2020 International Workshop on Antenna Technology (iWAT 2020)

Bucharest, Romania
25 – 28 February 2020
Program

Registration
Registration
Opening Ceremony

Oral session W1: New Directions and Challenges in Antenna Design

Two-dimensional Polarity Orthogonal Multiplexing Antenna System for Non-far Region Communication...1
Jiro Hirokawa and Takashi Tomura (Tokyo Institute of Technology, Japan)

A New Design Concept for Broadband Bull’s Eye Antennas...5
Despoina Kampouridou and Alexandros Feresidis (University of Birmingham, United Kingdom (Great Britain))

Some of the Latest Developments on Liquid Antennas...N/A
Yi Huang (University of Liverpool, United Kingdom (Great Britain))

Periodic Structures with Glide Symmetry and Their Application to Antenna Design...8
Oscar Quevedo-Teruel (KTH Royal Institute of Technology, Sweden)

Waveguide Technology Based on Glide-Symmetric Holey Structures: Design Considerations...12
Zvonimir Sipus, Katarina Cavar and Marko Bosiljevac (University of Zagreb, Croatia)

Dynamically Reconfigurable and Packable Multifunctional Origami Antennas and Arrays...16
Satheesh Bojja Venkatakrishnan, Alexander Johnson, Matthew W Nichols, Jorge A Carpides Troccola and John L. Volakis (Florida International University, USA)

Discussion

Coffee Break

Oral session W2: Innovative Antenna Technologies for Space Applications

Multi-Frequency Broadband Optimization of Spaceborne Reflectarrays for Space Applications...18
Daniel R. Prado (Universidad de Oviedo & Signal Theory and Communications, Spain); Manuel Arrebola and Marcos R. Pino (Universidad de Oviedo, Spain); George Goussetis (Heriot-Watt University, United Kingdom (Great Britain))

Advanced Reflectarray Antennas for Multispot Coverages in Ka Band...22
Daniel Martinez-de-Rioja (Universidad Politécnica de Madrid, Spain); Eduardo Martinez-de-Rioja (Universidad Rey Juan Carlos, Spain); Jose A. Encinar (Universidad Politecnica de Madrid, Spain); Yolanda Rodriguez-Vaqueiro and Antonio Pino (University of Vigo, Spain)

Electronically-Steerable Transmitarray Antennas for SATCOM Terminals: a System Perspective...26
Antonio Clemente (CEA-LETI Minatec, France); Francesco Foglia Manzillo (CEA-LETI, France); Maciej Smierzchalski (CEA, France); Ronan Sauleau (University of Rennes 1, France)

