostino Monorchio (University of Pisa)
- 09:15-09:30 [TUm-R2_02] **Wireless, Battery-Free, Conformal Optoelectronic Implant for Obstructive Sleep Apnea Therapy**
Giulia Battistini, Elisa Augello, Giacomo Paolini, Diego Masotti, Martina Lops, Stefano Bastianini, Giovanna Zoccoli, Alessandra Costanzo (University of Bologna)
- 09:30-09:45 [TUm-R2_03] **Compact Network for Harmonic Tag Matching**
Alessandro Di Carlofelice, Emidio Di Giampaolo, Piero Tognolatti (University of L'Aquila)
- 09:45-10:00 [TUm-R2_04] **Dual-Mode 3-D Printed Rectenna Exploiting Intermodulation Products for quasi-UWB Localization**
Giacomo Paolini, Giulia Battistini, Diego Masotti, Alessandra Costanzo (University of Bologna)
- 10:00-10:15 [TUm-R2_05] **Time-Frequency Filtering for Frequency-Coded Cross-Polarized Chipless RFID Tags**
Emanuele Tavanti (University of Pisa), Andrea Randazzo (University of Genoa), Simone Genovesi (University of Pisa), Filippo Costa (University of Pisa), Giuliano Manara (University of Pisa)
- 10:15-10:30 [TUm-R2_06] **Antenna Design and Diode Characterization for a 60 GHz Energy Harvester**
Paola Russo, Christopher Hardly Joseph, Davide Mencarelli, Leonardo Zappelli, Luca Pierantoni (Polytechnic University of Marche)

SCIENTIFIC SESSION – Forward and Inverse Scattering Problems

Session Chairs: G. Leone, G. Schettini

Room Tirreno Mare

- 09:00-09:15 [TUm-R3_01] **Numerical Results in 1D Forward Scattering Via SVD**
Giovanni Leone, Giovanni Volpicelli, Rocco Pierri (University of Campania)
- 09:15-09:30 [TUm-R3_02] **Microwave Imaging Via Physics-Aware Deep Neural Networks**
Sabrina Zumbo (University "Mediterranea" of Reggio Calabria), Stefano Mandija (Utrecht University), Tommaso Isernia (University "Mediterranea" of Reggio Calabria), Martina Teresa Bevacqua (University "Mediterranea" of Reggio Calabria)
- 09:30-09:45 [TUm-R3_03] **Recent Advances on AI-Driven Inverse Scattering Methods for Microwave Imaging @ Eledia Research Center**
R. Azaro (University of Trento), M. Facchinelli (University of Trento), M. Li (Tsinghua University), S. Lusa (University of Trento), G. Oliveri (University of Trento), L. Poli (University of Trento), A. Polo (University of Trento), P. Rocca (University of Trento), M. Salucci (University of Trento), L. Tosi (University of Trento), F. Zardi (University of Trento), A. Massa (University of Trento)
- 09:45-10:00 [TUm-R3_04] **Virtual Experiments for 3D Inverse Scattering Problems: A Linearized Approach for the Scalar Case**
Martina T. Bevacqua (University "Mediterranea" of Reggio Calabria), Loreto Di Donato (University of Catania), Tommaso Isernia (University "Mediterranea" of Reggio Calabria)



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10:00-10:15	[TUm-R3_05] Polarization Dependent Intensification or Shielding Effects by Using Wearable Scatterers <i>Ludovica Tognolatti, Cristina Ponti, Giuseppe Schettini (Roma Tre University)</i>
10:15-10:30	[TUm-R3_06] Diffraction Patterns of Light from Spheres and Clusters of Particles for Modelling Hydrometeors <i>Paolo Cicolin (University of Rome "La Sapienza")</i>

10:45 – 11:15 Coffee Break (sponsored by CNIT)

11:15 – 12:45 Round Table, Room Cinema

SIEm & ICT Societies: The Role of Information and Communication Technologies (ICT) and the Country System

Organizer: *Alessandro Toscano*

Moderator: *Leonardo De Cosmo*, Science journalist, ANSA

For the first time, the presidents of the scientific societies of the scientific-disciplinary groups of the information sector - electronics, electromagnetic fields, telecommunications, automatics, information technology, bioengineering and measurements - will meet to discuss the crucial role of Information Technologies and Communication (ICT).

