

# Final Program 2018

session **01) Inverse problems and nonlinear media, organized by Y. Shestopalov**

ICEAA

chair Y. Shestopalov

Monday 10

13:40

room 1

13:40 - 14:00 Exact solution for the electromagnetic field excited by a pulsed filamentary electric current in a nonlinear nondispersive medium

**143** A.V. Kudrin, E.Yu. Petrov, University of Nizhny Novgorod, Russia;

14:00 - 14:20 Complex Waves in Multi-Layered Metal-Dielectric Waveguides

**176** E.A. Kuzmina, Moscow Technological University (MIREA), Russia; Y.V. Shestopalov, University of Gavle, Sweden;

14:20 - 14:40 Numerical Study of Multilayer Nonlinear Inhomogeneous Goubau Lines

**177** Y. Shestopalov, University of Gävle, Sweden; E. Smolkin, M. Snegur, Penza State University, Russia;

14:40 - 15:00 Synthesis of 1-bit Digital Anisotropic Impedance Cylindrical Metasurface for Monostatic RCS Reduction

**197** A.I. Semenikhin, D.V. Semenikhina, Y.V. Yukhanov, P.V. Blagovisnyy, Southern federal university, Russia, Russia;

15:00 - 15:20 Characteristics of Vivaldi antennas in the radiation and scattering mode

**249** Yu.V. Yukhanov, T.Yu. Privalova, E.V. Kriuk, Southern federal university, Russia;

15:20 - 15:40 The effect of inserts upon propagation modes in a waveguide

**290** P. D. Smith, E.D. Vinogradova, Macquarie University, Australia; Y.V. Shestopalov, University of Gavle, Sweden;

16:00 - 16:20 The radiation and scattering characteristics of the UWB low-profile dipole antenna

**296** A.V. Gevorkyan, E.V. Kryuk, Southern federal university, Russia;

16:20 - 16:40 The Radiation Characteristics Of The Two-Element Vivaldi Antenna, Which Located On The Surface Of The Sphere-Cone-Sphere Adjunction

**297** A.V. Gevorkyan, Yu.V. Yukhanov, Southern federal university, Russia;

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session **02) Wireless communications and sensors**

**IEEE APWC**

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chair G. Castellanos

A. Seidel

Monday 10

13:40

room 2

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13:40 - 14:00 An Ultra-Compact 0.17 mm<sup>2</sup> 2.4 GHz Low-Voltage Class-E Power Amplifier in 28 nm CMOS

**174** A. Seidel, M. Kreißig, F. Ellinger, TU Dresden, Germany;

14:00 - 14:20 Performance of Equatorial Time Diversity Systems Evaluated from Rain Rate Time Series

**183** J. Brito, M. D'Amico, Politecnico di Milano, Italy; B. Ramos, A. Núñez, I. Nolivos, Escuela Superior Politécnica del Litoral (ESPOL), Ecuador;

14:20 - 14:40 Dual-Polarized Integrated mmWave Antenna for High-Speed Wireless Communication

**265** B. Klein, R. Hahnel, D. Plettemeier, Technische Universität Dresden, Germany;

14:40 - 15:00 MODEL DEFINITION FOR INTERFERENCE PROTECTION BETWEEN DTT AND TVWS

**279** G. Castellanos, T. Giraldo, Escuela Colombiana de Ingenieria, Colombia;

15:00 - 15:20 Multilayer Flat Spiral Resonators for Low Frequency Wireless Power Transfer

**331** J. Alberto, University of Coimbra, Portugal;G. Puccetti, U. Reggiani, University of Bologna, Italy;L. Sandrolini, University of Bologna, Italy;A. Tacchini, University of Modena and Reggio Emilia, Italy;

15:20 - 15:40 24 GHz BiCMOS Single-Stage Rectifier

**324** A. Brönnner, Alexander Wiegand SE & Co. KG, Germany;P. Sakalas, F. Ellinger, Technische Universität Dresden, Germany;

16:00 - 16:20 TDoA Emitter Location Enhancement in NLoS Scenario using Multi-path Ray Tracing Fingerprint and Machine Learning

**122** M. Nogueira de Sousa, Ilmennau University of Technology, Germany;E. F. S. Correa,Ivanildo Barboza, Instituto Militar de Engenharia, Brazil;R. Thomä, Ilmennau University of Technology, Germany;

16:20 - 16:40 A Performance Comparison of WirelessHART and ZigBee in Oil Refinery

**285** B. Ramos, Espol, Ecuador;S. Savazzi, CNR-IEIIT, Italy;J.M. Winter, E-Aware Technologies, Brazil;V. Ojeda, M. Chalen, E. Del Rosario, M. Alvarez, Espol, Ecuador;

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session **03) DOA estimation**

**IEEE APWC**

chair G. Castellanos

A. Seidel

Monday 10

16:40

room 2

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16:40 - 17:00 TRAINING MODEL FOR LOCALIZATION OF INTERFERING AND ILLEGAL TRANSMISSION FOR MILITARY FORCES IN UHF BANDS

**280** D. Diaz, L. Vargas, G. Castellanos, Escuela Colombiana de Ingenieria, Colombia;

17:00 - 17:20 Efficient RSS-Based DoA Estimation for ESPAR Antennas Using Multiplane SDR Calibration Approach

**286** M. Groth,L. Leszkowska, L. Kulas, Gdansk University of Technology, Poland;

chair A. Delgado

P.L.E. Uslenghi

Monday 10

13:40

room 3

13:40 - 14:00 Magnetically Coupled Circuit with Nonlinear Inductor

**106** A. Delgado, Universidad Nacional de Colombia, Colombia;

14:00 - 14:20 A new Augmented-Reality platform for Electromagnetic Education

**209** C. Mateo-Segura, Heriot Watt University, United Kingdom;

14:20 - 14:40 Scattering by two vertical thin metallic wires truncated by a horizontal metal plane

**123** P.L.E. Uslenghi, University of Illinois at Chicago, USA

14:40 - 15:00 Two-parameter expansions and ray representation of the fields diffracted at thin-to-thick curved dielectric layers and conducting bodies

**130** I.O. Sukharevsky, TU Munich, Germany;

15:00 - 15:20 Characterization and Simulation of Electromagnetic Beams Truncated by Finite Apertures in Millimeter and Submillimeter Wavelengths

**300** T. Viana de Sousa, M. Zamboni-Rached, H. E. Hernández-Figueroa, E. Recami, University of Campinas

15:20 - 15:40 The physics of self-complementary metasurfaces

**393** J.D. Mateus, Universidad Nacional de Colombia, Colombia;J. P. del Risco, Universidad Sergio Arboleda, Colombia;A. Sayanskiy, S. B. Glybovski, ITMO University, Russia;J. D. Baena, Universidad Nacional de Colombia, Colombia;

chair S.-Y. Kim H. Shirai Monday 10 16:00 room 3

16:00 - 16:20 Hidden ray-tracing on the shadow boundary of penetrable wedges

**186** S.Y. Kim, Korea Institute of Science and Technology, Korea, South;

16:20 - 16:40 Image Reconstruction and Processing Algorithm of GPR for Humanitarian Demining Sensor ALIS

**169** M. Sato, K. Kikuta, Tohoku Univesrity, Japan;

16:40 - 17:00 Scattering of a Beam Wave from a Dielectric Grating with Finite Extent

**196** A. Komiyama, Osaka Electro-Communication University, Japan;

17:00 - 17:20 EM wave scattering by a window on a wall

**113** H. Shirai, M. Shimuzu, Chuo University, Japan; R. Sato, Niigata University, Japan;

chair D. Filipovic I. Piekarz Tuesday 11 8:40 room 1

08:40 - 09:00 Design, Simulation and Optimization of a Slotted Waveguide Array with Central Feed and Low Sidelobes

**356** L. Ripoll-Solano, L. Torres-Herrera, Universidad del Norte, Colombia; M. Sierra-Perez, Universidad Politécnica de Madrid, Spain;

09:00 - 09:20 Performance study of localization techniques: hybrid vs. Non hybrid TDOA/DOA

**514** T.Sanchez,R.C.Hincapie,C.Gomez, Univesidad Pontificia Bolivariana, Colombia

09:20 - 09:40 Experimental verification of 3D printed low-conductivity graphene-enhanced PLA absorbers for back lobe suppression in aperture-coupled antennas

**218** I. Piekarz, J. Sorocki, I. Slomian, K. Wincza, S. Gruszczynski, AGH University of Science and Technology, Poland;

09:40 - 10:00 Broadband Antenna Selection for Vehicle-mounted Jamming System against RCIEDs

**309** T. M. D. Tran, M. Piette, Royal Military Academy, Belgium;

10:20 - 10:40 Influence of Non-ideal Components in a Dynamic Directional Modulation System

**341** E.A Cabrera-Hernández, J Parrón-Granados, Universitat Autònoma de Barcelona, Spain;A Tennant, The University of Sheffield, United Kingdom;

10:40 - 11:00 High Isolation Diplexer-Free Dual-Polarized Array for Geostationary Satellites

**167** E. Tianang, M. Elmansouri, D. Filipovic, University of Colorado Boulder, USA;

11:00 - 11:20 Dual-band Ku-band Scanning Leaky-Wave Antenna For Satellite Communications

**246** M. Poveda-Garcia,J. Luis Gomez-Tornero, Universidad Politecnica de Cartagena, Spain;S. Rotenberg, C. Mateo-Segura, Heriot Watt University, United Kingdom;