Dual Band Dual-Circularly Polarized Transmit-array Antenna for SoTM Ground Terminals at Ka-band...N/A
Sergio Matos (Instituto Universitário de Lisboa, Portugal); Jorge R. Costa (Instituto de Telecomunicações / ISCTE-IUL, Portugal); Joao M. Felicio (Instituto de Telecomunicações, Portugal); Antonio Almeida (Instituto Superior Tecnico/IT, Portugal); Nelson Fonseca (European Space Agency, The Netherlands); Parinaz Naseri (University of Toronto, Canada); Carlos A. Fernandes (Instituto de Telecomunicacoes, Instituto Superior Tecnico, Portugal)
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Influence of Morphology and Tissue Distribution on SAR Estimation: Application on a Heterogeneous Head with Realistic Connected Glasses</strong>...30</td>
<td>Arwa Farid Elyamani and Marylene Cueille (UCA, LEAT &amp; CNRS, France); Jean-Lou Dubard (UCA, LEAT &amp; CNRS, France); Andrea Castagnetti and Philippe Peyrard (Eclicie-Healthy, France); Regis Amblard, Benjamin Serrano, Remy Villeneuve and Nicolas Garnier (CHPG, Monaco)</td>
</tr>
<tr>
<td><strong>Novel Approach for the Synthesis of Nonuniformly Spaced Array Antennas with Generalized Array Factor</strong>...34</td>
<td>Maxim Dubovitskiy (JSC Special Research Bureau of Moscow Power Engineering Institute (JSC OKB MEI) &amp; National Research University Moscow Power Engineering Institute, Russia); Vladlen Gusevsky (NRU MPEI, Russia)</td>
</tr>
<tr>
<td><strong>A Distance Averaging Approach for Measuring the Radiation from Common Mode Currents on Antenna Feeders</strong>...38</td>
<td>Andreea Constantin, Liliana Anghinol and Razvan D. Tamas (Constanza Maritime University, Romania); Alin Danisor (Maritime University of Constanta, Romania); George Caruntu (Constanza Maritime University, Romania)</td>
</tr>
<tr>
<td><strong>Design of a Conventional Horn Antenna for Ku Band</strong>...42</td>
<td>Cristina Adelaida Heiman (University Politehnica of Bucuresti, Romania); Alina Mihaela Badescu (University POLITEHNIKA of Bucharest, Romania)</td>
</tr>
<tr>
<td><strong>Spiral Slot-Fed High Gain Wide Bandwidth Circularly Polarized Layered Cylindrical DRA</strong>...46</td>
<td>Waled A Mohamed Albakosh and Abdulmajid Abdulmajid (The University of Sheffield, United Kingdom (Great Britain)); Salam Khamas (University of Sheffield, United Kingdom (Great Britain))</td>
</tr>
<tr>
<td><strong>A Low Profile, UWB Circular Patch Antenna with Monopole-Like Radiation Characteristics</strong>...49</td>
<td>Bahare Mohademzade and Roy B. V. B. Simorangkir (Macquarie University, Australia); Raheel Maqsood Hashmi (Macquarie University &amp; IEEE, Australia); Karu Esselle (University of Technology Sydney, Australia)</td>
</tr>
<tr>
<td><strong>An ISA100.11a Model Implementation for Accurate Industrial WSN Simulation in Ns-3</strong>...52</td>
<td>Zoltan Padrah (Technical University of Cluj-Napoca &amp; Control Data Systems, Romania); Catalin Pop and Eusebiu Jecan (Control Data Systems, Romania); Andra Pastrav and Tudor P Palade (Technical University of Cluj-Napoca, Romania); Ovidiu Ratiu (Control Data System, Romania); Emanuel Puschita (Technical University of Cluj-Napoca, Romania)</td>
</tr>
<tr>
<td><strong>Analysis of the Effects of Conductivity on Small Antenna Characteristics</strong>...56</td>
<td>Rana Berro (Grenoble Alpes University &amp; CEA LETI, France); Serge Bories (CEA, France); Christophe Delaveaud (CEA-LETI, France)</td>
</tr>
<tr>
<td><strong>A Planar End-fire Antenna for Wireless Body Area Network</strong>...60</td>
<td>Zere Iman and Amanzhol Shungteyev (Nazarbayev University, Kazakhstan); Dinesh Rano (Indraprastha Institute of Information Technology, Delhi, India); Mohammad Hashmi (Nazarbayev University, Kazakhstan)</td>
</tr>
<tr>
<td><strong>MACKES Type S Miniaturized Using Short Circuit Plate</strong>...63</td>
<td>Toshiki Tamura, Shigeru Makino and Kenji Itoh (Kanazawa Institute of Technology, Japan)</td>
</tr>
<tr>
<td><strong>Folded Crossed-Dipole Antenna for Circular Polarization</strong>...66</td>
<td>Kam Kedze and Ikmo Park (Ajou University, Korea (South))</td>
</tr>
<tr>
<td><strong>Design of Compact Superdirective and Reconfigurable Array Antenna Associated with Non-Foster Elements for IoT</strong>...69</td>
<td>Jean Marc Ribero (Université Côte d’Azur &amp; CNRS, LEAT, France); Souai Sana (University of Tunis ELMANAR &amp; Sophia Antipolis Nice University, Tunisia); Aliou Diallo (Université Côte d’Azur- LEAT-CNRS, France); Taoufik Agiili (Laboratoire des Systèmes de Communications, Tunisia)</td>
</tr>
<tr>
<td><strong>Small Antenna with Magnetic Sheet for Wireless Capsule Endoscope Communication</strong>...73</td>
<td>Yutaro Yokoyama, Kazuyuki Saito, Koichi Ito and Yunxiao Peng (Chiba University, Japan)</td>
</tr>
</tbody>
</table>
The Analysis, Modelling and Comparison Between Circular and Rectangular Patch Antennas...N/A
Claudia Constantinescu, Calin Munteanu, Claudia Pacurar, Adina Giurgiuman, Sergiu Andreica and Marian Gliga (Technical University of Cluj Napoca, Romania)

