

XXII RINEM

Riunione Nazionale di Elettromagnetismo

September 3-6, 2018

Cagliari, Italy



Conference Chair:

Giorgio Montisci, University of Cagliari

Conference Venue:

Faculty of Engineering
University of Cagliari

More Info:

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Conference Chair

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Conference Venue:

**Faculty of Engineering
University of Cagliari**

Via Marengo, 2

09123 Cagliari

Info at: <http://sites.unica.it/rinem2018>

Invited Speakers

PLENARY SESSION

Tuesday, September 4th, 2018, 14:00-15:30

Chairperson: Giuseppe Mazzarella

14:00-14:30

Prof. Yang Hao

School of Electronic Engineering and Computer Science
Queen Mary, University of London

"Nanoelectromagnetics at Microwave Frequencies and Beyond"

Abstract: Classic electromagnetics has witnessed novel developments in recent years due to the emergence of novel materials and concepts such as metamaterials and transformation optics. The theory of near-field electromagnetism has enabled us to explore structures in sub-wavelength scales and opens up new possibilities of imaging, sensing and characterization of materials. In this talk, I will review our recent research activities related to nanoelectromagnetics applied to microwave frequencies and beyond. In particular, how novel electromagnetic modelling tools have been developed and applied for the development of device innovation.

14:30-15:00

Dr. Francesco Bonaccorso

Graphene Labs
IIT Central Research Lab, Genova

"Solution processed 2D-materials for printed electronics"

Abstract: Graphene and other 2D crystals are emerging as promising materials to improve the performance of existing devices or enable new ones. A key requirement for flexible and printed electronics is the development of industrial-scale, reliable, inexpensive production processes, while providing a balance between ease of fabrication and final material quality. Solution-processing is a simple and cost-effective pathway to fabricate various 2D crystal-based (opto)electronic devices, presenting huge integration flexibility compared to conventional methods. Here, I will present an overview of graphene and other 2D crystals for flexible and printed (opto)electronic applications, starting from solution processing of the raw bulk materials, the fabrication of large area electrodes and their integration in the final devices.

15:00-15:30

Prof. Alexander I. Nosich

Institute of Radio-Physics and Electronics
National Academy of Sciences
Kharkiv, Ukraine

"Periodicity matters: ultrahigh-Q resonances on the grating modes of large arrays of sub-wavelength scatterers"

Abstract: This talk reviews the nature and history of the discovery of extremely high-quality natural modes existing on periodic arrays of many subwavelength scatterers. Thanks to these modes, infinite and large arrays can be viewed as specific periodically structured open resonators. These grating or lattice modes (GMs), like any other natural modes, give rise to the associated resonances in electromagnetic-wave scattering and absorption. Their complex wavelengths are always located very close to (but not exactly at) the well-known Rayleigh anomalies (RAs), determined only by the period and the phase shift between adjacent elements. This circumstance has long been a reason for their misinterpretation as RAs, especially in the measurements and simulations using low-resolution methods. On the frequency scans of the reflectance or transmittance, GM resonances usually develop as asymmetric Fano-shape double extrema. In the microwave range, GM resonances can spoil the performance of large phased-array antennas assembled on flat surfaces. In the optical range, GM resonances are found behind exotic phenomena such as "anomalous" transmission, reflection and absorption, giant Faraday, Kerr and Kerker effects, etc., and also behind the principle of operation of Distributed Feedback Lasers. If a grating is made of subwavelength-size noble metal elements, then collective GMs exist together with better-known localized surface-plasmon modes on individual particles. Their interplay can result in the effect of induced optical transparency. Thanks to high tunability and considerably higher Q-factors, the GM resonances can potentially replace the plasmon-mode resonances in the design of nanosensors, nanoantennas, and solar-cell nanoabsorbers.

INAF SESSION

Tuesday, September 4th, 2018, 11:15-12:45

Chairperson: Alessandro Navarrini

11:15-11:45

Prof. Paul Goldsmith

Jet Propulsion Laboratory, California Institute of Technology
Pasadena CA 91109, USA

"The Renaissance of Submillimeter Astronomical Spectroscopy"

Abstract: High resolution spectroscopy is recognized as a powerful astrophysical tool. For understanding many critical aspects of the formation and evolution of interstellar clouds and how new stars are formed within them, the most important spectral lines are at submillimeter wavelengths, corresponding to the terahertz frequency range between 300 and 6000 GHz, (0.3 to 6 THz). In many astronomical situations, line widths resulting from Doppler shifts arising from gas motions can be significantly less than 1 km/s. Thus, extracting the full information available about the kinematics of gas in the source being observed requires resolution $R = f / \Delta f \geq 3 \times 10^5$. This requires a heterodyne system, which can readily achieve the required frequency resolution. Exploiting the wealth of ionic, atomic, and molecular transitions has been hampered by the nearly total absorption by the Earth's atmosphere and the relatively low sensitivity of available detectors. The situation has improved dramatically over the last decade. The development of the Heterodyne Instrument for Far Infrared (HIFI), on board the Herschel Space Observatory launched in 2009 encouraged a continuing technological transformation that includes vastly improved mixers, local oscillators, optics, and the development of focal plane arrays. The data from Herschel have inspired improved laboratory measurements generating spectral line catalogs, quantum calculations, and measurements of collision rates and chemical reaction rates for key astrophysical species. New observing platforms including the SOFIA airborne observatory and long-duration balloons flying at 40 km altitude have resulted in a stream of data of ever-increasing frequency coverage and range and extent of sources observed. Anticipated ultra-long-duration balloons and the possibility of space missions ranging from small satellites to a large-aperture major (Flagship) mission are generating great excitement about possible future observations. In this talk I will review the importance of high resolution spectroscopy and will briefly highlight recent astronomical results, including high-sensitivity observation of water in collapsing cloud cores and the solar system and velocity-resolved large-area studies of Giant Molecular Clouds and nearby galaxies in the 158 micron fine structure transition ([CII]) of C+. I will then turn to the technological developments that have made this dramatic progress possible, including detectors, local oscillators, and spectrometers. I will conclude by talking about some possibilities for the future.

11:45-12:15

Dr. Federica Govoni

INAF – Osservatorio Astronomico di Cagliari, Italy

"Scientific involvement of the Italian radio astronomical community in national and international facilities"

Abstract: The attention of the Italian radio astronomy is currently distributed across various world-class facilities which includes both single-dish radio telescopes, such as the Sardinia Radio Telescope, and radio interferometers, such as the Square Kilometre Array, its precursors (e.g. MeerKAT, ASKAP, MWA), and its pathfinders (e.g. LOFAR, APERTIF, GMRT). I will compare the strengths of single-dish radio telescopes to radio interferometers and I will show the research which is performed by the Italian community using these instruments.

12:15-12:45

Dr. Tonino Pisanu

INAF – Osservatorio Astronomico di Cagliari, Italy

"The Front-Ends of the Sardinia Radio Telescope"

Abstract: The Sardinia Radio Telescope (SRT), a challenging scientific project of the Italian National Institute for Astrophysics (INAF), is a new general purpose fully steerable 64 m diameter radio telescope designed to operate with high efficiency across the 0.3-116 GHz frequency range. The SRT is located 35 km North of Cagliari, Sardinia, Italy, at about 600 m above the sea level. The telescope, equipped with an active surface, three first-light receivers and various backends, successfully completed a six-month early science program in 2016. Following the refurbishment of its active surface in 2017, the telescope is currently being recommissioned for its technical and scientific capabilities with the goal of opening it to the international community by the end of 2018. I will describe the SRT first-light instrumentation, in particular the three radioastronomy receivers, that were all developed by INAF: a double frequency L-P band (305-410 MHz, 1.3-1.8 GHz) coaxial receiver for the primary focus, a K-band (18-26.5 GHz) 7-beam multibeam receiver for the Gregorian focus and a single feed high C-band (5.7-7.7 GHz) receiver for the Beam Waveguide focus. Furthermore, I will describe the receivers planned to be built and installed on SRT during the next few years.