11:20 - 11:40 A Quadri-band PBG Antenna Cross-shaped For Wireless Communications

**227** B.O. Andrade, L.M. Mendonca, Federal University of Rio Grande del Norte, Brazil;

11:40 - 12:00 Reconfigurable Printed Yagi-Uda Star Array for RF Power Transmission and Harvesting Systems

**157** H. Raad, Xavier University, USA; A. Hammoodi, A. Issac, University of arkansas Little Rock, USA;

12:00 - 12:20 An Optimized and Integrated Antenna Design for the Future Jamming System against RCIEDs

**306** T. Tran, M. Piette, Royal Military Academy, Belgium;

session **07) RFID technologies**

**IEEE APWC**

chair M. Longhi

I. Piekarz

Tuesday 11

13:40

room 1

13:40 - 14:00 60 GHz On-Chip BiCMOS Bow-Tie Antenna

**211** A. Brönnner, WIKA KG, Germany;F. Schwarze, F. Ellinger, Technische Universität Dresden, Germany;

14:00 - 14:20 Design of Highly Distinguishable Letters for Inkjet-Printed Chipless RFID Tags

**220** M.A. Demir, F. Mutlu, O. Ergul, Middle East Technical University, Turkey;

14:20 - 14:40 RFID-Based Localization for Monitoring in Greenhouses Using MAVs

**377** M. Longhi, University of Rome 'Tor Vergata', Italy;Z. Taylor, M. Popovic, Nieto, R. Siegwart, ETH Zurich, Switzerland;G. Marrocco, University of Rome 'Tor Vergata', Italy;

session **08) Radar, Imaging, Inverse Scattering and Remote Sensing**

**ICEAA**

chair L. Klinkenbusch

M. Sato

Tuesday 11

14:40

room 1

14:40 - 15:00 Estimating Particle Dimensions in Streams Using a Multistatic Radar System

**112** A. Reinhardt, H. Bruens, L. Klinkenbusch, M. Hoeft, Kiel University, Germany;

15:00 - 15:20 A Joint Inversion Method for Breast Imaging using Electromagnetic and Acoustics waves

**216** Ö. Özdemir, Istanbul Technical University, Turkey; K.W.A. van Dongen, Delft University, Netherlands; A. Onclu, Bogazici University, Turkey

15:20 - 15:40 Differences in polarimetry properties between backward and forward scattered microwave waves from various pollutions on sea surface

**493** P. Kabacik, A. Byndas, M. Hofman, WRUST Wroclaw University of Science and Technology, Poland;

16:00 - 16:20 Electric fields produced by lightning strokes obtained by ray-tracing method

**454** A. Parra, F. Vega, Universidad Nacional de Colombia, Colombia; F. Rachidi, École Polytechnique Fédérale de Lausanne, Switzerland;

16:20 - 16:40 Evaluation of ALIS GPR for Humanitarian Demining in Colombia and Cambodia

**168** M. Sato, K. Kikuta, Tohoku University, Japan; R. Bustemante, Universidad de los Andes, Colombia;

16:40 - 17:00 Experimental Verification of In-door Ground Based SAR Using Beam Space MUSIC Algorithm

**239** B. Omuz, Bogazici University, Turkey; F. Oz, MİLTEK Ar-Ge Ltd. co., Turkey; O. Ozdemir, Istanbul Technical University, Turkey; A. Onclu, Bogazici University, Turkey;

17:00 - 17:20 Assessing the performance of three type of UWB antennas for FMCW GPR imaging

**459** H. J. Martínez, S. Alvarez, M. A. Yarlequé, Pontificia Universidad Católica del Perú, Peru;



chair R.D. Graglia

D.R. Wilton

Tuesday 11

8:40

room 2

08:40 - 09:00 SIE-DDM based Direct and Iterative Solvers for Multiscale Problems

**160** M. Jiang, Z. Rong, L. Lei, J. Hu, University of Electronic Science and Technology of China, China;

09:00 - 09:20 Equivalence Principle Algorithm for Potential Integral Equations

**219** A. Farshkaran, O. Ergul, Middle East Technical University, Turkey;

09:20 - 09:40 Simplified treatment of three-media junctions using the Method of Moments

**252** D. Tihon, Ha Bui Van, H. A. Kayani, C. Craeye, ICTEAM institute, UCL, Belgium;

09:40 - 10:00 Deep Thinning of MoM Matrices with the Balanced Electromagnetic Absorber Method in Three Dimensions

**276** R. Kastner, Tel Aviv University, Israel; D. S. Weile, University of Delaware, USA;

10:20 - 10:40 A Hybrid Time-Frequency Domain Algorithm for Broadband Monostatic RCS Computation of Large and Deep Open Cavities

**302** K.D. Zhang, University of Illinois, USA;C.F. Wang, National University of Singapore, Singapore;J.M. Jin, University of Illinois, USA;

10:40 - 11:00 The Flammer solution for the circular PEC disk: Computations and comparisons

**332** A. F. Peterson, Georgia Tech, USA;M. M. Bibby, Georgia Tech, USA;

11:00 - 11:20 Reducing the Dimensionality of Volume-Volume (6-D) Integrals for Numerical Evaluation by Multiple Applications of the Divergence Theorem

**355** J. Rivero, F. Vipiana, Politecnico di Torino, Italy;D. R. Wilton, University of Houston, Italy;W.A. Johnson, Consultant, USA;

11:20 - 11:40 LEGO brick boundary with a penetrating PEC structure

**380** R. Bojanic, B.P. de Hon, M.C. van Beurden, Eindhoven University of Technology, Netherlands;

11:40 - 12:00 A Stochastic Green's Function - Integral Equation Method for Communication in Diffuse Multipath Environments

**429** S. Lin, E. Dohme, Z. Peng, University of New Mexico, USA;

12:00 - 12:20 Analytical Treatment of the Near Field Term of the Green Function of Planarly Stratified Media

**505** E.H. Bleszynski, M.K. Bleszynski, T. Jaroszewicz, Monopole Research, USA;W.A. Johnson, Consultant, USA;J. Rivero, Istituto Superiore Mario Boella, Italy;F. Vipiana, Politecnico di Torino, Italy;D. Wilton, University of Houston, USA;

13:40 - 14:00 Numerical modeling of a wind turbine blade deflection sensing system using the moving frame FDTD method

**328** O. Franek, Aalborg University, Denmark;

14:00 - 14:20 An Efficient Galerkin Scheme to Solve the Time Domain Integral Equation for Wire-Grid Models Involving Multiple Incident Pulses

**181** S.M. Rao, Naval Research Laboratory, USA;

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session **10) Optoelectronics and photonics**

**ICEAA**

chair T. Dhaene

E. Reyes Vera

Tuesday 11

14:40

room 2

14:40 - 15:00 Fourier Scheme for the Fiber Loop Mirror Temperature Sensor Based on Indium-filled Side-hole Photonic Crystal Fiber

**232** E. Reyes-Vera, C. Jiménez-Durango, Instituto Tecnológico Metropolitano, Colombia;M. Varón, P. Torres, Engineering Universidad Nacional de Colombia, Colombia;

15:00 - 15:20 Performance Analysis of a Mach–Zehnder Interferometer Based on Dual-Core Transversally Chirped Microstructured Optical Fiber for Biosensing applications

**333** J. Montoya-Cardona, Instituto Tecnológico Metropolitano, Colombia;Erick Reyes-Vera, Universidad Nacional de Colombia, Colombia;B. Huertas-Herrera, C. Jiménez-Durango, Instituto Tecnológico Metropolitano, Colombia;J. Úsuga-Restrepo, Insti

15:20 - 15:40 Fast and Accurate Time-Domain Simulation of Passive Photonic Systems

**339** Y. Ye, D. Spina, Y. Xing, W. Bogaerts, T. Dhaene, Ghent University-, Belgium;

16:00 - 16:20 A Novel Interferometric Sensor Based on a Dual-Core Transversally Chirped Microstructured Optical Fiber for Measuring Glucose Concentration

**404** C. Jimenez-Durango, Instituto Tecnológico Metropolitano, Colombia;Erick Reyes-Vera, Universidad Nacional de Colombia, Colombia;J. Úsuga-Restrepo, Instituto Tecnológico de Aeronáutica (ITA), Brazil;J. Montoya-Cardona, B. Huertas-Herrera, J. F Restrepo, N.