Simulation and Optimization of the Design of Focusing Dielectric Lenses Based on Cartesian Ovals with Physical Optics...75
Orell Garten, Jan Barowski and Ilona Rolfes (Ruhr-Universität Bochum, Germany)

Impact of Electromagnetic Properties of Textile Materials on Performance of a Low-Profile Wearable Antenna Backed by a Reflector...79
Gabriela Atanasova and Nikolay T Atanasov (South-West University Neofit Rilski, Bulgaria)

Study on Broadband Sleeve Antenna with Plate Element and Parasitic Element...83
Mitsuhiko Ichinose (National Defense Academy of Japan & Graduate School of Science and Engineering, Japan); Kazuya Matsubayashi and Naobumi Michishita (National Defense Academy, Japan); Hisashi Morishita (National Defense Academy of Japan, Japan)

A Simple Printed Dipole Antenna with Broadband Characteristics...85
Tuan Hung Nguyen (Le Quy Don Technical University, Vietnam); Itsuki Sasaki, Yuta Nakagawa and Hisashi Morishita (National Defense Academy, Japan)

One Method to Realize Decoupled Antenna Pair for 5G MIMO Mobile Phone...N/A
Si Li (Guangdong OPPO Mobile Telecommunication Co., Ltd., China)

The Effects of Ground-Plane of a Textile Higher Mode Microstrip Patch Antenna on SAR...89
Maria Seimeni (NCSR Demokritos & National Technical University of Athens, Greece); Aris Tsolis and Antonis A Alexandridis (NCSR Demokritos, Greece); Stelios Pantelopoulos (Singular Software AE, Greece)

Miniaturization of Spiral Implanted Antenna for Pacemakers...N/A
Yusnita Rahayu and Nafisah Aprian (Universitas Riau, Indonesia)

Polymer-based 2.4 GHz Patch Antenna...93
Yuchan Song, Denis Le Goff, Ghislain Riondet and Koen Mouthaan (National University of Singapore, Singapore)

A Comparison Between Two Antenna Pattern Approximations...97
Teodor Petrita (Politehnica University of Timisoara & ANCOM, Romania); Florin Alexa (Politehnica University Timisoara, Romania); Romeo Negrea (University Politehnica Timisoara, Romania)

A Compact Frequency Reconfigurable Elliptic Antenna with Tunable UWB/Band-pass/Band-stop Characteristics...101
Mohamed S. Soliman (Taif University, Saudi Arabia); Saeed M Alamri (Albaha University, Saudi Arabia)

Analytical Comparison of Blackman and Kaiser Functions for Power Weighted Linear Array Antennas with Small Number of Elements...105
Chairunisa Chairunisa, Hartuti Mistialustina, Budi Irawan and Achmad Munir (Institut Teknologi Bandung, Indonesia)