URSI SESSION

Wednesday, September 5th, 2018, 8:45-10:45

Chairperson: Stefano Selleri

8:45-9:15

Mauro Messerotti

INAF-Astronomical Observatory of Trieste, Loc. Basovizza 302, 34149 Trieste, Italy

"Solar Radio Interferences on Radio Systems: A Direct Space Weather Effect"

Abstract: The Sun is a source of broadband radio noise, which can reach quite high levels at different phases of the solar activity cycle. In particular, very intense solar radio bursts can significantly affect the quality of radio communications, e.g. in HF and UHF (mobile phones, radars), up to the interruption of services like satellite geolocation via GNSS in L-band. The Trieste Solar Radio System (TSRS) has played a key role in the detection of one of the first GNSS solar RFI published in literature. In this work, we briefly review the phenomenological scenario by focussing on the observational requirements for GNSS, which operate in the Right-Hand Circular Polarisation mode, and point out the need of a network of dedicated multichannel solar radio polarimeters for providing alerts and warning to enhance the quality of GNSS services and their resilience with respect to solar RFIs, a direct Space Weather effect on technological systems.

9:15-9:45

Prof. Alain Sibille

LTCI, Telecom ParisTech
46 rue Barrault 75013, Paris, France

"Statistical methods for joint antenna-radio channel modelling"

Abstract: The description of the electromagnetic behavior of antennas needs a large amount of data to be complete, since it requires complex numbers for the radiated far field in all possible directions and polarizations, for all frequencies of interest and all antenna elements in case of arrays or multiport antennas, plus the full impedance matrix. In addition, since most of the time the radio channel linking the transmitting and receiving antennas in a wireless communication is not in free space, many propagation effects are involved and result in the particularities of the received signals. Finally, while it is often designed and measured in nearly ideal conditions (e.g. anechoic chamber) an antenna is rarely used in emptiness and its close environment does impact its performance, sometimes dramatically. While strong close disturbers can be taken into account at the design phase (such as a casing or a human head),

variations in the effective impact of such disturbers can take place, which to some extent can unpredictably affect the antenna characteristics. Deterministic methods can hardly take into account all the variabilities that occur in real life and would be much too expensive to implement and to use. The natural approach, widely practiced in other domains, is to resort to statistical descriptions, based on metamodels able to represent these variabilities with a limited number of parameters while achieving an adequate trade-off between accuracy and simplicity. The presentation will address these issues for joint antenna-channel modelling, giving some examples about the development and use of such methods.

9:45-10:15

Prof. Ludger Klinkenbusch

Technische Fakultät der Christian-Albrechts-Universität zu Kiel
Kiel University

"Scattering and Diffraction of Complex-Source Beams by Canonical Objects"

Abstract: The presentation reviews recent advances in the application of complex-source beams (CSB) as incident fields in the context of scattering and diffraction by canonical objects like wedges, cones and sector-like structures. A CSB can be achieved by simply replacing the source coordinates in the Green's function by suitably chosen complex numbers. Nearby the axis it then represents half of a Gaussian beam which – except of the waist – exactly satisfies the Maxwell or Helmholtz equations. The main advantages of using CSBs as compared to the commonly applied illuminating plane waves are a dramatically improved convergence of the resulting series expansions of the scattered far fields and the opportunity to illuminate just the desired part of the canonical object, for example the tip of the cone. To achieve results comparable to the case of an incident plane wave a uniform CSB will be employed representing a full Gaussian beam. The uniform CSB will be located such that its waist where the field can be interpreted as a local plane wave interacts with the structure of interest, for example the tip. The outcomes can be used to extend the application of asymptotic methods like the Geometrical Theory of Diffraction (GTD) or the Uniform Theory of Diffraction (UTD). More generally, (uniform) CSBs can also be used as wave propagators in different applications where localized or beam-like fields are more suitable than omnidirectionally radiated fields or full plane waves.

10:15-10:45

Prof. Gabriele Gradoni

School of Mathematical Sciences, and George Green Institute for
Electromagnetics Research University of Nottingham
University Park NG7 2RD
United Kingdom

"Wave Chaos for Electromagnetic Environment Modelling and Control"

Abstract: The propagation of waves through real-life electromagnetic environments, e.g., structures, channels and media, involves multiple components and space-time scales. In particular, the modelling of high frequency fields poses computational challenges when the environment is large and irregular. Recently, it has been shown that wave interference driven by multiple reflections and scattering ignites collective phenomena whose physics is beyond the obvious, e.g., wave localisation, diffusion, and rogue states. This opens up new exciting modelling avenues to understand and design complex electromagnetic environments. Collective phenomena are universal in the sense they depend on system generic symmetries and can be predicted by chaos theory with a few global parameters. Based on this phenomenology, statistical methods have been successfully used to devise simulation tools that characterise the electromagnetic energy flow through large structures with a reasonable computational effort. A specific model, the random coupling model, which describes the high-frequency excitation of irregular environments, is derived and applied to cavity problems of practical interest. The derivation is outlined following the wave chaos theory paradigm, which brings together semiclassical analysis and random matrix theory. In a linear eigenvalue problem, semiclassics is used to replace exact eigenfunctions with putative modes made of a superposition of random plane waves, while random matrix theory is used to replace the exact spectrum of resonances with universal distributions of eigenvalues. The two prescriptions are motivated by field mixing, ray instability, and high modal overlapping: collective wave phenomena of systems whose underlying classical dynamics is chaotic. A few advanced applications are discussed in the context of wave control of energy diffusion and focusing in dynamic confined environments. Results are relevant in wireless channels in telecommunications, wavefront shaping in imaging and radars, reverberation chambers in electromagnetic compatibility, and microwave applicators in material processing engineering.

XXII RINEM

Conference Sessions

Monday, September 3th, 2018

12:00-14:30 **Registration**

14:30-15:00 **Open and Salutations**

Session 1: Antennas I

Chairperson: Giovanni Andrea Casula

15:00-15:15 1.1 [Barzilai Prize]

ANGLE AND POLARIZATION TUNING OF THE SECOND HARMONIC RADIATION PATTERN IN DIELECTRIC NANOANTENNAS

Carletti L.¹, D. Rocco¹

¹Department of Information Engineering, Università degli Studi di Brescia

15:15-15:30 1.2

OPTIMAL SYNTHESIS OF SHAPED BEAMS FOR GENERIC FIXED GEOMETRY ARRAYS

G. M. Battaglia¹, G. G. Bellizzi¹, T. Isernia, A. F. Morabito^(1,2)

¹DIIES, Università Mediterranea di Reggio Calabria

²CNIT, Consorzio Nazionale Interuniversitario per le Telecomunicazioni

15:30-15:45 1.3

OPTIMAL SYNTHESIS OF SUM AND DIFFERENCE PATTERS OF CENTRO-SYMMETRIC ARRAYS

G. Bellizzi^(1,2,3), O.M. Bucci^(1,2,3)

¹DIETI Università di Napoli Federico II

²IREA-CNR

³CNIT

15:45-16:00 1.4

AUTOMATIC DESIGN OF A RHCP LINEAR SLOTTED ARRAY FOR LAST-MILE APPLICATIONS AT MICROWAVES

S. C. Pavone¹, M. Casaletti², M. Albani¹

¹Department of Information Engineering and Mathematics (DIISM), University of Siena,

²Laboratory of Electronics and Electromagnetics (L2E), University Pierre and Marie Curie, Paris

16:00-16:15 1.5 [Sannino Prize]

A WIDEBAND PHASED ARRAY

C. Novi¹, M. Righini²

¹Antennas and EMC Development Unit Research and Development Department, Rheinmetall Italia S.p.A., Rome

²Department of Information Engineering, University of Florence

16:15-16:30 1.6

DESIGN OF CRYOGENIC PHASED ARRAY FEED FOR 4-8 GHZ

A. Navarrini¹, et al.

¹INAF-Osservatorio Astronomico di Cagliari, via della Scienza 5, Selargius, Italy

16:30-16:45 1.7

DEVELOPMENT OF HIGH-FREQUENCY RADOMES FOR POLAR GROUND STATIONS

A. Martellosio¹, M. Pasian¹, F. Concaro², L. Perregrini¹

¹Department of Electrical, Computer and Biomedical Engineering, University of Pavia

²Department of Ground Systems Engineering, European Space Agency (ESA)