16:20 - 16:40 Novel Wide-Bandwidth Polarization Filter Based on H-Shaped Micro-Structured Optical Fiber with Gold Nano-strip

**407** N. Gomez-Cardona, E. Reyes-Vera, C. Jiménez-Durango, Instituto Tecnológico Metropolitano, Colombia;J. Usuga-Restrepo, Instituto Tecnológico de Aeronáutica (ITA), Brazil;P. Torres, Universidad Nacional de Colombia, Colombia;

16:40 - 17:00 Liquid-Core Photonic Crystal Fiber for Supercontinuum Generation Based on Hybrid Soliton Dynamics

**411** N. Munera, S. Vergara, C.A. Alvarez, R. Acuna, National University of Colombia - Medellin, Colombia;

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session **11) Lightning electromagnetics, organized by F. Rachidi, M. Rubinstein**

**ICEAA**

chair F. Rachidi

M. Rubinstein

Tuesday 11

8:40

room 3

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08:40 - 09:00 An Update on the Characteristics of Positive Flashes Measured at the Säntis Tower

**207** M. Azadifar, M. Rubinstein, Heig-vd, Switzerland; F.Rachidi, EPFL, Switzerland;

09:00 - 09:20 Natural lightning observatories in Colombia

**267** D. Aranguren Keraunos sas, Colombia, J. Lopez, J. Montanya Technical University of Catalonia, Spain, H. Torres,Keraunos sas, Colombia

09:20 - 09:40 An Experimental Approach on the Transient Response of Earthing Systems Based on Soil Enhancing Compounds and Non-Conventional Electrodes

**278** E. Castellanos, J. Rodriguez, J. Ramirez, I. Acosta, J. Bermudez, Y. Mendez Hernandez, Universidad Simon Bolivar, Venezuela;

09:40 - 10:00 AKUNU: Open Lightning Detection and Atmospheric Data Collection System

**386** G. Nicora, UNIDEF (MINDEF - CONICET), Argentina;M. Rubinstein, M. Azadifar, J. Brechet, A. Perez Quintana, University of Applied Sciences Western Switzerland, Switzerland;F. Rachidi, Swiss Federal Institute of Technology, Lausanne, Switzerland;V. Cooray,

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session **12) Electromagnetic modeling of devices and circuits**

**ICEAA**

chair F. Vega

T. Yin

Tuesday 11

10:20

room 3

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10:20 - 10:40 Modeling of an electromagnetic actuator by means of reluctance network with the saturation effect included

**111** T. Yin, C. Shuai,Y. Li, Naval University of Engineering, China;

10:40 - 11:00 Three-section asymmetric differentially-fed broadband coupled-line directional coupler

**116** K. Janisz, I. Piekarz, A. Rydosz, K. Wincza, S. Gruszczynski, AGH University, Poland;

11:00 - 11:20 Analytical Modeling of a Coaxial Probe in a Waveguide Device

**221** D. Tami, C. Rego, G. Lopes Ramos, Federal University of São João del-Rei, Brazil;

11:20 - 11:40 Investigation of Multilevel Adaptive Cross Approximation (MLACA) Acceleration for Superconducting Circuit Analysis

**258** B.A.P. Nel, M.M. Botha, Stellenbosch University, South Africa;

11:40 - 12:00 Non-Magnetic On Board Transistor-Free PI Topology Based Circulator

**433** E.G. Sousa, S. R.M.J. Rondineau, University of Brasilia, Brazil;

12:00 - 12:20 Parametric Modeling of the Front Door Coupling Between Two Nearby Parabolic Antennas

**456** J. F. Vega, J. M. Becerra, J. A. Rangel, Z. Y. Lopez, National University of Colombia, Colombia; M. L. Suárez, R. Martinez, National Agency of the Spectrum, Colombia;

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session **13) Recent advances in electromagnetics for MRI, organized by D. Erricolo, G Carluccio**

**ICEAA**

chair G. Carluccio

D. Erricolo

Tuesday 11

13:40

room 3

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13:40 - 14:00 Travelling-wave MRI for small-bore imager at 15.2T

**234** F. Vazquez, S. E. Solis-Najera, UNAM, Mexico; J. Lazovic, L. M. Zopf, Campus Science Support Facilities GmbH, Austria; R. Martin, L. Medina, Faculty of Sciences, UNAM, Mexico; O. Marrufo, INNN MVS, Mexico; A. O. Rodriguez, UAM, Mexico;

14:00 - 14:20 SNR improvement when a High Permittivity Material helmet-shaped former is used with a close-fitting Head Array

**281** G. Carluccio, G. Haemer, C.M. Collins, New York University, USA;

14:20 - 14:40 Bore-Lining Slot Antennas for 7T Body MRI

**318** L. Alon, New York University School of Medicine, USA;

14:40 - 15:00 Theoretical performance of a metamaterial-inspired antenna for MRI

**345** R. Martin, S. E. Solis-Najera, F. Vazquez, Faculty of Sciences, UNAM, Mexico; O Marrufo, INNN MVS, Mexico; A. O. Rodriguez, UAM Iztapalapa, Mexico;

15:00 - 15:20 A Tool for Coil Sensitivity Analysis for an Arbitrary Surface Coil near Arbitrary Spherical Sample

**399** G. Carluccio, C.M. Collins, New York University, USA;

15:20 - 15:40 Design of an 8 Channel Dipole Transmit Array for Head Imaging with the use of a High Permittivity Material Helmet Shaped Former

**451** G.G. Haemer, G. Carluccio, C.M. Collins, NYU Langone Health, USA;

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session **14) Electromagnetic applications to biomedicine**

**ICEAA**

chair G. Carluccio

D. Erricolo

Tuesday 11

16:00

room 3

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16:00 - 16:20 Microwave-based sensors for exhaled acetone and ethanol detection

**124** A. Rydosz, AGH University of Science and Technology, Poland; E. Maciak, Silesian Univ. of Technology, Poland; K. Wincza, S. Gruszczynski, AGH University of Science and Technology, Poland;

16:20 - 16:40 Evaluation of the Interference in the Magnetic Resonance of the 3.0 Tesla Field Next to a 1.5 Tesla Field -A Case Study

**273** T.M.B Farias, K. A.C. Daros, C. H. Murata, L. C. Carnielo, N. Abdala, H. Carrete Jr, Universidade Federal de São Paulo, Brazil;

16:40 - 17:00 First Experimental Assessment of a Microwave Imaging Prototype for Cerebrovascular Diseases Monitoring

**344** J.A. Tobon Vasquez, Politecnico di Torino, Italy;R. Scapatucci, CNR-IREA, Italy;G. Turvani, G. Dassano, Politecnico di Torino, Italy;N. Joachimowicz, Université Paris-Diderot, France;B. Duchêne, Université Paris-Saclay, France;M.R. Casu, Politecnico di To

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session **15) Advanced architectures supporting radiationless anapole modes in electrodynamics and nanophotonics, organized by A. Basharin , L. Matekovits** ICEAA

chair A. Basharin L. Matekovits Tuesday 11 8:40 room 4

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**08:40 - 09:00** Subwavelength cloaking device due to anapole mode excitation

**471** A. K. Ospanova, NUST MISiS, Russia;G. Labate, L. Matekovits, Politecnico di Torino, Italy;A. A. Basharin, NUST MISiS, Russia;

09:00 - 09:20 Tunable Lens Based on Graphene Metasurface for Circular Polarization

**477** Z. Hamzavi-Zarghani, Politecnico di Torino, Italy;A. Yahaghi, Shiraz University, Iran;L. Matekovits, Politecnico di Torino, Italy;

**09:20 - 09:40** All-dielectric metamaterials in visible spectral range. Anapole mode excitation

**473** I.V. Stenishchev, A.K. Ospanova, A.A. Basharin, National University of Science and Technology (MISiS), Russia;

09:40 - 10:00 Wave Propagation in Cylindrically Stratified Dielectric Media and Application to RCS Characterization

**478** K. Naishadham, Georgia Institute of Technology, USA;L. Matekovits, Politecnico di Torino, Italy;

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session **16) EMC/EMI/EMP** ICEAA

chair L.R. Arnaut F. Roman Tuesday 11 10:20 room 4

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10:20 - 10:40 Probability distribution of dissipated energy in electrically large cavities

**185** L.R. Arnaut, Queen Mary University London, United Kingdom;M.I. Andries, DB Technology, United Kingdom;

10:40 - 11:00 High Current Tests over Conductive Fabrics

**358** J. A. Cristancho, J. E. Rodriguez, C. A. Rivera, F. J. Roman, J. J. Pantoja, Universidad Nacional de Colombia, Colombia;

11:00 - 11:20 Predicting deviations in software execution paths due to EMI injection via reachable sets and random delays

**435** L. Valbuena, University of New Mexico, USA;G. L. Heileman, University of Kentucky, USA;S. Hemmady, Edl Schamiloglu, University of New Mexico, USA;

**11:20 - 11:40** Evaluation of Interference Due to Rain in Millimeter Waves

**436** T.M. Surco Espejo, L. da Silva Mello, Pontificia Universidade Catolica do Rio de Janeiro, Brazil;

11:40 - 12:00 The Finite Ground Plane Effect on the Reconstruction of Equivalent Sources for Electromagnetic Compatibility Applications

**259** H. Zhao, C. Li, S. Tao, UESTC, China;Z. Chen, Dalhousie University, Canada;Jun Hu, UESTC, China;

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session **17) Antennas and electromagnetic devices inspired by electromagnetic bandgap and metamaterials, organized by K. Esselle, L. Matekovits**

**ICEAA**

chair K. Esselle

L. Matekovits

Tuesday 11

13:40

room 4

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**13:40 - 14:00** Toroidal dipole modes and anapole states in metamaterials

**470** A. Basharin, National University of Science and Technology, Russia



14:00 - 14:20 A Low-Profile, Planar, Power-Efficient 2D Beam-Steering Antenna Technology

**247** M. U. Afzal, K. P. Esselle, Macquarie University, Australia;

14:20 - 14:40 Analyze and Design of Thin Planar High Impedance Surface as an Antenna

**463** A.T. Almutawa, H. Kazemi, F. Capolino, University of California, Irvine, USA;

14:40 - 15:00 Sidelobe Suppression in Resonant Cavity Antennas through Near-field Analysis

**312** A. A. Baba, R. M. Hashmi, K. P. Esselle, Macquarie University, Australia;A. R. Weily, CSIRO, Australia;L. Matekovits, Politecnico di Torino, Italy;

15:00 - 15:20 Spectral Composition of the Scattered Field from a Large Metallic Cloaked Cylinder

**250** B. Cappello, L. Matekovits, Politecnico di Torino, Italy;

15:20 - 15:40 Semi-Analytical Modeling of Cylindrically-Layered Anisotropic Metamaterial Devices