Compact Reconfigurable Antenna for NB-IoT or LTE-M and MIMO LTE2500 Applications...109
Kadidiatou Diallo (Ecole Superieure Polytechnique - Université Cheikh Anta Diop, Senegal); Aliou Diallo (Université Côte d’Azur- LEAT-CNRS, France); Dioum Ibra (Ecole Superieure Polytechnique - Université Cheikh Anta Diop, Senegal); Samuel Ouya (ESP, Senegal); Jean-Marc Ribero (Université de Nice Sophia Antipolis, France)

Study on Impedance Matching and Miniaturization of Bow-tie Antenna with Folded Structure and Slit for Ground Penetrating Radar...113
Hikaru Takizawa (National Defense Academy of Japan & Graduate School of Science and Engineering, Japan); Kazuya Matsubayashi (National Defense Academy, Japan)

An Efficient Photomixer Based Slot Fed Terahertz Dielectric Resonator Antenna...115
Xiaohang Li (University of Sheffield, United Kingdom (Great Britain)); Wenfei Yin (The University of Sheffield, United Kingdom (Great Britain)); Salam Khamas (University of Sheffield, United Kingdom (Great Britain))
Oral session W3: Evolution of MIMO Antenna Systems towards 5G

Multi-antenna System as an Eavesdropper for Directional Beams...126
Adam Narbudowicz (Wroclaw University of Science and Technology)

Wideband Antenna Pair with Shared Radiator and High Isolation...N/A
Hanyang Wang (Huawei Technologies, United Kingdom (Great Britain))

Field Decorrelation in a MIMO Antenna Using Transformation Electromagnetics...130
Usman Qureshi (National University of Sciences & Technology (NUST), Pakistan); Muhammad Umar Khan (National University of Sciences and Technology & Research Institute for Microwave and Millimeter-Wave Studies, Pakistan); Tayyab Hassan (LRIMMS, National University of Science and Technology (NUST), Pakistan); Mohammad S. Sharawi (Polytechnique Montreal, Canada); Shah Nawaz Burokur (LEME, France); Raj Mittra (Penn State University, USA)

One-bit Programmable Metasurface for Enhanced Wireless MIMO Systems...134
Xiaohua Long, Jieyi Yin, Qi Wu, Haiming Wang and Wei Hong (Southeast University, China)

Break

Welcome reception

Registration

Oral session T1: Small antennas

Adjusting Radiation Pattern of Small Antennas...138
Anu Lehtovuori and Rasmus Luomanieni (Aalto University, Finland); Ville Viikari (Aalto University & School of Electrical Engineering, Finland)

Antenna Design for a Cranial Implant...141
Anja K. Skrivervik, Alberto Jose Moreno Montes and Ismael Vico Trivino (EPFL, Switzerland); Marko Bosiljevac (University of Zagreb, Croatia); Miroslav J. Veljovic (EPFL, Switzerland); Zvonimir Sipus (University of Zagreb, Croatia)

Wearable Button Antenna with Circular Polarization...145
Xiaomu Hu (KU Leuven, Belgium); Sen Yan (Xi’an Jiaotong University, China); Jiahao Zhang (KU Leuven, Belgium); Guy Vandenbosch (Katholieke Universiteit Leuven (KU Leuven), Belgium)

Study of the Isolation Between Complementary Antennas...148
Lamia Sadaoui (Universite Cote d’Azur, CNRS, LEAT, France); Robert Staraj (University Cote d’Azur, CNRS, LEAT, France)

A Small Millimeter-Wave Magneto-Electric Dipole...N/A
Kwai-Man Luk and Jie Sun (City University of Hong Kong, Hong Kong); Yanhong Xu (Xidian University, China)
Coffee Break

Oral session T2: Metamaterials and metasurfaces antennas

**A Wideband Leaky Wave Metasurface Antenna for Fixed Beam Radiation...N/A**
Qiang Cheng (Southeast University, China)

**Concentric Round Metaloops...152**
Hisamatsu Nakano and Tomoki Abe (Hosei University, Japan); Amit Mehta (Swansea University, United Kingdom (Great Britain)); Junji Yamauchi (Hosei University, Japan)