- **Paolo Pavan**, *Università degli Studi di Modena e Reggio Emilia*, Società Italiana di Elettronica (SIE)
- **Alessandro Toscano**, *Università degli Studi Roma Tre*, Società Italiana di Elettromagnetismo (SIEm)
- **Riccardo Leonardi**, *Università degli Studi di Brescia*, Associazione Gruppo Telecomunicazioni e Tecnologie dell'Informazione (GTTI)
- **Sauro Longhi**, *Università Politecnica delle Marche*, Società Italiana Docenti e Ricercatori in Automatica (SIDRA)
- **Stefano Paraboschi**, *Università degli Studi di Bergamo*, Gruppo di Ingegneria Informatica (GII)
- **Paolo Netti**, *Università degli Studi di Napoli Federico II*, Gruppo Nazionale di Bioingegneria (GNB)
- **Emilio Sardini**, *Università degli Studi di Brescia*, Gruppo Misure Elettriche ed Elettroniche (GMEE)

12:45 – 13:30 Round Table, Room Cinema

Young Women Researchers and New Frontiers of the Electromagnetism

Organizers: *Alessandra Costanzo, Antonella D'Orazio e Micaela Liberti*

The session will start with a short presentation of the international IEEE and URSI initiatives, aimed at encouraging women involvement in STEM activities. Subsequently, young women researchers, from various SIEM units, will present their research portfolio and open a discussion in which they will share their experiences and expectations. The session will end with a round table in which the questions and themes proposed by the audience in the room will be collected. All RiNEm 2024 members are invited!

- **Marianna Biscarini**, *Università di Roma "La Sapienza"*
- **Giulia Battistini**, *Alma Mater Studiorum Università di Bologna*
- **Sara Fontana**, *Università di Roma "La Sapienza"*
- **Ilaria Marasco**, *Politecnico di Bari*

13:30 – 15:00 Lunch Break, Room Vangi



15:00 – 15:45 Keynote Speech, Room Cinema

The European Chips Act, a Challenge and an Opportunity for the Italian Semiconductor Ecosystem

Enrico Sangiorgi, Alma Mater Studiorum University of Bologna



15:45 – 17:30 Scientific Sessions

SCIENTIFIC SESSION – Electromagnetic Wave Propagation

Session Chairs: M. D. Migliore, F. Moglie

Room Cinema

- 15:45-16:00 [TUa-R1_01] **Propagation Challenges and Strategies of Free Space Optics in Satellite Links**
Giulio Cossu (Sant'Anna School of Advanced Studies)
- 16:00-16:15 [TUa-R1_02] **Exploiting Satellite-To-Earth Electromagnetic Signals for the Atmospheric Channel Modeling**
Marianna Biscarini (University of Rome "La Sapienza")
- 16:15-16:30 [TUa-R1_03] **Combining Millimeter and Optical Wavelengths to Increase the Performance of 6G Backhaul Links**
Lorenzo Luini (Polytechnic University of Milan), Elizabeth Verdugo (Polytechnic University of Milan), Carlo Riva (Polytechnic University of Milan), Roberto Nebuloni (National Research Council of Italy), Gianluca Galzerano (National Research Council of Italy), Laura Resteghini (Huawei Technologies Italia)
- 16:30-16:45 [TUa-R1_04] **Surface-Plasmon-Polariton Waves Propagating Guided by the Interface of a Metal and a Tightly Interlaced Matched Ambidextrous Bilayer**
Francesco Chiadini (University of Salerno), Roberta De Simone (University of Salerno), Vincenzo Fiumara (University of Basilicata), Akhlesh Lakhtakia (Pennsylvania State University)
- 16:45-17:00 [TUa-R1_05] **Influence of Butt-Coupling Parameters in Reducing Bimodality of 850nm VcSEL-SMF Radio Over Fiber Links**
Maryam N. Esfahani, Giada Saderi, Jacopo Nanni, Giovanni Tartarini (University of Bologna)
- 17:00-17:15 [TUa-R1_06] **On the Inverse Design of Dielectric Linear Accelerators for Sub-Relativistic Particles Acceleration**
Roberta Palmeri (University "Mediterranea" of Reggio Calabria), Davide Guarnera (University "Mediterranea" of Reggio Calabria), Santi C. Pavone (University of Catania), Giorgio S. Mauro (University of Catania), Giuseppe Torrì (University of Catania), Gino Sorbello (University of Catania)