**275** G. Simon da Rosa, J. R. Bergmann, Pontifical Catholic University of Rio de Janeiro, Brazil;

16:00 - 16:20 A Low-Profile Phase Correcting Solution to Improve Directivity of Horn Antenna

**298** A. Kiyani, M. U. Afzal, R. M. Hashmi, K. P. Esselle, Macquarie University, Australia;L. Matekovits, Politecnico di Torino, Italy;

16:20 - 16:40 Quasi-transparent and circularly polarized patch antenna using Metamaterial integrated to a solar cell for S-band CubeSat applications

**452** A. Ygnacio-Espinoza, D. Peñaloza-Aponte, J. Alvarez-Montoya, Universidad Nacional de Ingeniería,, Peru; A. Quispe-Mesco, Universidad Nacional de San Antonio Abad del Cusco, Peru;Mark Clemente-Arenas, Universidad Nacional de Ingeniería,, Peru;

chair A. Boag

X. Chen, J.-M. Jin

Wednesday 12

8:40

room 1

08:40 - 09:00 Accelerating the Domain Green's Function Method with the Equivalent Dipole-Moment technique

**139** D. J. Ludick, Stellenbosch University, South Africa;

09:00 - 09:20 Generalized source integral equations with improved shields

**134** L. Klinkenbusch, Kiel University, Germany;A. Sharshevsky, A. Boag, Tel Aviv University, Israel;

09:20 - 09:40 Self-Dual Wideband Absorbers

**360** N. Mohammadi Estakhri, N. Enghata, R. Kastner, University of Pennsylvania, USA;

09:40 - 10:00 Back-Projection Cortical Potential Imaging Using a Multi-Resolution Optimization Algorithm

**145** D. Haor, R. Joffe, R. Shavit, A. Geva, Ben-Gurion University, Israel;

10:20 - 10:40 A Parallelized Multi-Solver Algorithm for Solving Large and Complex Electromagnetic Problems

**303** J Guan, S Yan, KD Zhang, J M Jin, University of Illinois, USA;

10:40 - 11:00 Effects of Multiple Scattering on Resolution of Full-Wave Inverse-Scattering Solver

**308** Z. Wei, X. Chen, National University of Singapore, Singapore;

11:00 - 11:20 Fast Direct Solution of Electromagnetic Scattering with Enhanced Skeletonization Scheme

**159** Z. Rong, J. Hu, M. Jiang, University of Electronic Science and Technology of China, China;

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session **19) Antennas**

**ICEAA**

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chair L. Jonsson

I. Strytsin

Wednesday 12

11:20

room 1

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11:20 - 11:40 On bounds of the Q-factor as a function of array antenna directivity

**348** B. L. G. Jonsson, S. Shi, A. Ludvig-Osipov, KTH Royal Institute of Technology, Sweden;

11:40 - 12:00 Dual Millimeter Wave Reconfigurable Dielectric Lens Antenna

**384** R. A. Santos, G. L. Fré, Federal University of Itajubá - UNIFEI, Brazil;F. B. Mejia, National Institute of Telecommunications - INATEL, Brazil;D. H. Spadoti, IESTL Brazil;

12:00 - 12:20 Reconfigurable Hemispherical Dielectric Lens Antennas in MM-Waves

**372** R. A. Santos, G. L. Fré, Federal University of Itajubá - UNIFEI, Brazil;F. B. Mejia, National Institute of Telecommunications - INATEL, Brazil;D. H. Spadoti, Federal University of Itajubá - UNIFEI, Brazil;

13:40 - 14:00 High-Gain Circularly Polarized Corporate-Feed Terahertz Antenna Array

**203** D. Warmowska, Z. Raida, Brno University of Technology, Czech Republic;

14:00 - 14:20 Effects of Phone Case and User Effects on Switched-Beam High Gain Antenna System for 5G Mobile Terminals

**166** I. Strytsin,S. Zhang, G. Frølund Pedersen, Aalborg University, Denmark;

14:20 - 14:40 Antenna Integrated with a Microstrip Filter for 5G Mm-wave Applications

**365** I. Strytsin, M. Shen, G. Frølund Pedersen, Aalborg University, Denmark;

14:40 - 15:00 Antenna Pattern Effects in a Low Sidelobe Circularly Polarized Planar Array Due to Element Errors

**163** P.M. Ruiz, CentraleSupélec, France;R.L. Haupt, Colorado School of Mines, USA;I.D. Hinojosa Sáenz,R. Guinvarc'h, CentraleSupélec, France;

15:00 - 15:20 Dual-band multibeam antenna array with different polarization properties fed by modified Butler matrix

**121** I. Slomian, A.Rydosz, S. Gruszczynski, K. Wincza, AGH University of Science and Technology, Poland;

15:20 - 15:40 Evaluation of Additive Manufacturing Processes for 3-D Multiband Antennas

**448** G.A. Ramirez, J.L. Araque, Universidad Nacional de Colombia, Colombia;

16:00 - 16:20 Antenna for In-Band Full-Duplex Wireless Communications

**425** D.O. Rodriguez-Duarte, J.L. Araque-Quijano, Universidad Nacional de Colombia, Colombia;

16:20 - 16:40 Aperture-coupled microstrip antenna integrated with a PET-G dielectric lens

**337** I. Slomian, J. Sorocki, I. Piekarz, K. Wincza, S. Gruszczynski, AGH University of Science and Technology, Poland;

16:40 - 17:00 Investigation on the realization of compact patch antennas on magneto-dielectric substrate using 3D printing technology with iron-enhanced PLA filament

**217** J. Sorocki, I. Piekarz, I. Slomian, S. Gruszczynski, K. Wincza, AGH University of Science and Technology, Poland;

17:00 - 17:20 Design of Omnidirectional Reflector Fed by a Dielectric Lens Associated with a Coaxial Feed Horn

**301** L. Saavedra, J.R. Bergmann, Pontifical Catholic University of Rio de Janeiro, Brazil;

session **20) Modern Problems of Mathematical and Computational Electromagnetics and their Advanced Applications, organized by M.N. Georgieva-Grosse, G.N. Georgiev** ICEAA

chair G.N. Georgiev M.N. Georgieva-Grosse Wednesday 12 8:40 room 2

08:40 - 09:00 Theory of a loop antenna located on the surface of a circular column with uniaxial anisotropic permittivity and gyromagnetic permeability

**131** A.V. Kudrin, T.M. Zaboronkova, A.S. Zaitseva, University of Nizhny Novgorod, Russia;

09:00 - 09:20 Criterion for Phase Shifter Operation of the Circular Waveguide with Azimuthally Magnetized Ferrite and Dielectric

**349** M.N. Georgieva-Grosse, Consulting and Researcher in Physics and Computer Sciences, Germany; G.N. Georgiev, University of Veliko Tirnovo, Bulgaria

09:20 - 09:40 The path from monadic to tetradic Green's functions

**366** A. R. Baghai-Wadji, University of Cape Town & Xi'an University of Science and Technology, South Africa;

09:40 - 10:00 Advanced Computational Method for Analysis of the Circular Waveguide, Loaded with an Azimuthally Magnetized Ferrite Toroid and a Dielectric Cylinder

**371** G.N. Georgiev, University of Veliko Tirnovo, Bulgaria; M.N. Georgieva-Grosse, Consulting and Researcher in Physics and Computer Sciences, Germany;

10:20 - 10:40 Detection capability of small targets floating on sea waters by mm-wave radar

**502** P. Kabacik, A. Byndas, M. Hofman, D. Sysak, T. Wasik, WRUST Wroclaw University of Science and Technology, Poland;

chair L. Ahumada

E. Zochmann

Wednesday 12

10:40

room 2

10:40 - 11:00 Statistical Evaluation of Delay and Doppler Spread in 60 GHz Vehicle-to-Vehicle Channels During Overtaking

**243** E. Zochmann, TU Wien, Austria;M. Hofer, AIT, Austria;M. Lerch, TU Wien, Austria;J. Blumenstein, TU Brno, Czech Republic;S. Sangodoyin, USC, USA;H. Groll, S. Pratschner, S. Caban, TU Wien, Austria;D. Löschenbrand, L. Bernado, T. Zemen, AIT, Aus

11:00 - 11:20 Studying the dynamics of outdoor-indoor wireless links at 60 GHz

**268** E Carreno, A Anglès, D Schkolnik, L Ahumada, Universidad Diego Portales, Chile;

11:20 - 11:40 Wideband Channel Sounding Using Modulated OFDM Signals

**439** M. Molina Silva, L.da Silva Mello, PUC-Rio - C. Rodríguez Ron, Pontifícia Universidade Católica do Rio de Janeiro, Brazil;P. Gonzalez Castellanos, Universidade Federal Fluminense da UFF, Brazil;11:40 - 12:00 Capacity Gains of  $(3 \times 3) \times (3 \times 3)$  MIMO Fixed Links with Planar Aperiodic Sparse Arrays in Pure-LOS Channels**161** A. A. Glazunov, University of Twente, Netherlands;N. Amani, A. Uz Zaman, M. V. Ivashina, R. Maaskant, Chalmers University of Technology, Sweden;

12:00 - 12:20 Analysis of Spatial Overlap Constellations in Hybrid Beamforming Communication Systems

**396** J. Eisenbeis, P. Ramos López, T. Mahler, T. Zwick, Karlsruhe Institute of Technology (KIT), Germany;

chair B. Notaros

S. Selleri

Wednesday 12

13:40

room 2

13:40 - 14:00 An efficient 2.5D finite element - transformation optics approach to morphed-BoR objects