Monday, September 3th, 2018

Session 2: Computational Electromagnetics

Chairperson: Gino Sorbello

15:00-15:15 2.1

ANALYSIS OF INHOMOGENEOUS WAVEGUIDE COMPONENTS BY THE BI-RME METHOD

S. Battistutta¹, M. Bozzi¹, M. Bressan¹, L. Perregrini¹

¹Department of Electrical, Computer and Biomedical Engineering, University of Pavia

15:15-15:30 2.2 [Sannino Prize]

CLOSED-TO-OPEN CROSS-SECTION CONVERSION OF MM-WAVE DEVICES BY MEANS OF THE MODE MATCHING THEORY

G. Torrisi¹, G. Castorina²

¹Istituto Nazionale di Fisica Nucleare -Laboratori Nazionali del Sud, Catania

²Università degli Studi di Roma La Sapienza, Dip. SBAI

15:30-15:45 2.3

AN OPTIMISED APPROACH TO NUFFT

A. Capozzoli¹, C. Curcio¹, A. Liseno¹

¹Dept. of Information Technology and Electrical Engineering, University of Naples "Federico II"

15:45-16:00 2.4 [CNIT Prize]

A GENERAL ANALYTICAL METHOD, BASED ON SLATER'S PERTURBATION THEOREM, FOR MESH GENERATION IN FEM SIMULATION OF RF CAVITIES

G. S. Mauro^(1,2), L. Celona³

¹Istituto Nazionale di Fisica Nucleare - Laboratori Nazionali di Legnaro

²Universita' degli Studi "Mediterranea" di Reggio Calabria

³Istituto Nazionale di Fisica Nucleare - Laboratori Nazionali del Sud, Catania

16:00-16:15 2.5

MESHLESS METHODS APPLIED TO ELECTROMAGNETIC EIGENPROBLEMS

V. Lombardi¹, M. Bozzi¹, L. Perregrini¹

¹Department of Electrical, Computer and Biomedical Engineering, University of Pavia

16:15-16:30 2.6

AN ANALYTICAL APPROACH FOR THE EFFICIENT EVALUATION OF A CLASS OF IMPROPER INTEGRALS INVOLVING OSCILLATING AND SLOWLY DECAYING FUNCTIONS

M. Lucido¹, G. Panariello¹, C. Santomassimo¹, F. Schettino¹

¹Department of Electrical and Information Engineering, University of Cassino and Southern Lazio

16:30-16:45 2.7 [Barzilai Prize]

APERTURE TRUNCATION AND EXCITATION ERROR ANALYSIS FOR A SPACE DEBRIS RADAR ANTENNA ARRAY

G. Siciliano¹

¹Dept. of Electrical, Electronic and Biomedical Engineering, University of Pavia

Monday, September 3th, 2018

Session 3: Bioelectromagnetism & Biomedical applications

Chairperson: Rosa Scapaticci

17:15-17:30 3.1

EXPERIMENTAL STUDY UP TO 50 GHZ ON TISSUE-MIMICKING MATERIALS FOR BREAST PHANTOMS

S. Di Meo¹, L. Pasotti^(1,2), G. Matrone^(1,2)

¹Dept. of Electrical, Computer and Biomedical Engineering University of Pavia

²Centre for Health Technologies, University of Pavia, Pavia

17:30-17:45 3.2

QUANTITATIVE MICROWAVE BRAIN STROKE IMAGING: INVERSION PROCEDURE AND PRELIMINARY EXPERIMENTAL RESULTS

I. Bisio¹, C. Estatico², A. Fedeli¹, F. Lavagetto¹, G. L. Mancardi³, M. Pastorino¹, A. Randazzo¹, A. Sciarrone¹, E. Tavanti¹

¹Department of Electrical, Electronic, Telecommunications Engineering, and Naval Architecture, University of Genoa

²Department of Mathematics, University of Genoa

³Department of Neuroscience, Rehabilitation, Ophthalmology, Genetics, Maternal and Child Health, University of Genoa

17:45-18:00 3.3 [CNIT Prize]

SYNTHESIS OF TARGET-CONFORMAL FIELD INTENSITY PATTERNS FOR HEAD & NECK HYPERTHERMIA TREATMENT

G. G. Bellizzi^(1,2), L. Crocco²

¹DIIES, Università Mediterranea di Reggio Calabria

²CNR-IREA, Napoli

18:00-18:15 3.4

NEW IN-VIVO MAPPING OF HUMAN TISSUES VIA PHASELESS INVERSE SCATTERING AND MRI/CT SEGMENTATION

M. T. Bevacqua¹, G. G. Bellizzi^(1,2), L. Crocco², T. Isernia^(1,2)

¹DIIES, Università Mediterranea di Reggio Calabria

²CNR-IREA, Napoli

18:15-18:30 3.5

AN EXPERIMENTAL ASSESSMENT OF THERMAL ABLATION MONITORING VIA MICROWAVE TOMOGRAPHY

R. Scapaticci¹, M. Cavagnaro², V. Lopresto³, R. Pinto³, L. Crocco¹

¹IREA, National Council of Research of Italy, Naples

²DIET, Sapienza University of Rome, Rome

³ENEA, Division of Health Protection Technologies, Casaccia Research Center, Rome

18:30-18:45 3.6

MAGNETIC BIOMATERIALS FOR BONE TUMOR HYPERTHERMIA: A NUMERICAL STUDY

A. Fanti¹, M.B Lodi¹, G. Vacca¹, G. Mazzeola¹

¹Department of Electrical and Electronic Engineering, University of Cagliari, Cagliari

18:45-19:00 3.7 [Barzilai Prize]

NUMERICAL RESULTS ON A MILLIMETER-WAVE CONFORMAL ARRAY FOR BREAST CANCER DETECTION

S. Di Meo¹, G. Matrone¹

¹Dept. of Electrical, Computer and Biomedical Engineering University of Pavia

Monday, September 3th, 2018

Session 4: RADAR

Chairperson: Sandra Costanzo

17:15-17:30 4.1 [Sannino Prize]

A MICROWAVE RADAR SYSTEM FOR INDOOR POSITIONING TRACKING OF ELDERLY AND DEPENDENT PEOPLE

G. Paolini¹

¹DEI – University of Bologna

17:30-17:45 4.2

INTEGRATED RADAR TILE FOR X/KA BAND SAR APPLICATIONS

E. Arnieri¹, L. Boccia¹, G. Amendola¹, C. Mao², S. Gao², T. Rommel³, S. Glisic⁶, P. Penkala⁴, M. Krstic⁵, A. Ho⁷, U. Yodprasit⁶, O. Schrape⁵, M. Younis³

¹DIMES, University of Calabria

²School of Engineering and Digital Arts, University of Kent, Canterbury

³Microwaves and Radar Institute, German Aerospace Center (DLR)

⁴Evatronix S.A. Bielsko-Biała, Poland.

⁵IHP, 15236 Frankfurt (Oder)

⁶Silicon Radar GmbH, 15236 Frankfurt (Oder)

⁷Innovative Solutions In Space BV, 629 JD, Delft

17:45-18:00 4.3

ANALYTICAL MODEL FOR THE BISTATIC RCS OF SHIPS BASED ON THE GEOMETRICAL OPTICS APPROXIMATION

A. Di Simone¹, W. Fuscaldo², L. M. Millefiori³, G. Di Martino¹, A. Iodice¹, G. Ruello¹, D. Riccio¹, P. Braca³, P. Willett⁴

¹Dept. of Information Technology and Electrical Engineering, University of Naples "Federico II"

²Dept of Information Engineering, Electronics and Telecommunications, Sapienza Univ. Rome

³NATO-STO Centre for Maritime Research and Experimentation, La Spezia

⁴Department of Electrical and Computer Engineering, University of Connecticut

18:00-18:15 4.4

THE DELAY AND SUM ALGORITHMS FOR THROUGH THE WALL RADAR IMAGING SYSTEMS

S. Pisa¹, E. Piuze¹, E. Pittella¹, G. Sacco¹, P. d'Atanasio², A. Zambotti²

¹Dept. of Information Engineering, Electronics and Telecommunications, Sapienza Univ. Rome

²Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Casaccia Research Centre, Rome

18:15-18:30 4.5 [CNIT Prize]