**Dual-Phase Hybrid Metasurface for Enhancing Antenna Performance...N/A**
Yijun Feng, Wenlong Guo, Guowen Ding, Ke Chen and Junming Zhao (Nanjing University, China)

**Metantennas: Flat Luneburg Lens Antennas Using Transformation Optics Method (TOM)...154**
Zhi Ning Chen, Yuanyan Su and Wei E. I. Liu (National University of Singapore, Singapore)

**Selecting A Channel from 5G Sub-6-GHz Bands by A Small Antenna of Metamaterial Channel Filters...157**
Changhyeong Lee and Heejun Park (Incheon National University, Korea (South)); Yejune Seo (Inchon National University, Korea (South)); Gwang-Gyun Namgung (Incheon National University, Korea (South)); Aurora Andújar (Fractus, Spain); Jaume Anguera (Fractus Antennas & Universitat Ramon Llull, Spain); Sungtek Kahng (University of Incheon, Korea (South))

Lunch

Technical Interactive Session T-TI: Innovative Structures [interactive session]

**Calibration for a Hybrid MIMO Near-field Imaging System to Mitigate Antennas Effects...160**
Manh Ha Hoang, Zeeshan Ahmed, Matthias John, Patrick McEvoy and Max Ammann (Technological University Dublin, Ireland)

**28/39-GHz Dual-Band Dual-Polarized Millimeter Wave Stacked Patch Antenna Array for 5G Applications...164**
Yuqi He, Luyu Zhao, Minglei Rao and Mengkai Xi (Xidian University, China)

**Influence of the Substrate Material on the Radar Cross Section of Square Loop Unit Cells for Frequency Selective Surfaces..168**
Adrian Androne (University Politehnica of Bucharest, Romania); Razvan D. Tamas (Constanta Maritime University, Romania); Antonio Sorin Tasu (Maritime University of Constanta, Romania)

**Dual-Polarized Probe for Millimeter-Wave Multi-Probe Spherical near Field Measurement System...172**
Xiaoyuan Zhao, Luyu Zhao and Ge Zhao (Xidian University, China)

**Comparison Between Fully and Partially Filled Dielectric Materials on the Waveguide of Circularly Polarised Radial Line Slot Array Antennas...176**
Mst Nishat Yasmin Koli and Muhammad Usman Afzal (Macquarie University, Australia); Karu Esselle (University of Technology Sydney, Australia); Md Zahidul Islam (Teleaus: Serveno Australia Pty Ltd, Australia)

**Comparative Analysis of Highly Transmitting Phase Correcting Structures for Electromagnetic Bandgap Resonator Antenna...179**
Touseef Hayat, Muhammad Usman Afzal and Ali Laibakhsh (Macquarie University, Australia); Karu Esselle (University of Technology Sydney, Australia); Foez Ahmed (Macquarie University, Australia)

**Analysis of Cloaking Metasurface Using Theory of Characteristic Modes...183**
Ozuehm Chukwuka (University of Lille & IFSTTAR Institute, France); Divitha Seetharamdoo (IFSTTAR, LEST & Univ Lille Nord de France, France); Mohammed Kalaagi, III (Univeriste Lille 1 & The French Institute of Science and Technology for Transport, Spatial Planning, Development and Networks, France)

**Design and Analysis of Irregular Inductive Frequency Selective Surfaces for Beam-Waveguide Deep Space Antenna...187**
Maxim Dubovitskiy (JSC Special Research Bureau of Moscow Power Engineering Institute (JSC OKB MEI) & National
Design of a Dual-Band Dual-Polarization Method for a Textile Antenna...191
Daisuke Yamanaka and Masaharu Takahashi (Chiba University, Japan)

Pattern Synthesis of Conformal Antenna Array Based on Convex Optimization Model...N/A
Xinji Li (Beihang University, China)