**192** G.G. Gentili, M. Khosronejad, Politecnico di Milano, Italy; R. Nesti, INAF - Osservatorio di Arcetri, Italy; G. Pelosi, S. Selleri, University of Florence, Italy;

14:00 - 14:20 Applications of Adjoint Solutions for Predicting and Analyzing Numerical Error of Forward Solutions Based on Higher Order Finite Element Modeling

**465** B. M. Notaros, C. Key, A. Smull, D. Estep, Colorado State University, USA; T. Butler, University of Colorado Denver, USA;

14:20 - 14:40 Characterizing Metamaterial Resonators and Finite Metasurfaces by the Method of Moments

**431** J.L. Araque-Quijano, J.D. Baena, Universidad Nacional de Colombia, Colombia;

14:40 - 15:00 Finite elements analysis of a thermodynamic model of a lightning-like plasma channel

**361** A.F. Escobar, F.J. Roman Campos, Universidad Nacional de Colombia, Colombia;

15:00 - 15:20 FEM-based detection of moving targets via particle filtering and artificial neural network

**269** G. Battistelli, L. Chisci, University of Florence, Italy; N. Forti, NATO Science and Technology Organization, Italy; L. Gao, University of Electronic Science and Technology of China, China; G. Pelosi, S. Selleri, University of Florence, Italy;

15:20 - 15:40 Efficient Electromagnetic Modeling of Wireless Signal Propagation in Underground Mine Tunnels

**464** B. M. Notaros, C. Key, S. B. Manic, B. Troksa, M. M. Ilic, S. Savic, Colorado State University, USA;

16:00 - 16:20 Non-Conformal Domain Decomposition Method supporting hp discretizations

**200** A. Amor-Martín, L. García-Castillo, Universidad Carlos III de Madrid, Spain; D. García-Doñoro, Xidian University, China

16:20 - 16:40 Checkerboard-like low profile antenna optimization

**406** M. Zucchi, Politecnico di Torino, Italy;G. Giordanengo, M. Righero, Istituto Superiore Mario Boella, Italy;J.L. Araque Quijano, Universidad Nacional de Colombia, Colombia;G. Vecchi, Politecnico di Torino, Italy;

**16:40 - 17:00** Dielectric Characterization of FAME: Glycerol Mixtures in the Separation Stage of the Biodiesel Production Process

**430** A.F. Uribe, D.A. Pulido, G.F. Giraldo, S.Velásquez, L. Muñoz, J.B. Bohórquez, N.M. Peña, Universidad de los Andes, Colombia

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session **23) Signals-of-opportunity bistatic radar, organized by M. Moghaddam, J. Garrison**

**ICEAA**

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chair J. Garrison

M. Moghaddam

Wednesday 12

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room 3

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08:40 - 09:00 GNSS-R modeling results obtained with improved bistatic radar equation

**125** V. Zavorotny, A. Voronovich, NOAA Earth System Research Laboratory, USA;

09:00 - 09:20 Snow Depth Estimation Using Pseudorange and Carrier Phase of GNSS Signals

**126** K. Yu, China University of Mining and Technology, China; Y. Li, X. Chang, S. Wang, Wuhan University, China; K. Zhang, China University of Mining and Technology, China;

09:20 - 09:40 A Study of the Amplitude Distribution of Near-Specular Bistatic Sea Clutter

**226** A. M. Balakhder, M. M. Al-Khaldi, J. T. Johnson, ElectroScience Lab, The Ohio State University, USA;

09:40 - 10:00 Probing Soil Moisture Up to Root-Zone by Using Multiple Signals of Opportunity

**237** D.R. Boyd, M. Kurum, Mississippi State University, USA;J. Garrison, B. Nold, G. Pignotti, Purdue University, USA;J. Piepmeier, M. Vega, R. Bindlish, National Aeronautics and Space Administration, USA;



10:20 - 10:40 Detection and Measurement of Moving Targets Using X-band Digital Satellite TV Signals

**244** S. Ribó, E. Cardellach, F. Fabra, W. Li, V. Moreno, A. Rius, Institute of Space Sciences (ICE, CSIC), Spain;

10:40 - 11:00 Coherence Properties Characterization of Signals of Opportunity Over Land Surface

**307** R Shah, J;S Yueh, Jet Propulsion Laboratory, California Institute of Technology, USA;X Xu, Jet Propulsion Laboratory, California Institute of Technology, USA;J Garrison, Purdue University, USA;

11:00 - 11:20 GNSS signals inversion for amplitude estimation: a concept for high-rate reflectometry

**323** G. Stienne, ULCO, France; J.-C. Kucwaj, ULCO, France; M. Semmling, GFZ, Germany; S. Reboul, ULCO, France;

11:20 - 11:40 Experimental and modelled GNSS Reflectometry response over land

**350** L. Guerriero, Tor Vergata University, Italy;N.Pierdicca, D. Comite, Sapienza University of Rome, Italy;F. Costantini, Deimos Space UK Ltd, United Kingdom;L. Dente, Tor Vergata University, Italy;

11:40 - 12:00 Preliminary Results of a GNSS-R Simulation to Sense Canopy Parameters

**354** O. Eroglu, M. Kurum, J. E. Ball, Mississippi State University, USA;

12:00 - 12:20 Signals of Opportunity: Enabling New Science Outside of Protected Bands

**387** J.L. Garrison, Purdue University, USA;J. R. Piepmeier, NASA Goddard Space Flight Center, USA;R. Shah, Jet Propulsion Laboratory, USA;

13:40 - 14:00 Retrieving Snow Water Equivalence using Signals of Opportunity Bistatic Radar

**394** X. Xu, R. Shah, S. Yueh, JPL, USA;K. Elder, USA Forest Service, USA;H. Huang, L. Tsang, University of Michigan at Ann Arbor, USA;

14:00 - 14:20 Signals of Opportunity Airborne Demonstrator: Instrument Overview, Performance during First Flights and Future Instrument Concept

**442** M.A. Vega, J.R. Piepmeier, NASA Goddard Space Flight Center, USA; J.L. Garrison, Purdue University, USA; J. Knuble, C. Du Toit, M.A. Fritts, NASA Goddard Space Flight Center, USA;

14:20 - 14:40 GNSS-R Parameter Sensitivities for Soil Moisture Retrieval

**453** J.D. Campbell, M. Moghaddam, University of Southern California, USA;

session **24) Novel frequency selective structures and applications, organized by Z. Shen**

**ICEAA**

chair Z. Shen

Wednesday 12

15:00

room 3

15:00 - 15:20 Analysis of THz beam propagation between the PEC planar mirrors

**151** W. Dou, H. Guo, N. Liu, Southeast University, China;

15:20 - 15:40 Highly-Integrated Folded Reflectarray for Generation of Bessel Beam Carrying Orbital Angular Momentum

**382** J. Yang, Y. Shen, S. Hu, Southeast University, China;

16:00 - 16:20 Adaptive narrowband antijam method for satellite navigation

**509** K. Shi, Y. Jia, S. Fu, Z. Cao, P. Chen, Southeast University, China;

**16:20 - 16:40** Wideband Suppression of SSN using Spiral-shaped Localized Defected Structures

**241** Z. Zhang, J. Fu, A. Li, K. Zhang, Q. Wu, Harbin Institute of Technology, China;

16:40 - 17:00 An Ultra-Wideband and High-Efficiency 90° Polarization Rotator Based on Double Split-Ring Resonators

**142** A. A. Omar, S. Y. Ho, Z. Shen, Nanyang Technological University, Singapore;

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session **25) Emerging antenna technologies and wideband/multiband antennas, organized by H. Nakano**

**IEEE APWC**

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chair T. Kawano

H. Nakano

Thursday 13

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room 1

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08:40 - 09:00 Short circularly polarized metaline antenna

**114** H. Nakano, T. Abe, J. Yamauchi, Hosei University, Japan;

09:00 - 09:20 A Wideband Phase-Shifterless Switched-Beam Array Antenna

**129** P. Ngamjanyaporn, Rangsit University, Thailand; C. Phongcharoenpanich, M. Krairiksh, King Mongkut's Institute of Technology Ladkrabang, Thailand;

09:20 - 09:40 A bent umbrella-shaped transmission line antenna with parasitic monopoles

**191** T. Kawano, National Defense Academy, Japan; H. Nakano, Hosei University, Japan

09:40 - 10:00 Millimeter Wave Beam Steerable/Reconfigurable Liquid Metal Array Antenna

**248** K. Yahya Alqurashi, C. Crean, University of Surrey, UK; H.R.D. Filgueiras, I.F. da Costa, A. Cerqueira S. Jr., Inatel, Brazil; P. Xiao, University of Surrey, UK; Z. Chen, H. Wong, City University of Hong Kong, China; J.R. Kelly, University of Surrey, UK;

10:20 - 10:40 Dual band MACEY type T composed of three radiating grids for WiFi 2/5 GHz application

**133** S. Makino, K. Hirano, K. Itoh, K. Noguchi, T. Hirota, Kanazawa Institute of Technology, Japan;

10:40 - 11:00 Design of Dual-Band Metasurface Antenna Array Using Characteristic Mode Analysis (CMA) for 5G Millimeter-Wave Applications

**136** T. Li, Z. N. Chen, National University of Singapore, Singapore;

11:00 - 11:20 Design Strategies on Broadband Circular Polarization Generation using Metasurface Structures