SOFTWARE-DEFINED RADAR FOR VITAL SIGN MONITORING

A. Raffo¹, S. Costanzo¹

¹Dept. of Informatics, Modeling, Electronics and System Engineering, University of Calabria

18:30-18:45 4.6 [CNIT Prize]

DUAL-RECEIVER FMCW RADAR FOR SNOWPACK MONITORING: SYSTEM VALIDATION AND PRELIMINARY RESULTS

P. F. Espin-Lopez¹, M. Pasian¹

¹Department of Electrical, Computer and Biomedical Engineering, University of Pavia

18:45-19:00 4.7 [CNIT Prize]

UPGRADING THE P-BAND RECEIVER OF THE SARDINIA RADIO TELESCOPE FOR SPACE DEBRIS MONITORING

L. Schirru^(1,2), G. Muntoni¹, G. Montisci^(1,2)

¹Department of Electrical and Electronic Engineering, University of Cagliari

²National Institute for Astrophysics, Cagliari Astronomical Observatory, Selargius

Tuesday, September 4th, 2018

08:30-09:00

Registration

Session 5: EMF Propagation & Remote Sensing

Chairperson: Lorenzo Luini

9:00-9:15 5.1

TWO-SCALE MODEL FOR THE EVALUATION OF SEA-SURFACE SCATTERING IN CIRCULAR POLARIZATION

G. Di Martino¹, A. Di Simone¹, A. Iodice¹, D. Riccio¹, G. Ruello¹

¹Department of Electrical Engineering and Information Technology, University of Napoli Federico II

9:15-9:30 5.2

FLOOD MAPPING USING SENTINEL-1 SAR DETECTED IMAGES

D. Amitrano¹, G. Di Martino¹, A. Iodice¹, D. Riccio¹, G. Ruello¹

¹Department of Electrical Engineering and Information Technology, University of Napoli Federico II

9:30-9:45 5.3 [CNIT Prize]

A NEW METHOD TO ENHANCE SPATIAL RESOLUTION OF MICROWAVE EARTH OBSERVATION MEASUREMENTS

M. Alparone^(1,2), F. Nunziata¹

¹Dipartimento di Ingegneria, Università degli Studi di Napoli Parthenope

²Centro Direzionale - Isola C4, Napoli

9:45-10:00 5.4 [CNIT Prize]

STUDY ON MM-WAVE MULTI-USER BEAMFORMING BASED ON MEASUREMENTS AND RAY TRACING SIMULATIONS

M. Zoli¹, F. Fuschini¹

¹Department of Electrical, Electronic and Information Engineering (DEI), University of Bologna

10:00-10:15 5.5

PROGRESS ON THE REALIZATION OF A LOR® BASED COMMUNICATION SYSTEM FOR ATMOSPHERIC MONITORING PROBES

S. Bertoldo^(1,2), M. Paredes^(1,3), L. Carosso^(1,2), C. Lucianaz^(1,2), M. Allegretti^(1,2,3), F. Canavero¹, G. Perona²

¹Politecnico di Torino, DET

²Consorzio Interuniversitario Nazionale per la Fisica delle Atmosfere e delle Idrosfere, Politecnico di Torino

³Envisens Technologies s.r.l., Torino

10:15-10:30 5.6

EM WAVE PROPAGATION EXPERIMENT AT E BAND AND D BAND FOR 5G MOBILE NETWORKS

L. Luini¹, G. Roveda², M. Zaffaroni², M. Costa², C. Riva¹

¹DEIB, Politecnico di Milano

²Huawei Microwave Centre, Milano

10:30-10:45 5.7

RAY TRACING PATH LOSS PREDICTION IN URBAN ENVIRONMENT @ 26, 28 AND 38 GHZ

F. Mani¹, E. M. Vitucci¹, M. Barbiroli¹, F. Fuschini¹, V. Degli Esposti¹

¹Dept. of Electrical, Electronic and Information Eng. "G. Marconi", University of Bologna

Tuesday, September 4th, 2018

Session 6: Measurements & Diagnostics

Chairperson: Graziano Cerri

9:00-9:15 6.1
PERFORMANCES ESTIMATION AND MEASUREMENT OF A SOURCE STIRRED REVERBERATION CHAMBER

G. Cerri¹, A. De Leo¹, V. Mariani Primiani¹, P. Russo¹

¹Dipartimento di Ingegneria dell'Informazione, Università Politecnica delle Marche

9:15-9:30 6.2
AN ITERATIVE TECHNIQUE TO CORRECT PROBE POSITIONING ERROR AFFECTED PLANAR WIDE-MESH SCANNING NF DATA

F. D'Agostino¹, F. Ferrara¹, C. Gennarelli¹, R. Guerriero¹, M. Migliozzi¹

¹D.I.In., Università di Salerno, Fisciano

9:30-9:45 6.3
FAST DIAGNOSTICS OF LARGE CONFORMAL ARRAY BY MATRIX METHOD

G. Di Massa¹, S. Costanzo¹

¹DIMES-University of Calabria, Rende

9:45-10:00 6.4
NEAR-FIELD VALIDATION OF THE ELECTROMAGNETIC MODELS FOR LOFAR LBA- OUTER ARRAY

P. Di Ninni¹, P. Bolli¹, F. Paonessa², G. Pupillo³, G. Virone², S. J. Wijnholds⁴

¹INAF-Osservatorio Astrofisico di Arcetri, Firenze

²CNR-Istituto di Elettronica ed Ingegneria dell'Informazione e delle Telecomunicazioni, Torino

³INAF-Istituto di Radio Astronomia, Medicina

⁴Netherlands Institute for Radio Astronomy, Dwingeloo, The Netherlands

10:00-10:15 6.5
FIRST TESTS OF A TORALDO PUPIL OPTICAL MODULE FOR THE 32M MEDICINA ANTENNA

L. Olmi¹, P. Bolli¹, L. Carbonaro¹, L. Cresci¹, A. Maccaferri², G. Maccaferri², P. Marongiu³, D. Mugnai⁴, R. Nesti¹, A. Orfei², D. Panella¹, S. Righini²

¹INAF – OAA, Firenze

²INAF – IRA, Villafontana

³INAF – OAC, Selargius

⁴CNR – IFAC, Firenze

10:15-10:30 6.6 [Barzilai Prize]
A VALID ANGLE CRITERION IN NEAR FIELD MEASUREMENTS BASED ON ANALYTICAL SVD

M.A. Maisto¹

¹Dipartimento di Ingegneria, Università della Campania L. Vanvitelli, Aversa

10:30-10:45 6.7 [Barzilai Prize]
MEASUREMENTS-BY-DESIGN: A NOVEL APPROACH FOR FAST AND RELIABLE ANTENNA CERTIFICATION

M. Salucci¹

¹ELEDIA Research Center (ELEDIA@UniTN - University of Trento), Trento

Tuesday, September 4th, 2018

11:15-12:45

INAF SESSION

12:45-14:00

Lunch

14:00-15:30

PLENARY SESSION

15:30-20:00

Visit at the SARDINIA RADIO TELESCOPE

20:00

Dinner at Agriturismo "Su Leunaxiu"

Wednesday, September 5th, 2018

08:30-08:45

Registration

08:45-10:45

URSI SESSION

Session 7: RFID

Chairperson: Luca Catarinucci

11:15-11:30 7.1 [CNIT Prize]

AN EPIDERMAL CONFIGURABLE ANTENNA SYSTEM FOR THE MONITORING OF BIOPHYSICAL PARAMETERS

C. Miozzi¹, G. Marrocco¹

¹University of Roma "Tor Vergata", Roma

11:30-11:45 7.2 [CNIT Prize]

UHF RFID 3-D LOCALIZATION IN RETAIL SHOP SCENARIOS

A. Motroni¹, P. Nepa¹

¹Dipartimento di Ingegneria dell'Informazione, University of Pisa

11:45-12:00 7.3 [CNIT Prize]