SCIENTIFIC SESSION – Antenna Arrays and Beamforming Techniques

Session Chairs: P. Baccarelli, A. Galli

Room Tirreno Monti

- 15:45-16:00 [TUa-R2_01] **Modelling Arrays of Resonant Antennas for Filtenna Synthesis**
Matteo Oldoni, Gian Guido Gentili, Giuseppe Macchiarella (Polytechnic University of Milan)
- 16:00-16:15 [TUa-R2_02] **Error Analysis in Focused Arrays**
Giovanni Buonanno, Sandra Costanzo (University of Calabria)
- 16:15-16:30 [TUa-R2_03] **Integrated Duplexer for K/Ka-Band Satcom on the Move User Terminals**
Luigi Boccia, Emilio Arnieri (University of Calabria), Sherif Zahran (University of Calabria), Carmine Mustacchio (University of Calabria), Tobias Chaloun (University of Calabria), Michael Fischer (Ulm University), Christian Waldschmidt (Ulm University), Francesco Greco (Antecnica s.r.l.s), Giandomenico Amendola (University of Calabria)
- 16:30-16:45 [TUa-R2_04] **A Music Based Approach for Faults Reconstruction in Phased Array Diagnostics**
Mario Del Prete, Raffaele Solimene, Maria Antonia Maisto (University of Campania "Luigi Vanvitelli")
- 16:45-17:00 [TUa-R2_05] **A Novel Feeding Technique for Quadrifilar Helix Antenna**
Alessandro Di Carlofelice, Emidio Di Giampaolo, Piero Tognolatti (University of L'Aquila)
- 17:00-17:15 [TUa-R2_06] **Unconventional Phased Array Design Methodologies for Next-G Wireless Communication And Radar Systems @ Eledia Research Center**
N. Anselmi (University of Trento), R. Azaro (University of Trento), A. Benoni (University of Trento), G. Gottardi (University of Trento), S. Goudos (Aristotle University of Thessaloniki), G. Oliveri (University of Trento), L. Poli (University of Trento), P. Rocca (University of Trento), A. Salas-Sanches (University of Trento), L. Tosi (University of Trento), P. Rosatti (University of Trento), A. Massa (University of Trento)
- 17:15-17:30 [TUa-R2_07] **Design and Fabrication of an Air-Filled Substrate Integrated Waveguide Antenna Array**
Antonella Maria Loconsole (Polytechnic University of Bari), Vito Vincenzo Francione (Polytechnic University of Bari), Francesco Anelli (Polytechnic University of Bari), Imran Khan (Polytechnic University of Bari), Adham Mahmoud (University of Rennes), Mauro Ettore (Michigan State University), Francesco Prudeniano (Polytechnic University of Bari)



XXV Riunione Nazionale di Elettromagnetismo – Viareggio (LU), September 30 – October 02, 2024

Final Technical Program

September 29, 2024

17:30 – 18:30 Round Table, Room Tirreno Monti

Electromagnetic fields: experiences of a cross-cutting discipline

Organizer: *Alessandra Costanzo*

- **Annamaria Cucinotta**, *Università di Parma*
- **Gaetano Marrocco**, *Università di Roma Tor Vergata*
- **Andrea Massa**, *Università di Trento*
- **Paolo Nepa**, *Università di Pisa*
- **Giuseppe Ruello**, *Università degli Studi di Napoli Federico II*