**156** T. Fukusako, K. Furuya, R. Kuse, Kumamoto University, Japan;

11:20 - 11:40 A Transparent Double Folded Loop Antenna for IoT Applications

**199** Y. Koga, M. Kai, Fujitsu Laboratories LTD., Japan;

11:40 - 12:00 Low-Profile Magnetolectric Dipole Antenna with Dual Complementary Sources

**230** H. Wong, Q.W. Lin, University of Hong Kong, China;

12:00 - 12:20 Design of Wideband Slot Array Antenna by Groove Gap Waveguide in Millimeter Waves

**149** J. Liu, A. Uz Zaman, J. Yang, Chalmers University Technology, Sweden;

13:40 - 14:00 Compact and Wideband Printed Monopole Antenna for Circular Polarization

**188** T. Fujimoto, T. Kawamoto, K. Shimizu, Y. Urushizaki, Nagasaki University, Japan;

14:00 - 14:20 Millimeter-wave array antennas based on liquid crystal

**195** S. Kaushal, Y. Hasegawa, R. Hosono, R. Yamamoto, N. Guan, Fujikura Ltd., Japan;

14:20 - 14:40 Wideband Antenna Characteristics of a Spiral Antenna with Double Layer HIS Reflector

**236** M. Tanabe, Toshiba Infrastructure Systems & Solutions Coporation, Japan;

14:40 - 15:00 A Wideband Compressed Slot Antenna with Enhancing Directivity

**251** R. Zhang, Q.X. Chu, South China University of Technology, Guangzhou, China;

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session **26) Low-profile and UWB antennas and systems**

**IEEE APWC**

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chair I.D. Hinostrroza Sáenz

B. You

Thursday 13

15:00

room 1

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15:00 - 15:20 Resonances in receiving two-arm spiral antennas

**173** N. R. K. Devarapalli, Mahindra École Centrale, India;I. D. Hinostrroza Saenz, R. Guinvarc'h, CentraleSupelec, France;R.L. Haupt, Colorado School of Mines, USA;

15:20 - 15:40 A LTCC ultra-wideband periodic leaky-wave antenna with wide scanning range at 60 GHz

**421** M. Emami,M.H. Rahmani, D. Deslandes, École de Technologie Supérieure, Canada;

16:00 - 16:20 A Broadband Dual Polarized Antenna with L shaped Slots

**490** W. Shi,Q.-Xin Chu, South China University of Technology, China

16:20 - 16:40 A Monopole Antenna with Butterfly-like Coupling Slot for MIMO Applications

**254** J. Zhou, X. He, J. Nie, B. You, W. Li, K. Zhang, Xiamen University, China;

16:40 - 17:00 A Multi-band Antenna Loaded with G-like Nested-Ring Meta-elements for WLAN/WIMAX Applications

**255** B. You, B. Lin, J. Zhou, H. Xu, Xiamen University, China;

17:00 - 17:20 A Novel Modified Hexagonal Shaped Fractal Antenna with Multi Band Notch Characteristics for UBW Applications

**266** J. Benavides, R. Lituma, P. Chasi, L.F. Guerrero-Vásquez, Universidad Politécnica Salesiana, Ecuador;

session **27) Complex media and materials**

**ICEAA**

chair A. Boag

Ph. Lambin

Thursday 13

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room 2

08:40 - 09:00 Electrodynamics of graphene heterostructures and electromagnetic applications

**128** Ph. Lambin, B. Majerus, University of Namur, Belgium;M. Lobet, Harvard University, USA;M. Sarrazin, M. Cormann, University of Namur, Belgium;T. Kaplas, Yu. Svirko, University of Eastern Finland, Finland;A. Paddubskaya, K. Batrakov, P. Kuzhir, Be

09:00 - 09:20 Efficient hybrid and screened hybrid density functional calculations of carbon and silicon nanostructures electronic properties

**238** D. Gabay, Tel Aviv University, Israel;X. Wang, V. Lomakin, University of California, San-Diego, USA;A. Boag, Tel Aviv University, Israel;M. Jain, Indian Institute of Science, India;A. Natan, Tel Aviv University, Israel;

09:20 - 09:40 Series feeding network based on metamaterial coupled-line couplers and zero-degree metamaterial phase-shifting compensation-lines

**153** D. Betancourt, A. Konforta, T. Bertuch, FHR, Germany;

09:40 - 10:00 Metasurfaces with thermal hysteresis

**277** M. Clemente-Arenas, Universidad Nacional de Ingeniería, Peru;J. Urbina, A. Lakhtakia, The Pennsylvania State University, USA;

10:20 - 10:40 The scattering parameters of boreholed antennas in the UHF band

**162** A. Badescu, I. Mocanu, UPB, Romania;

10:40 - 11:00 Early-time diffusion in imaging through obscuring random media: two-way propagatio

**284** E. Bleszynski, M. Bleszynski, T. Jaroszewicz, Monopole Research, USA;

11:00 - 11:20 Engineering of giant magnetoimpedance effect in Co- rich microwires by Joule heating

**178** A. Zhukov, P. Corte-Leon, M. Ipatov, J.M. Blanco, J. Gonzalez, V. Zhukova, University of Basque Country, Spain

11:20 - 11:40 Optimization of giant magnetoimpedance effect in Fe-rich microwires.

**179** A. Zhukov, P. Corte-Leon, M. Ipatov, J.M. Blanco, J. Gonzalez, V. Zhukova, University of Basque Country, Spain

11:40 - 12:00 On the Study of Coffee's Complex Permittivity

**388** J.C. Bohorquez Reyes, S. Velasquez, N. Peña, A. Cortes, N. Gutierrez, Universidad de los Andes, Colombia;

12:00 - 12:20 Metamaterial based microstrip sensor for dielectric characterization of solids

**409** A. Soffiatti, Y. Max, L.M. Mendonca, Universidade Federal do Rio Grande do Norte, Brazil;

13:40 - 14:00 An alternative method based on RF to classify porous ceramic materials

**416** J.J. Choquehuanca-Zevallos, F.A. Huamán-Mamani, D. Mayta-Ponce, J. Ludeña-Choez, Universidad Católica San Pablo, Peru;

14:00 - 14:20 Dielectric Characterization of FAME: Glycerol Mixtures in the Separation Stage of the Biodiesel Production Process

**420** D.S. Pulido Suarez,G.F. Giraldo Villa,L.C. Diaz Bautista, S. Velasquez Suarez, J.C. Bohorquez Reyes, N.M. Peña Traslaviña, Universidad de los Andes, Colombia;

14:20 - 14:40 Broadband characterization of 3D printed samples with graded permittivity

**445** G.A. Ramirez, J.L. Araque, Universidad Nacional de Colombia, Colombia;

14:40 - 15:00 Determination of Permittivity Values Using Microwave Dielectric Spectroscopy for Assessing Apple and Purple Sweet Potato Quality Parameters

**449** M Yarlequé, Pontificia Universidad Católica del Perú, Peru;W Castro, Universidad Privada del Norte, Peru;S Chuquizuta, Universidad Nacional Toribio Rodriguez de Mendoza, Peru;A Reyes, Pontificia Universidad Católica del Perú, Peru;

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session **28) Antenna array modelling, organized by M.M. Botha, C. Craeye**

**ICEAA**

chair M.M. Botha

C. Craeye

Thursday 13

15:00

room 2

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15:00 - 15:20 Performance of a Massively Parallel Higher Order Method of Moments Code Using Thousands of CPUs

**119** Z.Lin, X.Zhao,Y.Zhang, Xidian University, Xian, China; T.K.Sarkar, Syracuse University, USA

15:20 - 15:40 Parallel Finite Element Method solver for antenna analysis

**127** D. Garcia-Donoro, Xidian University, China;L. E. Garcia-Castillo, M. Salazar-Palma, Universidad Carlos III de Madrid, Spain;

16:00 - 16:20 Grating Lobe Mitigation in Ultra-wideband Phased Arrays

**148** A. Boag, S. Zach, Tel Aviv University, Israel;Y. Gazit, Yehoshua Gazit Consulting Engineering, Israel;G. Zwirn, Omnisys Ltd., Israel;A. Boag, Tel Aviv University, Israel;



16:20 - 16:40 Modeling, Design, and Characterization of a 78.5 GHz Dual-Polarized Planar Antenna Array Consisting of Series-Parallel Fed Patch Antenna Sub-Arrays

**164** G. F. Hamberger, U. Siart, T. F. Eibert, TUM, Germany;

16:40 - 17:00 Fast Iterative Techniques for the Simulations of Large Antenna Arrays

**253** H. Bui-Van, T. Pairon, C. Craeye, Universite catholique de Louvain, Belgium;

17:00 - 17:20 Efficiency of Various Macro Basis Function Schemes for Antenna Array Analysis

**257** K. Sewraj, R.C. Beswick, M.M. Botha, Stellenbosch University, South Africa;

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session **29) Spectrum management evolution, organized by A. Navarro**

**IEEE APWC**

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chair A. Navarro

M. Pineda

Thursday 13

9:00

room 3

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09:00 - 09:20 Spectrum Occupancy Measurements Using Cyclostationary Detection in GNU Radio

**213** A. Navarro, J. Aristizabal, L. Vargas, Universidad Icesi, Colombia;

09:20 - 09:40 Antenna pattern verification for Digital TV Broadcast systems in Andean countries based on UAV's