GOSPER SPACE-FILLING RADIOFREQUENCY-SKIN FOR THE DETECTION AND IDENTIFICATION OF SURFACE CRACKS

S. Nappi¹, G. Marrocco¹

¹Department of Civil and Informatic Engineering, University of Rome Tor Vergata

12:00-12:15 7.4

TIME-BASED ARRAYS FOR PRECISE TAGS LOCALIZATION

M. Shanawani¹, D. Masotti¹, A. Costanzo²

¹DEI - University of Bologna, Bologna

²DEI - University of Bologna, Cesena

12:15-12:30 7.5

RADIO FREQUENCY SENSORS BASED ON CHIPLESS RFID TECHNOLOGY

F. Costa¹, S. Genovesi¹, S. Terranova¹, G. Manara¹

¹Dipartimento di Ingegneria dell'Informazione, University of Pisa

12:30-12:45 7.6 [Barzilai Prize]

UHF RFID TAG DETECTION IN CYLINDRICAL WAVEGUIDES

A. Michel¹

¹Dipartimento di Ingegneria dell'Informazione, University of Pisa

12:45-13:00 7.7 [Barzilai Prize]

ROTATION-INSENSITIVE RF-TO-DC LINK FOR IPT IMPLANTS

A. Pacini¹, F. Benassi¹

¹Department of Electrical, Electronic and Information Engineering "Guglielmo Marconi", University of Bologna

Wednesday, September 5th, 2018

Session 8: MICROWAVES

Chairperson: Luca Perregrini

11:15-11:30 8.1 [Barzilai Prize]

FOCUSING THROUGH CYLINDRICAL LEAKY WAVES

D. Comite¹, W. Fuscaldo¹

¹Department of Information Engineering, Electronics, and Telecommunications, "Sapienza" University of Rome

11:30-11:45 8.2 [Barzilai Prize]

SPATIAL CONFINEMENT OF LOCALIZED BEAMS AND PULSES FOR NEAR-FIELD FOCUSING APPLICATIONS AT MILLIMETER WAVES

W. Fuscaldo¹ and S. C. Pavone²

¹Dept. of Information Engineering, Electronics and Telecommunications, Sapienza Univ. Rome

²Department of Information Engineering and Mathematics, University of Siena

11:45-12:00 8.3

ADDITIVE MANUFACTURING OF HIGH PERFORMANCES FILTERS

G. Addamo¹, O.A. Peverini¹, F. Calignano², D. Manfredi², F. Paonessa¹, G. Virone¹

¹Istituto di Elettronica ed Ingegneria dell'Informazione e delle Telecomunicazioni, Torino

²Dipartimento di Ingegneria Gestione della Produzione, Politecnico di Torino

12:00-12:15 8.4

PERFORMANCE STUDY OF COMPACT SUBSTRATE INTEGRATED WAVEGUIDE RESONATORS

N. Delmonte¹, C. Tomassoni², M. Bozzi¹, L. Perregrini¹

¹Department of Electrical, Computer and Biomedical Engineering, University of Pavia

²Department of Engineering, University of Perugia

12:15-12:30 8.5

CORRUGATED RECTANGULAR WAVEGUIDE FOR PULSE COMPRESSION SYSTEMS

G. Di Massa¹, S. Costanzo¹

¹Department of Informatics, Modeling, Electronics and System Engineering, University of Calabria

12:30-12:45 8.6

3D-PRINTED SUBSTRATE INTEGRATED WAVEGUIDE CAVITY FOR FLUIDS CHARACTERIZATION

G. M. Rocco¹, M. Bozzi¹, D. Schreurs², S. Marconi³, G. Alaimo³, F. Auricchio³

¹Department of Electrical, Computer and Biomedical Engineering, University of Pavia

²Department of Electrical Engineering, KU Leuven, Belgium

³Department of Civil Engineering and Architecture, University of Pavia

12:45-13:00 8.7

Low-power Eco-friendly Sensors for the Internet of Things

Valentina Palazzi¹, Federico Alimenti¹, Luca Roselli¹, P. Mezzanotte¹

¹Dipartimento di Ingegneria, Università degli studi di Perugia

13:00-14:00

Lunch

Wednesday, September 5th, 2018

CST Presentation

14:00-15:00

Ing. Emanuele Zanin

CST Italy srl

"Smart Watch Antenna Design"

Abstract: Wearable electronics poses many challenges for the antenna design engineer. When designing wearable consumer electronics in particular, rapidly evolving performance requirements, new usage scenarios and regulatory constraints make the ability to accurately and efficiently evaluate and consider different design options critical in being competitive. In this presentation, some of the challenges facing antenna designers in the design of a new smartwatch product will be shown. The presentation will explore some design examples and discuss the design and analysis approaches in relation to the regulatory as well as electromagnetic and mechanical performance requirements for a typical commercial smartwatch.

Poster Session

14:00-15:45

P1.1

THE QV-LIFT PROJECT: A GROUND SEGMENT FOR THE FUTURE Q/V BAND SATELLITE SYSTEMS

G. Amendola¹, L. Boccia¹, F. Greco¹, E. Arnieri¹, C. Riva², L. Luini², R. Nebuloni³, G. Codispoti⁴, G. Parca⁴, G. Valente⁴, G. Goussetis⁵, S. Kosmopoulos⁵, M. Siegler⁶, R. Martin⁷, J. Moron⁷, R. Eleuteri⁸, M. Bergmann⁸, F. Massaro⁹, R. Campo⁹, F. Vitobello¹⁰

¹CNIT-Università della Calabria (I)

²CNIT-Politecnico di Milano(I)

³IEIIT/CNR (I)

⁴ASI-Agenzia Spaziale Italiana (I)

⁵Heriot Watt University (UK)

⁶ERZIA (S)

⁷Ommic (F)

⁸Skytech (I)

⁹Eutelsat (F)

¹⁰European Commission

P1.2

INVERSE SCATTERING METHODOLOGIES AND APPLICATIONS @ELEDIA RESEARCH CENTER

N. Anselmi¹, A. Gelmini¹, G. Gottardi¹, G. Oliveri¹, L. Poli¹, P. Rocca¹, M. Salucci¹, and A. Massa^(1,2)

¹ELEDIA Research Center, Trento

²ELEDIA Research Center, Madrid

P1.3

EM EDUCATION TOOLS & PROGRAMS @ ELEDIA RESEARCH CENTER

N. Anselmi¹, G. Oliveri¹, L. Poli¹, A. Polo¹, F. Robol¹, P. Rocca¹, M. Salucci¹, A. Massa^(1,2)

¹ELEDIA Research Center, Trento

²ELEDIA Research Center, Madrid

P1.4

ANTENNA SYNTHESIS AND OPTIMIZATION @ ELEDIA RESEARCH CENTER

Anselmi N.¹, R. Azaro¹, P. Bui¹, A. Gelmini¹, G. Gottardi¹, M. A. Hannan¹, G. Oliveri¹, L. Poli¹, A. Polo¹, F. Robol¹, P. Rocca¹, M. Salucci¹, and A. Massa^(1,2)

¹ELEDIA Research Center, Trento

²ELEDIA Research Center, Madrid

P1.5

DISTRIBUTED WIRELESS SENSING, MONITORING, AND DECISION SUPPORT: CURRENT ACTIVITIES @ ELEDIA RESEARCH CENTER

M. Bertolli¹, G. Oliveri¹, A. Polo¹, F. Robol¹, P. Rocca¹, F. Viani¹, A. Massa^(1,2)

¹ELEDIA Research Center, Trento

²ELEDIA Research Center, Madrid

P1.6

THE CASE OF MICROWAVE DISINFECTION OF RAISED BEDS CULTIVATIONS – NUMERICAL ASSESSMENT

S.Casu¹, A. Fanti¹, M.B. Lodi¹, M. Spanu¹, M. Renzi¹, G. Mazzarella¹

¹Department of Electrical and Electronic Engineering, University of Cagliari, Cagliari

P1.7

DESIGN OF AMC STRUCTURES FOR UHF APPLICATIONS

G.A. Casula¹, G. Montisci¹, P. Maxia¹

¹Department of Electrical and Electronic Engineering, University of Cagliari, Cagliari

P1.8 [Latmiral Prize]

ENHANCED COLE-COLE DIELECTRIC MODEL FOR ACCURATE BLOOD GLUCOSE SENSING

V. Cioffi¹

¹DIMES, University of Calabria, Rende (CS)