18:30 – 19:00 SIEm Meeting, Room Tirreno Monti

Organizer: *Alessandro Toscano*

20:30 Social Dinner, Principino Eventi



TECHNICAL PROGRAM

Wednesday October 2

08:30 – Registration desk opens

09:00 – 10:45 Scientific Sessions

SCIENTIFIC SESSION – Optics and Photonics I

Session Chairs: C. De Angelis, S. Trillo

Room Cinema

- 09:00-09:15 [WEEm-R1_01] **Precision Analysis of Micro and Nanoscale Structures Fabricated Via Grayscale Laser Lithography**
Seyyedhossein Mckee (University of Parma), Adrian Hugh Alexander Lutey (University of Parma), Dušan Chorvát (Centrum vedecko-technických informácií Slovenskej), David Kuhness (Joanneum Research Forschungsgesellschaft), Daniel Haško (Centrum vedecko-technických informácií Slovenskej), Christine Schuster (Micro resist technology), Anja Voigt (Micro resist technology), Vincenzo Ferraro (University of Parma), Annamaria Cucinotta (University of Parma), Markus Postl (Joanneum Research Forschungsgesellschaft)
- 09:15-09:30 [WEEm-R1_02] **Thin-Film Lithium Niobate Wireless Switches for On-Chip Communication**
M. Khalid (Polytechnic University of Bari), S. Ferraresi (University of Ferrara), G. Bellanca (University of Ferrara), V. Petruzzelli (Polytechnic University of Bari), G. Calò (Polytechnic University of Bari)
- 09:30-09:45 [WEEm-R1_03] **Mode Coupling and Ultimate Loss Limit in Ideal Hollow-Core Inhibited Coupling Fibers**
F. Melli (University of Modena and Reggio Emilia), K. Vasko (GLOphotonics SAS), L. Rosa (University of Modena and Reggio Emilia), F. Benabid (GLOphotonics SAS), L. Vincetti (University of Modena and Reggio Emilia)
- 09:45-10:00 [WEEm-R1_04] **Mode Coupling Effect on Real Hollow-Core Fibers Loss**
F. Melli (University of Modena and Reggio Emilia), K. Vasko (GLOphotonics SAS), L. Rosa (University of Modena and Reggio Emilia), F. Benabid (GLOphotonics SAS), L. Vincetti (University of Modena and Reggio Emilia)
- 10:00-10:15 [WEEm-R1_05] **Limitations of Second Harmonic Generation Efficiency in Spliced Optical Fibers**
Kassahun Mamuye Tesfaye (University of Brescia), Wasyhun Asefa Gemechu (University of Rome “La Sapienza”), Umberto Minoni (University of Brescia), Alessandro Tonello (University of Limoges), Vincent Couderc (University of Limoges), Fabio Mangini (University of Rome “La Sapienza”), Daniele Modotto (University of Brescia)
- 10:15-10:30 [WEEm-R1_06] **DY-Doped Yellow Fiber Laser and its Application for the Treatment of Retinal Diseases**
Wahida Chowdhury, Aizhan Issatayeva, Emebet Bisrat Mengesha, Walter Belardi, Annamaria Cucinotta (University of Parma)
- 10:30-10:45 [WEEm-R1_07] **Radiation Hardness of Optical Thin Films in the Space Environment**
M. Padovani (University of Padova), A. J. Corso (National Research Council of Italy), G. L. Santi (University of Padova), R. Hubner (Institute of Ion Beam Physics and Materials Research), U. Kentsch (Institute of Ion Beam Physics and Materials Research), M. Bazzan (University of Padova), M. Santagiustina (University of Padova), M. G. Pelizzo (University of Padova)

SCIENTIFIC SESSION – Sensing Systems for Smart EM Environments

Session Chairs: P. Pirinoli, D. Riccio

Room Tirreno Monti

- 09:00-09:15 [WEEm-R2_01] **Exploiting the Coupling Variation of 3D-Printed Cavity Filters for Complex Dielectric Permittivity Sensing**
Nicolo' Delmonte (University of Pavia), Lorenzo Silvestri (University of Pavia), Benjamin Allain (Jean Monnet University), Stefania Marconi (University of Pavia), Gianluca Alaimo (University of Pavia), Ferdinando Auricchio (University of Pavia), Maurizio Bozzi (University of Pavia)
- 09:15-09:30 [WEEm-R2_02] **A Dielectric Permittivity Sensor Based on Inverted Microstrip/3D-Printing Hybrid Technology**
Sofia Rustioni, Lorenzo Silvestri, Stefania Marconi, Gianluca Alaimo, Ferdinando Auricchio, Maurizio Bozzi (University of Pavia)
- 09:30-09:45 [WEEm-R2_03] **Complex Dielectric Permittivity Estimation of Liquid Phantoms Using a Coaxial Fixture Based on a PSO-NLR Model**
Giacomo Muntoni (University of Cagliari), Matteo Bruno Lodi (University of Cagliari), Andrea Melis (University of Cagliari), Marco Simone (University of Catania), Alessandro Fanti (University of Cagliari), Giuseppe Mazzarella (University of Cagliari)
- 09:45-10:00 [WEEm-R2_04] **On the Curved Passive Electromagnetic Skins for Urban Scenarios**
M. Beccaria (Polytechnic University of Turin), A. Freni (University of Florence), A. Mazzinghi (University of Florence), A. Massaccesi (Polytechnic University of Turin), P. Pirinoli (Polytechnic University of Turin)
- 10:00-10:15 [WEEm-R2_05] **Additive Manufacturing for Wireless Sensor Systems**
Simone Genovesi, Filippo Costa, Mahmoud El Geziry, Sandra Rodini, Daniela Gasperini, Armin Gharibi, Giuliano Manara (University of Pisa)
- 10:15-10:30 [WEEm-R2_06] **Smart EM Environments: Theory, Methodologies, and Technologies @ Eledia Research Center**
F. F. Albi (University of Trento), R. Azaro (University of Trento), A. Benoni (University of Trento), F. Capra (University of Trento), P. Da Rù (University of Trento), D. Erricolo (University of Illinois Chicago), M. Facchinelli (University of Trento), G. Gottardi (University of Trento), A. Hannan (University of Trento), B. Li (University of Trento), G. Oliveri (University of Trento), P. Rocca (University of Trento), M. Salucci (University of Trento), S. Yang (School of Electronic Science and Engineering), F. Zardi (University of Trento), A. Massa (University of Trento)
- 10:30-10:45 [WEEm-R2_07] **Ubiquitous Sensing by Using Zero-Energy Wireless Sensors**
Filippo Costa, Simone Genovesi, Sandra Rodini, Giuliano Manara (University of Pisa)