EBG Based Two Port High Isolation Compact MIMO Antenna for 5G Applications...N/A
Kanhaiya Sharma (Pandit DeenDayal Petroleum University & Gandhinagar, India); Ganga Prasad Pandey (Pandit Deendayal Petroleum University, India)

Influence of Dielectric Anisotropy and Bending on Wearable Textile Antenna Properties...194
Plamen I. Dankov (Sofia University "St. Kliment Ohridski" & SU, Bulgaria); Valda Levcheva (Faculty of Physics, Sofia University "St. Kliment Ohridski", Sofia, Bulgaria); Praveen Sharma (Birla Institute of Technology and Science (BITS), Pilani, Rajasthan, India)

Mm-Wave Planar Bruce Array Antenna...198
Zeeshan Ahmed, Manh Ha Hoang and Patrick McEvoy (Technological University Dublin, Ireland); Max James Ammann (Dublin Institute of Technology, Ireland)

Numerical Analysis of Dielectric Post-Wall Waveguides...201
Elguja Archemashvili (Free University of Tbilisi, Georgia); Vakhntang Jandieri (General and Theoretical Electrical Engineering (ATE), Faculty of Engineering, Germany); Hiroshi Maeda (Fukuoka Institute of Technology, Japan); Kiyotoshi Yasumoto (Fukuoka Institute of Technology & Kyushu University, Japan); Jaromir Plštora (VSB-Technical University Ostrava, Czech Republic); Daniel Erni (University of Duisburg-Essen, Germany)

Power Efficiency and Antenna Array Dimension of Middle Range Wireless Power Transmission...203
Changyoung An and Heung-Gyoon Ryu (Chungbuk National University, Korea (South))

Channel Prediction of Wideband OFDM Systems in a Millimeter-Wave Band Using Delay-Domain Multipath Detection...207
Yuta Takano, Yasutaka Ogawa, Toshihiko Nishimura, Takeo Ohgane and Junichiro Hagiwara (Hokkaido University, Japan)

Integration of Broadband mm-Wave Frequency Selective Surface for 5G Smartphone Applications...N/A
Zhengdong Yong (Guangdong OPPO Mobile Telecommunication Co., Ltd, China)

Conformal Patch Array on Silicone Sponge Rubber with Integrated Low Noise Amplifier...211
Denis Le Goff, Yuchan Song, Ghislain Riondet and Koen Mouthaan (National University of Singapore, Singapore)

Conformal and Lightweight 2.4 GHz ISM Band Patch Antenna on Silicone Sponge Rubber...215
Denis Le Goff, Yuchan Song, Ghislain Riondet and Koen Mouthaan (National University of Singapore, Singapore)

Gain Improvement of Ultra-Wideband Antenna Using Compact Frequency Selective Surface...N/A
Surajit Kundu (National Institute of Technology Sikkim & Supreme Knowledge Foundation Group of Institutions, India)

Tunable Attenuator Based on Commercial Graphene Nanoplatelets...219
Muhammad Yasir and Patrizia Savi (Politecnico di Torino, Italy)

Propagation Study of Dual Composite Right Handed Structures on Textile Materials...222
Laura Dogariu (University Politechnica of Bucharest, Romania); Iulia Mocanu (Politechnica University Bucharest, Romania)

Experimental Investigation of ADM-based Microstrip Square Patch Antenna with Resonant Frequency Lowering Characteristic...226
Achmad Munir (Institut Teknologi Bandung, Indonesia); Intan Novianti (UIJ Sunan Gunung Djati, Indonesia); Barokatun Hasanah (Kalimantan Institute of Technology, Indonesia)

Gain Enhancement of Microstrip Patch Antenna Using Grounded Metamaterial...N/A
Goutam Kumar Das (Techno India University, Saltlake, Sector V, India)
**High Gain On-Chip Hemispherical Dielectric Resonator Antenna for 60 GHz Applications**...230
Meshari D. Alanazi (The University of Sheffield, United Kingdom (Great Britain)); Salam Khamas (University of Sheffield, United Kingdom (Great Britain))