P1.9

ANALYSIS OF PROPAGATION IN URBAN AREAS AT 3.7 AND 28 GHZ FOR 5G WIRELESS NETWORKS

G. Di Martino¹, A. Iodice¹, D. Riccio¹, G. Ruello¹

¹Department of Electrical Engineering and Information Technology, University of Napoli Federico II

P1.10

ON THE REPEATABILITY OF THE EXPERIMENTAL CHARACTERIZATION UP TO 50 GHZ OF EX-VIVO BREAST TISSUES

S. Di Meo¹, P. F. Espin-Lopez¹, A. Martellosio¹

¹Dept. of Electrical, Computer and Biomedical Engineering, University of Pavia

P1.11

SVM CLASSIFICATION OF ALZHEIMER'S DISEASE USING MRI AND FMRI

C. Dachena¹, A. Allocca¹, I. Meloni¹, A. Fanti¹, G. Mazzarella¹

¹Department of Electrical and Electronic Engineering, University of Cagliari, Cagliari

P1.12 [Latmiral Prize]

EFFECTIVE ANTENNA DESIGN METHODOLOGIES FOR NEW GENERATION 5G MIMO SYSTEMS

G. Gottardi¹

¹ELEDIA Research Center, Trento

P1.13 [Latmiral Prize]

FEASIBILITY STUDY ON THE USE OF MICROWAVE IMAGING FOR IN-LINE MONITORING OF FOOD CONTAMINATION

L. Farina¹, J. A. Tobon Vasquez¹, and R. Scapatucci²

¹DET, Politecnico di Torino, Torino

²IREA, National Council of Research of Italy, Naples

P1.14

SOLUTION-PROCESSABLE ORGANIC SEMICONDUCTORS FOR INTEGRATED PHOTONICS APPLICATIONS

I. Maqueira Albo¹, M. Caironi², F. Morichetti¹

¹Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano, Milano

²Center for Nano Science and Technology, Istituto Italiano di Tecnologia, Milano

P1.15

ADDITIVE MANUFACTURING OF A SUBSTRATE INTEGRATED SLAB WAVEGUIDE FOR SINGLE-MODE BANDWIDTH ENHANCEMENT

E. Massoni¹, L. Silvestri¹, G. Alaimo², S. Marconi², M. Bozzi², L. Perregrini², and F. Auricchio²

¹Department of Electrical, Computer and Biomedical Engineering, University of Pavia

²Department of Civil Engineering and Architecture, University of Pavia

P1.16

DESIGN OF ROBUST WEARABLE UHF RFID TAGS THROUGH THE OPTIMUM POSITIONING OF A PIFA RADIATING ELEMENT ON A COMPACT GROUND PLANE

A. Michel², R. Colella¹, G. A. Casula³, P. Nepa², L. Catarinucci¹, G. Montisci³, G. Mazzarella³, G. Manara²

¹Dept. of Innovation Engineering, Univ. of Salento, Lecce

²Dept. of Information Engineering, Univ. of Pisa, Pisa

³Dept. of Electrical and Electronic Engineering, Univ. of Cagliari, Cagliari

P1.17

MODELING AND EXPERIMENTATION OF A UHF-RFID TRANSCUTANEOUS WIRELESS COMMUNICATION SYSTEM FOR THE MYOELECTRIC CONTROL OF PROSTHETIC HAND

C. Miozzi¹, S. Guido¹, G. Saggio¹, E. Gruppioni², G. Marrocco¹

¹University of Roma "Tor Vergata", Roma

²INAIL Centro Protesi, Research and Training Area, Budrio (BO)

P1.18

DESIGN OF ACTIVE WAVEGUIDE OMT FOR RADIO ASTRONOMY RECEIVER ARRAY IN THE 3 MM BAND

A. Navarrini¹, G. Valente², P. Serres³, F. Schaefer⁴, F. Thome⁵, O. Garnier³

¹INAF-Osservatorio Astronomico di Cagliari, via della Scienza 5, Selargius, Italy

²Agenzia Spaziale Italiana, Via del Politecnico snc, Rome, Italy

³IRAM-Istitut de RadioAstronomie Millimétrique, Grenoble, France

⁴MPIfR-Max Planck Institute for Radio Astronomy, Bonn, Germany

⁵IAF-Fraunhofer Inst. Appl. Solid State Physics, Friburg, Germany

P1.19

INVESTIGATING EM WAVE DEPOLARIZATION DUE TO RAIN USING A PHYSICALLY-BASED MODEL

E. Regonesi¹, L. Luini¹

¹Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano

P1.20

A FMCW RADAR AS ELECTRONIC TRAVEL AID FOR VISUALLY IMPAIRED SUBJECTS

G. Sacco¹, E. Piuze¹, E. Pittella¹, S. Pisa¹

¹Dept. of Information Engineering, Electronics and Telecommunications, Sapienza Univ. Rome

P1.21

FIRST EXPERIMENTAL ASSESSMENT OF A MICROWAVE IMAGING PROTOTYPE FOR CEREBROVASCULAR DISEASES MONITORING

J. A. Tobon Vasquez¹, R. Scapaticci², G. Turvani¹, G. Dassano¹, N. Joachimowicz³, B. Duchêne⁴, M. R. Casu¹, L. Crocco², and F. Vipiana¹

¹DET, Politecnico di Torino, Torino, Italy

²IREA, National Council of Research of Italy, Naples

³GeePs, CNRS–Centrale Supelec–Université Paris Saclay, Gif-sur-Yvette

⁴L2S, CNRS–Centrale Supelec–Univ Paris Sud, Gif-sur-Yvette

P1.22

NOVEL CLASS OF DUAL-MODE AIR FILLED SIW FILTERS

C. Tomassoni¹, L. Silvestri², M. Bozzi², L. Perregrini², A. Ghiotto³

¹University of Perugia, Department of Engineering, Perugia

²University of Pavia, Department of Electrical, Computer and Biomedical Engineering, Pavia

³University of Bordeaux, IMS Laboratory, Talence, France

P1.23

GRAPHENE MICROSTRIP ATTENUATOR WITH HIGH TUNABILITY AND MINIMUM REFLECTION

M. Yasir¹, M. Bozzi¹, L. Perregrini¹

¹Department of Electrical, Computer and Biomedical Engineering, University of Pavia, Pavia

P1.24

THE KRAMERS-KRONIG COHERENT RECEIVER: COMPLEX-FIELD RECONSTRUCTION BASED ON SIMPLE INTENSITY DETECTION

C. Antonelli¹, Mecozzi A. ¹, and M. Shtaif²

¹Department of Physical and Chemical Sciences, University of L'Aquila

²Department of Physical Electronics, Tel Aviv University, Tel Aviv

16:30-18:30

SIEM Meeting (CS, CD, AS)

20:00

Social Dinner at "Convento San Giuseppe"

Session 9: OPTICS I

Chairperson: Stefano Selleri

9:00-9:15 9.1

A GENERAL PURPOSE APPROACH FOR DIPSTICK ANALYSIS USING SMARTPHONES AND COLORIMETRIC EQUALIZATION CHART

F. Biasion¹, M. Barozzi¹, F. Pasquali², A. Tonelli², S. Selleri¹

¹Dipartimento di Ingegneria e Architettura - Università di Parma

²DNAPhone s.r.l., Parma

9:15-9:30 9.2

DESIGN OF AN IN-BAND PUMPED DYSPROSIUM-DOPED ZBLAN FIBER AMPLIFIER OPERATING AT 2.9-3.2 MICRON

M.C. Falconi¹, D. Laneve¹, M. Bozzetti¹, T. T. Fernandez², G. Galzerano², F. Prudenzeno¹

¹Department of Electrical and Information Engineering, Polytechnic of Bari

²Istituto di Fotonica e Nanotecnologie - CNR, Department of Physics, Politecnico di Milano

9:30-9:45 9.3

ELECTROMAGNETIC PROPAGATION FOR ON-CHIP WIRELESS COMMUNICATIONS

F. Fuschini¹, M. Barbiroli¹, M. Zoli¹, P. Bassi¹, G. Bellanca², A.E. Kaplan², G. Calò³, V. Petruzzelli³

¹Dept. of Electrical, Electronic and Information Eng. "G. Marconi", University of Bologna