10:45 – 11:15 Coffee Break



11:15 – 12:30 Keynote Speeches, Room Cinema

The Role of Electromagnetism in Quantum Technologies

Massimo Macucci, University of Pisa



Building a Quantum Computer Using Microwave Technology

Joseph Bardin, University of Massachusetts Amherst, MA, US

12:30 – 14:30 Poster Session: Latmiral Award & Regular Posters, Room Vangi

Session Chairs: F. Bilotti, F. Frezza, F. Prudenzano

AWARD SESSION - Latmiral Award (sponsored by CNIT)

[WEEm-P_L-01] **Inline Substrate Integrated Waveguide Filter with Extracted Zero for mMIMO Radio Units**

Anjali Kumari (University of Pavia), Nicolò Delmonte (University of Pavia), Lorenzo Silvestri (University of Pavia), Matteo Oldoni (Polytechnic University of Milan), Riccardo Moro (SIAE Microelettronica), Steven Caicedo Mejillones (SIAE Microelettronica), Stefano Moscato (SIAE Microelettronica), Maurizio Bozzi (University of Pavia)

[WEEm-P_L-02] **Distribution of Relaxation Times: An Eigenspectrum Analysis**

R. Dima, M.A. Maisto, R. Solimene (University of Campania)

[WEEm-P_L-03] **Linear Superposition of Focused Bricks for Field Intensity Shaping**

S. Zumbo, M.T. Bevacqua, T. Isernia (University of Reggio Calabria "Mediterranea")

[WEEm-P_L-04] **Epidermal RFID-Based Programmable Smart Shield for Enhancing Security of Implantable Cardiac Devices**

F. Lestini, G. Marrocco, C. Occhiuzzi (University of Rome "Tor Vergata")

[WEEm-P_L-05] **Enriching the Electromagnetic Fingerprint of RFID Antennas by Non-Linear Interrogation for Physical Unclonable Functions**

Francesca Nanni, Gaetano Marrocco (University of Rome "Tor Vergata")

[WEEm-P_L-06] **RFID Integrated Circuits as Network Controllers**

F. Lestini (University of Rome "Tor Vergata"), A. Di Carlofelice (University of L'Aquila), P. Tognolatti (University of L'Aquila), G. Marrocco (University of Rome "Tor Vergata"), C. Occhiuzzi (University of Rome "Tor Vergata")

[WEEm-P_L-07] **Microwave Imaging of the Neck for Early Stage Alzheimer's Diagnosis: A Numerical Feasibility Analysis**

V. Mariano (Polytechnic University of Turin), R. Scapatucci (IREA National Research Council), F. Vipiana (Polytechnic University of Turin)

[WEEm-P_L-08] **Experimental Assessment of a Frequency Selective Surface for The Monitoring of Hyperthermia Treatments**

Francesco Lestini (University of Rome "Tor Vergata"), Alessandro Di Carlofelice (University of L'Aquila), Piero Tognolatti (University of L'Aquila), Gaetano Marrocco (University of Rome "Tor Vergata"), Cecilia Occhiuzzi (University of Rome "Tor Vergata")

[WEEm-P_L-09] **Metal-Free Antennas by Laser-Induced Graphene (LIG) on Poly-Ether-Ether-Ketone (PEEK) Films for Application to Cyber Prostheses**

Alessio Mostaccio, Francesca M. C. Nanni, Francesca Deon, Gaetano Marrocco (University of Rome "Tor Vergata")

[WEEm-P_L-10] **Data-Driven Critical Review of Near Field Through-The-Body Wireless Power Transfer Links**

F. Naccarata, G. Piccardo, G. Marrocco (University of Rome "Tor Vergata")

Regular Posters

[WEEm-P_01] **Quantum-Based Simulation for Reconfigurable Intelligent Surface**

Emanuel Colella (Polytechnic University of Marche), Luca Bastianelli (Polytechnic University of Marche), Valter Mariani Primiani (Polytechnic University of Marche), Franco Moglie (Polytechnic University of Marche), Gabriele Gradoni (University of Surrey)

[WEEm-P_02] **Finite-Element Born Approximations of the EM Field Scattered by Moving Media with Stationary Boundaries**

Zeyde Kirill, Mirco Raffetto (University of Genoa)

[WEEm-P_03] **Preliminary Experimental Reconstructions of Calcaneus Phantoms for Bone Health Monitoring Via Microwave Imaging**

A. Cannatà (University of Pavia), A. Elahi (University of Galway), M. O'Halloran (University of Galway), M. Pasian (University of Pavia), S. Di Meo (University of Pavia), G. Matrone (University of Pavia), B. Amin (University of Galway)