**288** A. Navarro, J. Aristizabal, Universidad Icesi, Colombia; M.D. Pineda, TESAmerica, Colombia;

09:40 - 10:00 Spectrum forecasting model for IoT services

**335** M. PEREZ, D. JARAMILLO, Pontificia Universidad Javeriana, Colombia; D. PINZON, F. Herrera, Agencia Nacional del Espectro (ANE), Colombia;

chair J. Jr Abularach Arnez

G. Ramirez

Thursday 13

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room 3

10:20 - 10:40 A Time-Frequency Signal Analysis and Processing Application for Cooperative Spectrum Sensing

**222** J. J. Abularach Arnez, L. da Silva Mello, Pontifical Catholic University of Rio de Janeiro PUC Rio, Brazil;C. Medina, Military Institute of Engineering, Brazil;

10:40 - 11:00 Real Time SDR Cognitive Radio System for Cooperative Spectrum Sensing in the 700 MHz Brazilian Digital TV Band

**223** J. J. Abularach Arnez, L. da Silva Mello, C. Rodriguez Ron, Pontifical Catholic University of Rio de Janeiro PUC Rio, Brazil;C. Medina, Military Institute of Engineering, Brazil;P. Gonzalez Castellanos, Fluminense Federal University, Brazil;

11:00 - 11:20 Opportunistic Communication System for the FM Band

**362** M. Pérez, S Losada, C Paéz, R. Quiceno, Pontificia Universidad Javeriana, Colombia;

11:20 - 11:40 Model for Measurement of Radio Environment Maps and location of White Spaces for Cognitive Radio Deployment

**397** M. Patino, Universidad Distrital Francisco Jose de Caldas, Colombia;F. Vega, Universidad Nacional de Colombia, Colombia;

11:40 - 12:00 Analysis of an Energy Detection Algorithm for Spectrum Sensing

**443** G.A. Ramirez, M.A. Saavedra, J.L. Araque, Universidad Nacional de Colombia, Colombia;

12:00 - 12:20 Spectrum Occupation Assessment in Bogotá and opportunities for cognitive radio systems

**458** M. A. Saavedra, G. A. Ramirez, J. L. Araque, Universidad Nacional de Colombia, Colombia;

chair Y. Wen

Thursday 13

13:40

room 3

13:40 - 14:00 Electromagnetic interference characteristics and countermeasures on subway train

**479** J. Yu, China;Y. Lu, China Academy of Railway Sciences, China;Y. Jiang, CRRC Changchun Railway Vehicles, China;H. Chen, Y. Wang, Yi Zhou, China Academy of Railway Sciences, China;

14:00 - 14:20 Research on the Uncertainty of Radiated Emission Test System of High Speed Train

**480** F. Su, J. Yu, China Academy of Railway Sciences, China;Z. Wang, China Railway Corporation, China;H. Xue Hou, CRCC Tangshan CO.,LTD., China;Y. Lu, H. Chen, China Academy of Railway Sciences, China;

14:20 - 14:40 Solution for overcoming interference - radiation pattern reconfigurable antennas

**481** Q. Zeng, Nanjing University of Aeronautics and Astronautics, China

14:40 - 15:00 Study on the electromagnetic susceptibility of balise transmission module

**483** Y. Wen, Qi Geng, J. Xiao, Y. Zhu, D. Zhang, Beijing Jiaotong University, China;

15:00 - 15:20 Study on grounding and lightning protection for high-speed EMS maglev

**482** D.Wu, S. Xiao, Y. Xu, G. Deng, CRRC Qingdao Sifang Co., LTD, China;

chair D. Dudek

F. Vega

Thursday 13

15:20

room 3

15:20 - 15:40 Device technology and circuit design in Research. Fundamental science in electrical engineering and funding opportunities in Germany

**475** D. Dudek, DFG, German Research Foundation, Germany;

16:00 - 16:20 Humanitarian Research: A foundation for international collaborations

**510** C. Baer, Ruhr-University Bochum,germany;F.Vega Universidad Nacional de Colombia,Colombia

16:20 - 16:40 A Dynamic Multi-Layer Self-Healing Algorithm for WSN using Contiki OS

**511** D.Mendez, D.Santos,Pontificia Universidad Javeriana, Colombia

16:40 - 17:00 IMPACT OF MULTIPATH IN A HYBRID TDoA/DoA SPARSE RADIOLOCALIZATION FRAMEWORK

**512** R.Hincapie, C.Gomez,L.Betancur, Pontificia Universidad Javeriana, Colombia;A.Lavrenko, Technische Universitat Ilmenau, Germany;J.Schmitz, Aachen University,Germany

17:00 - 17:20 Interdisciplinary research activities for biomedical sensors – cooperation possibilities and student exchange within international master program at Ulm University, Germany

**513** C.Damm, Muh,M Puentes, Ulm University,Germany; H.U. Goeringer Technische Universitaet Darmstadt,Germany

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session **33) Antenna Systems for Radio Astronomy and Cosmology, organized by D.B. Davidson, E. Carretti, H. Pienaar**

**ICEAA**

chair H. Pienaar

Thursday 13

9:00

room 4

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09:00 - 09:20 Antenna design for the SKA1-LOW and HERA super radio telescopes

**472** E. de Lera Acedo, H. Pienaar, N. Fagnoni, University of Cambridge, United Kingdom;

09:20 - 09:40 Practical Polarisation Diversity for a Sparse Aperture Array Station

**379** H. Pienaar, Cambridge University, United Kingdom; C. Craeye, Universit catholique de Louvain, Belgium; E. de Lera Acedo, Cambridge University, United Kingdom;

09:40 - 10:00 Towards Full-Scale Environmental Modelling: A UTD Hack for Finite Dielectric Ground Planes in FEKO

**304** T.J. Phiri, S.O. Kuja, P.G. Wiid, Stellenbosch University, South Africa;D.B. Davidson, Curtin University, Australia;

10:20 - 10:40 MeerKAT Primary Beam Models: Derivation and Application In Calibration and Imaging

**376** O.M. Smirnov, K.M.B. Asad, Rhodes University, South Africa;J.N. Girard, CEA, France;M. de Villiers, SKA SA, South Africa;K. Iheanetu, T. Ansah-Narh, Rhodes University, South Africa;S. Makhathini, B. Hugo, SKA SA, South Africa;M. Santos, University of the

10:40 - 11:00 Characteristic Basis Function Pattern Modeling of Wideband Reflector Antenna Beam Pattern Frequency Variations

**242** E. Zochmann, TU Wien, Austria;M. Hofer, AIT, Austria;M. Lerch, TU Wien, Austria;J. Blumenstein, TU Brno, Czech Republic;S. Sangodoyin, USC, USA;H. Groll, S. Pratschner, S. Caban, TU Wien, Austria;D. Löschenbrand, L. Bernado, T. Zemen, A

11:00 - 11:20 A method to evaluate the Far-Field pattern from scattered Near-Field data acquired with an Unmanned Aerial Vehicle

**370** M. Righero, LINKS Foundation, Italy;G. Giordanengo, ISMB, Italy;F. Paonessa, G. Virone, O. Peverini, G. Addamo, L. Ciorba, CCNR, Italy;P. Bolli, INAF, Italy;G. Vecchi, Politecnico di Torino, Italy;

11:20 - 11:40 Compact Dual-Polarization Cryogenic Receiver Module for the 75-116 GHz band

**381** A. Navarrini, INAF-Astronomical Observatory of Cagliari, Italy; G. Valente, ASI, Italy; P. Serres, IRAM, France;F. Schaefer, MPIfR, Germany; F. Thome, IAF, Germany; O. Garnier, IRAM, France;

11:40 - 12:00 Analysis of Surface Waves Modes in Planar Connected Arrays for Radio Astronomy

**367** R. Baelemans, A. Sutinjo, Curtin University, Australia;B. Smolders, TU/e, Netherlands;D. Davidson, Curtin University, Australia;Ulf Johannsen, TU/e, Netherlands;R. Wayth, Curtin University, Australia;

session **34) Radio astronomy**

ICEAA

chair H. Pienaar

S. Selleri

Thursday 13

12:00

room 4

12:00 - 12:20 Concept Demonstrator for 14.5 to 20 GHz Extension of the SKA MeerKAT Radio Telescope

**383** S. Mundia, R. Geschke, University of Cape Town, South Africa; S. Malan, SARA0, South Africa;

13:40 - 14:00 Analysis of radio frequency interference mitigation using two reference antennas and closure relations in interferometric arrays

**385** B. Nguyen, A. T. Sutinjo, R. Wayth, ICRAR, Curtin University, Australia;

14:00 - 14:20 Profiled Corrugated Horn for Compact and High Efficiency Feeds

**494** S. Maddio, University of Florence, Italy; R. Nesti, Italian National Institute for Astrophysics, Italy; M. Righini, G. Pelosi, S. Selleri, University of Florence, Italy;

session **35) Mathematical Advances in Electromagnetics, organized by J. Arnold, P.D. Smith**

ICEAA

chair B.P. de Hon

P.D. Smith

Thursday 13

14:20

room 4

14:20 - 14:40 Scattering by two parallel metal wires over a conducting ground plane

**110** P.L.E. Uslenghi, University of Illinois at Chicago, USA

14:40 - 15:00 Surface distribution and field dependency upon the radius of curvature at smoothed corners of a scatterer

**289** P.D. Smith, A.J. Markowskei, Macquarie University, Australia;

15:00 - 15:20 On a Perspective of Discovering Wave Interaction in Canonical Open Metal-Dielectric Waveguides

**140** Y. Shestopalov, University of Gävle, Sweden;

15:20 - 15:40 Multiple scattering of E-polarized plane waves from a finite number of sinusoidal corrugated strips