²Dept. of Engineering, University of Ferrara

³Department of Electrical and Information Engineering, Polytechnic of Bari

9:45-10:00 9.4

EXPERIMENTAL DEMONSTRATION OF PROTEIN DETECTION USING HOLLOW-CORE TUBE LATTICE FIBERS

F. Giovanardi¹, A. Cucinotta², A. Rozzi³, R. Corradini³, F. Benabid^(4,5), L. Vincetti¹

¹Department of Engineering "Enzo Ferrari", University of Modena and Reggio Emilia

²Department of Engineering and Architecture, University of Parma

³Department of Chemistry, Life Sciences and Environmental Sustainability, University of Parma

⁴GPPMM group, Xlim Research Institute, CNRS UMR 7252, Université de Limoges, Limoges

⁵GLOphotonics SAS, Ester Technopole, Limoges Cedex

10:00-10:15 9.5

COUPLED MODE THEORY ASSESSMENT FOR SEMICONDUCTOR CODIRECTIONAL COUPLERS

Kaplan Ali Emre^(1,2), G. Bellanca¹, J. Van Der Tol², P. Bassi³

¹DI, University of Ferrara

²DEE, Technical University of Eindhoven, The Netherlands

³DEI, University of Bologna

10:15-10:30 9.6

NON-VOLATILE FERROELECTRIC ACTUATORS INTEGRATED IN SILICON PHOTONIC CIRCUITS

I. Maqueira Albo¹, S. Varotto², M. Asa², C. Rinaldi², M. Cantoni², A. Melloni¹, R. Bertacco², F. Morichetti²

¹Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano

²Dipartimento di Fisica, Politecnico di Milano

Thursday, September 6th, 2018

Session 10: INVERSE PROBLEMS

Chairperson: Giovanni Leone

9:00-9:15 10.1

THE REDUCED SCATTERED FIELD AS A TOOL FOR FOCUSING IN AN UNKNOWN SCENARIO

M. T. Bevacqua¹, R. Palmeri¹, L. Crocco², T. Isernia^(1,2)

¹DIIES, Univ. Mediterranea of Reggio Calabria

²CNR-IREA, National Research Council of Italy, Naples

9:15-9:30 10.2

THE ROLE OF VIEW DIVERSITY ON LINEAR SCATTERING OPERATOR IN FRESNEL-ZONE

M.A. Maisto¹, F. Munno¹

¹Dipartimento di Ingegneria, Università della Campania "L. Vanvitelli", Aversa

9:30-9:45 10.3

FAULTS DIAGNOSTICS OF A CONICAL ARRAY

G. Leone¹, G. Buonanno¹

¹Dipartimento di Ingegneria, Università della Campania "L. Vanvitelli", Aversa

9:45-10:00 10.4

ON THE FEASIBILITY OF PHASELIFT IN CIRCULAR GEOMETRY

M.A. Maisto¹, R. Moretta¹, R. Solimene¹, R. Pierri¹

¹Dipartimento di Ingegneria, Università della Campania "L. Vanvitelli", Aversa

10:00-10:15 10.5

TWO-DIMENSIONAL PHASE RETRIEVAL AS A 'CROSSWORDS' PROBLEM

A.F. Morabito¹, P. G. Nicolaci^(1,2), T. Isernia¹

¹DIIES, Univ. Mediterranea of Reggio Calabria

²Space Engineering S.p.A., Roma

10:15-10:30 10.6 [Barzilai Prize]

THEORETICAL ADVANCES ON NON-DETECTABLE OBJECTS WITH FREQUENCY-SHIFTING AND SPATIAL-SQUEEZING COATINGS

R. Palmeri¹, G. Labate²

¹DIIES, Univ. Mediterranea of Reggio Calabria

²DET, Politecnico di Torino

Thursday, September 6th, 2018

Session 11: OPTICS II

Chairperson: Stefano Trillo

11:00-11:15 11.1
NONLINEAR PROPAGATION IN OPTICAL FIBERS FOR SPACE-DIVISION SPACE-DIVISION MULTIPLEX TRANSMISSION

C. Antonelli¹, Mecozzi A. ¹, and M. Shtaif²

¹Department of Physical and Chemical Sciences, University of L'Aquila

²Department of Physical Electronics, Tel Aviv University, Tel Aviv

11:15-11:30 11.2
OBSERVING THE BROKEN SYMMETRY OF FERMI-PASTA-ULAM RECURRENCES IN OPTICAL FIBERS

A. Mussot¹, C. Naveau¹, M. Conforti¹, A. Kudlinski¹, F. Copie¹, P. Szriftgiser¹, and S. Trillo²

¹Univ. Lille, CNRS, UMR 8523 - PhLAM, Lille

²Department of Engineering, University of Ferrara

11:30-11:45 11.3
MULTI-CORE OPTICAL FIBERS FOR HIGH POWER LASERS

L. Rosa¹, F. Poli², S. Selleri², L. Vincetti¹, A. Cucinotta²

¹Department of Engineering "Enzo Ferrari", University of Modena and Reggio Emilia

²Department of Engineering and Architecture, University of Parma

11:45-12:00 11.4
NESTED PLASMONIC RESONANCES IN OPTICAL ANTENNAS LOADED WITH EPSILON-NEAR-ZERO NANOPARTICLES

D. De Ceglia¹, M. A. Vincenti², N. Akozbek³, M. J. Bloemer⁴, M. Scalora⁴

¹Department of Information Engineering, University of Padova

²Department of Information Engineering, University of Brescia

³Aegis Technologies Inc., Huntsville (AL) - USA

⁴US Army AMRDEC, Redstone Arsenal (AL) - USA

12:00-12:15 11.5
TUNABLE OPTICAL ANTENNAS USING VO₂ METAL-INSULATOR PHASE TRANSITIONS
A. Tognazzi¹, F. Baronio^(1,2), A. Locatelli^(1,2), M. A. Vincenti¹, F. Banfi³, C. Giannetti³, C. De Angelis^(1,2)

¹Dipartimento di Ingegneria dell'Informazione, Università degli Studi di Brescia

²Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche, Brescia

³Dipartimento di Fisica, Università Cattolica del Sacro Cuore, Brescia

12:15-12:30 11.6
ANALYSIS OF THE THERMAL EFFECTS ON A FULLY APERIODIC LARGE PITCH FIBER AMPLIFIER

K. Tragni¹, C. Molardi^(1,3), F. Poli¹, R. Dauliat², B. Leconte², D. Darwich², R. du Jeu², M.A. Malleville², S. Selleri¹, P. Roy², A. Cucinotta¹

¹University of Parma, Dept. of Engineering and Architecture, Parma

²University of Limoges, CNRS, XLIM, UMR 7252, Limoges

³Electrical and Electronic Eng. Dept., Nazarbayev University, Astana, KZ

Thursday, September 6th, 2018

Session 12: ANTENNAS II

Chairperson: Alessandro Fanti

11:00-11:15 12.1

REDUCED SIZE PLANAR GRID ARRAY ANTENNA FOR AUTOMOTIVE RADAR SENSOR

E. Arnieri¹, F. Greco¹, L. Boccia¹, G. Amendola¹

¹Università della Calabria

11:15-11:30 12.2

RECENT ADVANCES ON EBG CAVITY ANTENNAS

P. Baccarelli¹, S. Ceccuzzi², V. Jandieri³, C. Ponti¹, G. Schettini¹

¹Department of Engineering, Roma Tre University

²ENEA, Fusion and Nuclear Safety Department, Frascati

³Faculty of Engineering, University of Duisburg-Essen, and CENIDE–Center for Nanointegration Duisburg-Essen

11:30-11:45 12.3

PROPOSAL OF A MILLIMETER-WAVE ANTENNA ARRAY FOR CUBESATS

G. Buttazoni¹, F. Pelusi¹, R. Vescovo¹

¹Department of Engineering and Architecture, University of Trieste

11:45-12:00 12.4

A COMPACT SERIES ARRAY FOR SHORT RANGE COMMUNICATION

S. Maddio¹, G. Pelosi¹, M. Righini¹, S. Selleri¹

¹Department of Information Engineering, University of Florence

12:00-12:15 12.5

ESTIMATION OF THE ANTENNA PHASE CENTER POSITION IN ANECHOIC CHAMBER

C. Esposito¹, A. Gifuni² and S. Perna^(1,2)

¹Institute for Electromagnetic Sensing of the Environment (IREA) of Consiglio Nazionale delle Ricerche (CNR), Napoli