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[WEEm-P_04] Design of a PIN Phase Shifter for Beam Steering in Optical Phased Arrays

S. Ferraresi (University of Ferrara), L. Ramini (Hewlett Packard Labs), M. Fiorentino (Hewlett Packard Labs), D. Bertozzi (University of Manchester), M. Khalid (Polytechnic University of Bari), G. Calò (Polytechnic University of Bari), V. Tralli (University of Ferrara), G. Bellanca (University of Ferrara)

[WEEm-P_05] Statistical Analysis of the Rician K Factor in Reverberation Chambers for 5G Channel Emulation

A. De Leo, P. Russo, V. Mariani Primiani (Polytechnic University of Marche)

[WEEm-P_06] Machine Learning-Aided Inverse Scattering Approach for Biomedical Microwave Imaging

Sandra Costanzo, Alexandra Flores, Giovanni Buonanno (University of Calabria)

[WEEm-P_07] Analytical Fitting of Dielectric Response of Healthy Skin and Basal Cell Carcinoma

Enrico Mattana, Matteo Bruno Lodi, Giuseppe Mazzarella, Alessandro Fanti (University of Cagliari)

[WEEm-P_08] A Mild Data-Driven Regularization Technique for Microwave Imaging in Variable-Exponent Lebesgue Spaces

V. Schenone, A. Fedeli, C. Estatico, A. Randazzo (University of Genoa)

[WEEm-P_09] Electrotile-Based Flexible Electromagnetic mmWave Phantom

R. Rizzo (University of Rennes), G. Ruello (University of Naples "Federico II"), R. Massa (University of Naples "Federico II"), M. Zhadobov (University of Rennes), G. Sacco (University of Rennes)

[WEEm-P_10] Electromagnetic Propagation and Scattering in Metastructures with Temporal Interfaces

Luca Stefanini (Roma Tre University), Davide Ramaccia (Roma Tre University), Alessio Monti (Roma Tre University), Mirko Barbuto (Niccolò Cusano University), Michela Longhi (Niccolò Cusano University), Stefano Vellucci (Niccolò Cusano University), Alessandro Toscano (Roma Tre University), Andrea Alù (University of New York), Vincenzo Galdi (University of Sannio), Filiberto Bilotti (Roma Tre University)

[WEEm-P_11] MRO's Shallow Radar (SHARAD): Solar Arrays Effects on HF Antenna Input Impedance

A. Di Carlofelice (University of L'Aquila), P. Tognolatti (University of L'Aquila), R. Croci (Fondazione Gran Sasso Tech), F. Bernardini (Istituto di Astrofisica e Planetologia Spaziale)

[WEEm-P_12] EMF Levels Related to Different Generations of Mobile Communication Systems: A Case Study in Cassino

G. Chirico, C. J. D'Silva, F. Schettino, D. Pinchera (University of Cassino and Southern Lazio)

[WEEm-P_13] Preliminary Analysis on the Use of Microwave Imaging for Bone Regeneration Enhanced by Magnetic Scaffolds

M.B. Lodi (University of Cagliari), A. Paulis (University of Cagliari), N. Grandi (University of Cagliari), A. Fanti (University of Cagliari), G. Bellizzi (University of Naples "Federico II"), R. Palmeri (Università Mediterranea di Reggio Calabria), R. Scapatucci (Università Mediterranea di Reggio Calabria)

[WEEm-P_14] On a Canonical Analysis of Electromagnetic Integral Equations: A High-Frequency Perspective

V. Giunzioni (Polytechnic University of Turin), A. Merlini (IMT Atlantique), F. P. Andriulli (Polytechnic University of Turin)

[WEEm-P_15] Density Characterization of Graded Foams Via THz Imaging

I. Catapano (National Research Council of Italy), S. Zappia (National Research Council of Italy), P. Iaccarino (University of Naples "Federico II"), R. Scapatucci (National Research Council of Italy), E. Di Maio (University of Naples "Federico II"), L. Crocco (National Research Council of Italy)

13:30 – 14:30 Lunch Break, Room Vangi

14:30 – 15:45 SIEm meets International professional societies

Organizers: Filiberto Bilotti, Maurizio Migliaccio

Room Cinema

- **Filiberto Bilotti**, METAMORPHOSE VI AISBL
- **Maurizio Bozzi**, IEEE Microwave Theory and Technology Society (MTT-S)
- **Costantino De Angelis**, OPTICA, International Society for Optics and Photonics (SPIE)
- **Stefano Maci**, IEEE Antennas and Propagation Society (AP-S)
- **Giuliano Manara**, International Union of Radio Science (URSI)
- **Maurizio Migliaccio**, IEEE Geoscience and Remote Sensing Society (GRSS), IEEE Oceanic Engineering Society (OES)