**293** E.D. Vinogradova, Macquarie University, Australia;K. Kobayashi, Chuo University, Japan;

16:00 - 16:20 Wilson basis expansion of electromagnetic fields and source distributions - Wave decomposition and propagation tools for optical fibre scattering

**352** B.P. de Hon, Eindhoven University of Technology, Netherlands;S.J. Floris, TE Connectivity, Netherlands;

16:20 - 16:40 A rigorous approach to multiple plane wave scattering by arbitrary cylindrical cavities with longitudinal slits: ensembles of coupled resonators

**291** E.D. Vinogradova, P.D. Smith, Macquarie University, Australia;

16:40 - 17:00 Axisymmetric Electromagnetic Oscillations in Open Perfectly Conducting Spherical Cavities

**292** E.D. Vinogradova, Macquarie University, Australia;

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session **36) Novel and complex electromagnetic phenomena, and applications, organized by F. Capolino**

**ICEAA**

chair F. Capolino

Friday 14

8:40

room 1

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08:40 - 09:00 Force on Dipoles and Hidden Momentum

**212** A.D. Yaghjian, Electromagnetics Research, USA;

09:00 - 09:20 On the electrodynamics of rotating structures and metamaterials in their rest frame of reference

**315** I. Kasma, B. Z. Steinberg, Tel-Aviv University, Israel;

09:20 - 09:40 Higher-order, parity-time-symmetric electromagnetic sensors

**374** P. Y. Chen, University of Illinois at Chicago, USA;

09:40 - 10:00 Huygens' metasurfaces covering from waveplates to perfect absorbers

**390** J.L. Araque-Quijano, Universidad Nacional de Colombia, Colombia;J.P. del Risco, Universidad Sergio Arboleda, Colombia;M.A. Londoño, Universidad Nacional de Colombia, Colombia;A. Sayanskiy, S.B. Glybovski, ITMO University, Russia;J.D. Baena, Universidad Na

10:20 - 10:40 Salient features of temporal and spatio-temporal metamaterials

**400** V. Pacheco-Pena, Y. Kiasat, B. E. Edwards, N. Engheta, University of Pennsylvania, USA;

10:40 - 11:00 Various Topologies of Coupled-Mode Structures Exhibiting Exceptional Points of Degeneracy

**466** M. Y. Nada, A. F. Abdelshafy, T. Mealy, F. Yazdi,H. Kazemi,A. Figotin, F. Capolino, University of California, Irvine (UCI), USA;

11:00 - 11:20 Frequency Selective Surface with two Notch Frequencies and Good Incidence Angle Stability for Screening Applications

**496** A De Sabata, Politehnica University Timișoara, Romania;L. Matekovits, Politecnico di Torino, Italy;A. M. Silaghi, Politehnica University Timișoara, Romania;

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session **37) Electromagnetic measurements**

**ICEAA**

chair F. Capolino

K. Sieczkarek

Friday 14

11:20

room 1

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11:20 - 11:40 Impact of antenna inclination angle during scanning process on radiated emission measurements in the anechoic chambers up to 1 GHz

**194** K.S. Sieczkarek, A.M. Mackowiak, Institute of Logistics and Warehousing, Poland;

11:40 - 12:00 Simulation procedures for a cylindrical near-field to far-field transformation with probe compensation and gain determination

**245** E. Zochmann, TU Wien, Austria;M. Hofer, AIT, Austria;M. Lerch, TU Wien, Austria;J. Blumenstein, TU Brno, Czech Republic;S. Sangodoyin, USC, USA;H. Groll, S. Pratschner, S. Caban, TU Wien, Austria;D. Löschenbrand, L. Bernado, T. Zemen, A

12:00 - 12:20 Full-wave simulation of partial discharge in power transformers

**428** D. Galindo, J. Araque, Universidad Nacional, Colombia;

session **38) Microwave and mmwave sensors for advanced applications, organized C. Baer**

**ICEAA**

chair C. Baer

K. Haddadi

Friday 14

8:40

room 2

08:40 - 09:00 Status of Six-Port Technology for wireless sensing applications

**261** K. Haddadi, C. Loyez, University of Lille France;S. Lallemand, SEGULA, France;S. Gong, University of Linkoping, Sweden;A. Koelpin, Brandenburg University of Technology, Germany;

09:00 - 09:20 Six-Port Technology for 5G Millimeter-Wave Localization Systems

**262** C. Loyez, M. Boquet, K. Haddadi, University of Lille - IEMN, France;

09:20 - 09:40 122 GHz Monostatic Radar Altimeter for Automated UAV Landing

**205** P. Hügler, B. Driemeyer, T. Chaloun, C. Waldschmidt, Ulm University, Germany;

09:40 - 10:00 A Simulator for the Performance Investigation of Nonideal Pseudo-Random Binary Coded Signals

**256** G. Notzon, R. Storch, T. Musch, M. Vogt, Ruhr-University Bochum, Germany;

10:20 - 10:40 Comparison of real and simulated automotive radar targets measured with a reference radar

**378** S. Buddappagari Jayapal Gowdu, M. Ehtisham Asghar, Technische Universitaet Ilmenau, Germany;J. Nagel, Daimler AG, Germany;M. Rozmann, miro sys GmbH, Germany;R.Stephan, M. Hein, Technische Universitaet Ilmenau, Germany;

10:40 - 11:00 Tunable Target Design for a Dielectric-Waveguide-based Radar Target Generator

**338** C. Schulz, C. Baer, Ruhr-University Bochum, Germany;

11:00 - 11:20 Humanitarian Microwave Detection of Improvised Explosive Devices in Colombia

**327** C. Baer, C. Schulz, Ruhr-University Bochum, Germany;T. Just, TU Ilmenau, Germany;S. Gutierrez, Universidad Nacional de Colombia, Colombia;K. Orend, J. Barowski, Ruhr-University Bochum, Germany;D. Martinez, Universidad Nacional de Colombia, Colombia;B. Hat

11:20 - 11:40 Spin rate estimation of projectiles from microwave signals

**132** H. Covic,R. Adam, C. Thomas, F. Saada,L. Bernard, A. Schneider, ISL, France;

11:40 - 12:00 Sensitivity Evaluation for Reflection Phase Measurements of Resonant Microwave Near-Field Sensors with Artificial Transmission Lines

**260** B. Hattenhorst, C. Baer, T. Musch, Ruhr-University Bochum, Germany;

12:00 - 12:20 Dielectric Properties Engineering of Coplanar Waveguides on Porous Silicon up to 67 GHz

**263** K. Ziouche, K. Haddadi, University of Lille - IEMN, France;

chair E.S. Barbin

A. Navarro

Friday 14

8:40

room 3

08:40 - 09:00 Scattering Model for Ray Launching Tool, and Validation in 5.4GHz Indoor

**287** D. Guevara, B. Medina, Universidad Francisco de Paula Santander, Colombia;A. Navarro, Universidad Icesi, Colombia;

09:00 - 09:20 Measurements of Reflection and Penetration Loss of Construction Materials at 28 GHz and 38 GHz

**368** C.E. Orihuela Vargas, L. Da Silva Mello, PUC-RIO, Brazil;

09:20 - 09:40 Initial Results of Millimeter Wave Outdoor Propagation Measurements in a Campus Environment

**369** C.E. Orihuela Vargas, M.M.Silva, J.J. Abularach Arnez, L. Da Silva Mello, PUC-RIO, Brazil;

09:40 - 10:00 Site Specific Indoor Propagation Assessment in a 802.11ac WLAN by Site Survey and RayTracing Simulation

**460** J.M. Pardo, Universidad Manuela Beltran, Colombia;G.A. Ramirez, D.O. Rodriguez-Duarte, Universidad Nacional de Colombia, Colombia;

10:20 - 10:40 Site Specific Urban Propagation Using the Variable Terrain Radiowave Parabolic Equation Model

**485** P.E. Cadette, W.L. Jones, University of Central Florida, USA;

10:40 - 11:00 A comparative study for radioelectric coverage models applied to mobile communication systems performance analysis

**180** A.L. Reis, C.G. do Rego, Federal University of Minas Gerais, Brazil;M.L. Nunes, Brazilian National Telecommunication Agency, Brazil;D.C.T. Lopez, Federal University of Minas Gerais, Brazil;

11:00 - 11:20 High Frequency Methods Based in Parabolic Equation and Ray Launching in Electromagnetic Waves Propagation Predictions

**215** H. Triana, A. Navarro, Universidad Icesi, Colombia;

11:20 - 11:40 Approximate modeling of Electromagnetic Propagation through Vegetation

**457** O. R. Montero, L. Araque, Universidad Nacional de Colombia, Colombia;

11:40 - 12:00 Attenuation of Radiofrequency Waves due to Vegetation in Colombia

**462** O. Montero, J. J. Pantoja, M. Patiño, E. Pineda, D. Martinez, Universidad Nacional de Colombia, Colombia; G. Angel, J. Cruz, ; M. Suarez, Agencia Nacional del Espectro, Colombia; F. Vega, Universidad Nacional de Colombia, Colombia;

12:00 - 12:20 Using TDR-Time Domain Reflectometry Measurements to comparing ribbon busbar versus wire busbar connections in polycrystalline solar cells: the Signature Approach

**491** A. Silveira, University of Campinas, Brazil; S. E. Barbin, University of Sao Paulo, Brazil; L. C. Kretly, UNIVERSITY OF CAMPINAS, Brazil;