²Dipartimento di Ingegneria (DI), Università degli Studi di Napoli "Parthenope"

12:15-12:30 12.6

SPATIAL DISPERSION OF METASURFACES FOR LEAKY-WAVE ANTENNAS IN THE TERAHERTZ RANGE

S. Tofani¹, W. Fuscaldo¹, D. C. Zografopoulos², P. Baccarelli³, P. Burghignoli¹, R. Beccherelli², A. Galli¹

¹Dept. of Information Engineering, Electronics and Telecommunications, Sapienza Univ. Rome

²Institute for Microelectronics and Microsystems (CNR-IMM), National Research Council, Rome

³Department of Engineering, "Roma Tre" University

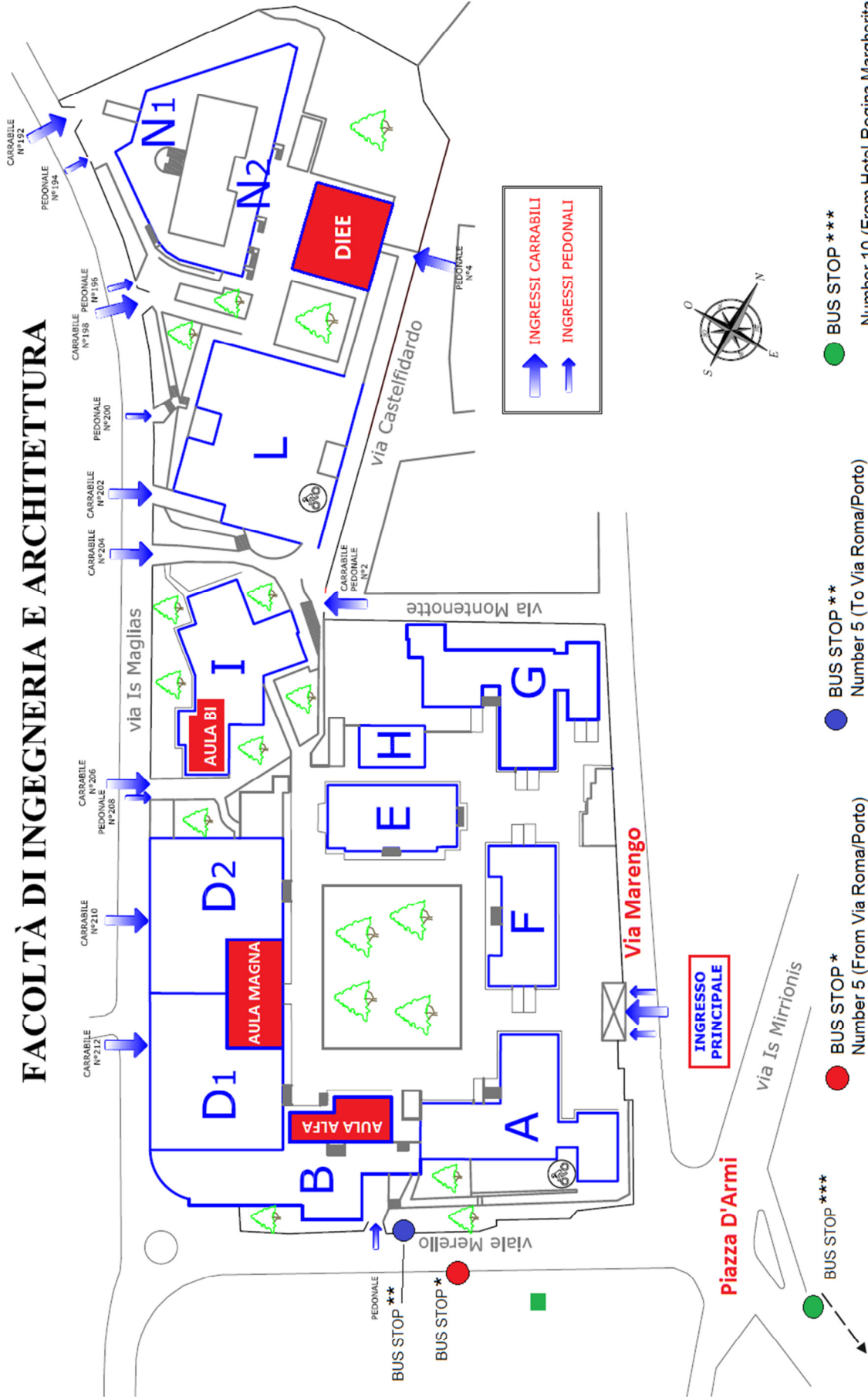
12:30-13:00

Closing and Awards

13:00-14:00

Lunch

FACOLTÀ DI INGEGNERIA E ARCHITETTURA



- BUS STOP *
Number 5 (From Via Roma/Porto)
Number 8 (To Piazza Matteotti/Porto)
Number 10 (To Hotel Regina Margherita)
- BUS STOP **
Number 5 (To Via Roma/Porto)
Number 8 (From Piazza Matteotti/Porto)
- BUS STOP ***
Number 10 (From Hotel Regina Margherita)

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Program Overview

	Monday Sept., 3	Tuesday Sept., 4	Wednesday Sept., 5	Thursday Sept., 6	
8:30-8:45		REGISTRATION (AULA MAGNA)		REGISTRATION (AULA MAGNA)	
8:45-9:00					
9:00-9:15		Session 5 (AULA ALFA) EMF Propagation & Remote Sensing	Session 6 (AULA MAGNA) Measurements & Diagnostics	URSI SESSION (AULA MAGNA)	Session 9 (AULA ALFA) Optics I
9:15-9:30					
9:30-9:45					
9:45-10:00					
10:00-10:15					
10:15-10:30					
10:30-10:45					
10:45-11:00		Coffee Break (AULA BI)		Coffee Break (AULA BI)	Coffee Break (AULA BI)
11:00-11:15					
11:15-11:30	REGISTRATION (AULA MAGNA)	INAF SESSION (AULA MAGNA)	Session 7 (AULA ALFA) RFID	Session 8 (AULA MAGNA) Microwaves	
11:30-11:45					Session 11 (AULA ALFA) Optics II
11:45-12:00		Session 12 (AULA MAGNA) Antennas II			
12:00-12:15					
12:15-12:30					
12:30-12:45					
12:45-13:00					
13:00-13:15		Lunch (AULA BI)		Lunch (AULA BI)	Lunch (AULA BI)
13:15-13:30					
13:30-14:00					
14:00-14:15					
14:15-14:30					
14:30-14:45	Open and salutations (AULA MAGNA)	PLENARY SESSION (AULA MAGNA)	Poster (AULA BI)	CST (AULA MAGNA)	
14:45-15:00					
15:00-15:15	Session 1 (AULA ALFA) Antennas I	Session 2 (AULA MAGNA) Computational Electromagnetics	Coffee Break (AULA BI)		
15:15-15:30					
15:30-15:45					
15:45-16:00					
16:00-16:15					
16:15-16:30					
16:30-16:45	Coffee Break (AULA BI)		SIEM Meeting (CS, CD, AS) CNIT Meeting (AULA MAGNA)		
16:45-17:00					
17:00-17:15	Session 3 (AULA ALFA) Bioelectromagnetism & Biomedical applications	Session 4 (AULA MAGNA) RADAR	Visit at the Sardinia Radio Telescope*		
17:15-17:30					
17:30-17:45					
17:45-18:00					
18:00-18:15					
18:15-18:30					
18:30-18:45					
18:45-19:00					
19:00-19:30					
19:30-20:00					
20:00-20:30			Social Dinner*** Awards (CNIT, Sannino, Latmiral)		
20:30-21:00	Dinner**				
21:00-21:30					
21:30-22:00					

* BUS leaving from Via Marengo 2 (In front of the Entry to the Faculty of Engineering)

** At Agriturismo "Su Leunaxiu" (<http://www.suleunaxiu.it/>)

*** At "Convento San Giuseppe" (<http://conventosangiuseppe.com/>)