15:45 – 17:30 Scientific Sessions

SCIENTIFIC SESSION – Optics and Photonics II

Session Chairs: A. Melloni, V. Fiumara

Room Cinema

15:45-16:00 [WEa-R1_01] Assessing Rayleigh Fingerprint Persistence in Long-Term Sensing Measurement Campaigns

Luca Schenato, Martina Cappelletti, Daniele Orsuti, Andrea Galtarossa, Marco Santagiustina, Simonetta Cola, Luca Palmieri (University of Padova)

16:00-16:15 [WEa-R1_02] Control of Nonlinear Modulational Instability in Optical Fibers by Fine Tuning of Gain

Guillaume Vanderhaegen (University of Lille), Pascal Szriftgiser (University of Lille), Alexandre Kudlinski (University of Lille), Andrea Armaroli (University of Ferrara), Matteo Conforti (University of Lille), Arnaud Mussot (University of Lille), Stefano Trillo (University of Ferrara)



16:15-16:30	[WEa-R1_03] Design and Optimization of Hollow-Core Inhibited-Coupling Fibers for Gas-Based Quantum Photon Sources Lorenzo Rosa (University of Modena and Reggio Emilia), Walter Belardi (University of Parma), Federico Melli (University of Modena and Reggio Emilia), Annamaria Cucinotta (University of Parma), Luca Vincetti (University of Modena and Reggio Emilia)
16:30-16:45	[WEa-R1_04] Influence of Butt-Coupling Parameters in Reducing Bimodality of 850nm VCSEL-SSMF Radio Over Fiber Links Maryam N. Esfahani, Giada Saderi, Jacopo Nanni, Giovanni Tartarini (University of Bologna)
16:45-17:00	[WEa-R1_05] Programmable Photonic Transceiver for Mitigation of Atmospheric Turbulence in Free Space Optical Links Andres Martinez (Polytechnic University of Milan), Seyedmohammad Seyedinnavadeh (Polytechnic University of Milan), Francesco Zanetto (Polytechnic University of Milan), Filippo Morandi (Polytechnic University of Milan), Angelo Milani (Huawei Technologies Italia Srl), Alessandro D'Acerno (Huawei Technologies Italia Srl), Laura Resteghini (Huawei Technologies Italia Srl), Francesco Morichetti (Polytechnic University of Milan), Andrea Melloni (Polytechnic University of Milan)
17:00-17:15	[WEa-R1_06] All-Silicon Integrated Micro and Metalenses for LWIR Sensing Applications F. Grossi (Polytechnic University of Milan), S. Nicoli (STMicroelectronics), F. D'Ercoli (STMicroelectronics), F. Morichetti (Polytechnic University of Milan), L. Tentori (STMicroelectronics), G. Bruno (STMicroelectronics), A. I. Melloni (STMicroelectronics)
17:15-17:30	[WEa-R1_07] Resonant Radiation from Optical Rogue Waves Marcos Caso-Huerta (University of Brescia), Lili Bu (University of Brescia), Fabio Baronio (University of Brescia), Shihua Chen (Southeast University), Stefano Trillo (University of Ferrara)

SCIENTIFIC SESSION – Microwave, Mm-Wave and THz Components and Circuits

Session Chairs: A. Massa, A. Toscano

Room Tirreno Monti

15:45-16:00	[WEa-R2_01] Characterization of 3D-Printed Dielectric Materials Giuseppe Addamo (National Research Council of Italy), Oscar Antonio Peverini (National Research Council of Italy), Mauro Lumia (National Research Council of Italy), Giuseppe Virone (National Research Council of Italy), Fabio Paonessa (National Research Council of Italy), Martin Schwentenwein (Lithoz GmbH), Matteo Valeri (HB Technology Srl), Flaviana Calignano (Polytechnic University of Turin), Diego Manfredi (Polytechnic University of Turin), Oilid Bouzekri (ESA-ESTEC)
16:00-16:15	[WEa-R2_02] Microwave Filters with Extracted Poles: Improving Accuracy of One-Port Cascade Synthesis Matteo Oldoni (Polytechnic University of Milan), Stefano Tamiazzo (Commscope), Gian Guido Gentili (Polytechnic University of Milan), Giuseppe Macchiarella (Polytechnic University of Milan), Steven Kleber Caicedo Mejillon (SIAE Microelettronica)
16:15-16:30	[WEa-R2_03] Synthesis of Very High Order Star-Junction Multiplexers Giuseppe Macchiarella (Polytechnic University of Milan), Matteo Oldoni (Polytechnic University of Milan), Gian Guido Gentili (Polytechnic University of Milan), Beizun Liu (Xidian University)
16:30-16:45	[WEa-R2_04] Detection of Sub-THz Radiation Through Nanomechanical Membranes Simone Zanotto (National Research Council of Italy), Benedetta Bertoni (National Research Council of Italy), Lorenzo Alborghetti (University of Pisa), Leonardo Vicarelli (University of Pisa), Alessandro Tredicucci (University of Pisa), Stefano Roddaro (University of Pisa), Alessandro Pitanti (University of Pisa)
16:45-17:00	[WEa-R2_05] A Low-Cost Manufacturing Protocol for the Metallization of 3D Printed Waveguides: WRD250 Waveguide Case Study Claudia Macciò, Andrea Melis, Matteo Bruno Lodi, Giuseppe Mazzarella, Alessandro Fanti (University of Cagliari)
17:00-17:15	[WEa-R2_06] A Quadrature Hybrid Directional Coupler with Superelliptical Shape for 5.8 GHz Applications Giacomo Giannetti, Stefano Maddio, Stefano Selleri (University of Florence)
17:15-17:30	[WEa-R2_07] Measuring Through-the-Snow Radiowave Propagation of LoRa Signals with two Different Snow Profiles Giulio Maria Bianco (University of Rome "Tor Vergata"), Vemanth Chandra Pamarthi (University of Rome "Tor Vergata"), Michele Girolami (National Research Council of Italy), Fabio Mavilia (National Research Council of Italy), Gaetano Marrocco (University of Rome "Tor Vergata")

SCIENTIFIC SESSION – Radar and Remote Sensing

Session Chairs: A. Iodice, M. Migliaccio

Room Tirreno Mare

15:45-16:00	[WEa-R3_01] Design of an Intermodulation Radar for Sensing Applications Stefano Pisa (University of Rome "La Sapienza"), Alessandro Trifiletti (University of Rome "La Sapienza"), Pasquale Tommasino (University of Rome "La Sapienza"), Pietro Monsurrò (University of Rome "La Sapienza"), Piero Tognolatti (University of L'Aquila), Alessandro Di Carlofelice (University of L'Aquila), Emidio Di Giampaolo (University of L'Aquila)
16:00-16:15	[WEa-R3_02] Polarimetric Analysis of the Cardinal Effect in Bistatic SAR Imagery Giovanni Paolo Blasone (Italian Space Agency), Gerardo Di Martino (University of Naples "Federico II"), Alessio Di Simone (University of Naples "Federico II"), Antonio Iodice (University of Naples "Federico II"), Daniele Riccio (University of Naples "Federico II"), Giuseppe Ruello (University of Naples "Federico II")
16:15-16:30	[WEa-R3_03] A Speckle Model to Distinguish Water-Filled Ponds from Empty Ones in SAR Imagery Ferdinando Nunziata, Anna Verlanti, Maurizio Migliaccio (University of Naples "Parthenope")
16:30-16:45	[WEa-R3_04] Electromagnetic Insights on the Low-Frequency Antenna Performance of the Square Kilometer Array Georgios Kyriakou (National Institute for Astrophysics), Pietro Bolli (National Institute for Astrophysics), Mirko Bercigli (Ingegneria dei Sistemi), Lorenzo Mezzadrelli (Sirio Antenne)
16:45-17:00	[WEa-R3_05] On the Serial Decomposition of the Mueller Scattering Matrix to Observe Metallic Targets at Sea in Polarimetric SAR Imagery Ferdinando Nunziata (University of Naples "Parthenope"), José J. Gil (University of Zaragoza), Ignacio S. José (Instituto Aragones de Estadística), Maurizio Migliaccio (University of Naples "Parthenope")



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17:00-17:15	[WEa-R3_06] A Portable Radar System for Glacier Investigation: Proof of Concept in the Aosta Valley Region <i>Paolo Perret (University of Pavia), Martina Lodigiani (Fondazione Montagna Sicura), Lorenzo Silvestri (University of Pavia), Fabrizio Troilo (Fondazione Montagna Sicura), Francesco Zucca (University of Pavia), M. Pasian (University of Pavia)</i>
17:15-17:30	[WEa-R3_07] Spatial Decorrelation in Bistatic Interferometric SAR Systems <i>Gerardo Di Martino, Alessio Di Simone, Antonio Iodice, Daniele Riccio, Giuseppe Ruello (University of Naples "Federico II")</i>

17:30 – 18:00 Closing Ceremony, Room Cinema

Organizers:

- Giuliano Manara, *XXV RiNEm General Chair*
- Alessandro Toscano, *SIEm President*