**Modified Patch Antenna Design Using Moth Search Algorithm for RF Energy Harvesting Applications**...234
Achilles D. Bourianis (Aristotle University of Thessaloniki, Greece); Stavros Koulouridis (University of Patras, Greece); Paolo Rocca (University of Trento, Italy); Sotirios Goudos (Aristotle University of Thessaloniki, Greece)

**MIMO Antenna Design for 5G Communication Systems Using Salp Swarm Algorithm**...237
Achilles D. Bourianis, Sotirios Goudos and Traianos Yioultsis (Aristotle University of Thessaloniki, Greece); Katherine Siakavara (Aristotle University, Greece); Paolo Rocca (University of Trento, Italy)

**Transmission of Electromagnetic Waves Through a Subwavelength Slit Using a Reconfigurable Phase-Gradient Metasurface**...240
Rui Feng (Xidian University, China); Badreddine Ratni (Univ Paris Nanterre, France); Jianjia Yi (Key Laboratory of Integrated Services Networks, Xidian University, China); André de Lustrac (Institut d’Electronique Fondamentale - Université Paris-Sud, France); Hailin Zhang (Xidian University, China); Shah Nawaz Burokur (LEME, France)

**Oral session T3: Antenna & RCS measurements**

**A Modified Physical Optics Approach for Extrapolating Fresnel Region RCS Measurements at High Incidence Angles**...244
Ilie Valentin Mihai (University Politehnica of Bucharest, Romania & The Institut d’Electronique et de Télécommunications de Rennes, France); Razvan D. Tamas (Constanta Maritime University, Romania); Ala Sharaiha (Université de Rennes 1 & IETR, France)

**Dominant Uncertainty in Traceable Millimeter-Wave Modulated Signal Source for OTA Calibration**...248
Robert Horansky (NIST, USA); Diogo Ribeiro (Instituto de Telecomunicações - Universidade de Aveiro, Portugal); Jeffrey Jargon (National Institute of Standards and Technology, USA); Kate A. Remley (NIST, USA)

**Low-Profile Wideband High-Gain and Low-RCS Circularly Polarized Array Using Checkerboard Polarization Rotators**...252
Qi Zheng (KU Leuven, Belgium); Chenjiang Guo and Jun Ding (Northwestern Polytechnical University, China); Guy Vandenbosch (Katholieke Universiteit Leuven (KU Leuven), Belgium)

**Terahertz Sensing for Biomedical Applications: A Dream or A Daydream**...255
Feng Qi (Shenyang Institute of Automation, Chinese Academy of Science, China)

**Break**

**Dinner Banquet and Best Paper Award Annoucement**

**Registration**

**Oral session F1: Antennas for 5G**

**A Simple and Wideband Decoupling Method for Antenna Array Applications**...258
Yiming Zhang, Shuai Zhang and Gert Pedersen (Aalborg University, Denmark)

**5G Millimeter Wave Broadside-Endfire Antenna Array**...262
Alexander Khripkov (Huawei Technologies LTD, Finland); Janne Ilvonen and Zlatoljub Milosavljevic (Huawei Technologies Oy (Finland) Co. Ltd, Finland)

**Eight-element MIMO Handset Based on Combinatory Feeding**...266
Tapio Saarinen (Aalto University, Finland); Jari-Matti Hannula (KTH Royal Institute of Technology, Sweden); Anu Lehtovuori (Aalto University, Finland); Ville Viikari (Aalto University & School of Electrical Engineering, Finland)
Feeding Techniques for Multilayer PCB Mmwave Array Antenna For UE...270
Khai Nguyen (Université Côte d’Azur, CNRS, France); Fabien Ferrero (University Nice Sophia Antipolis, CNRS, LEAT & CREMANT, France); Leonardo Lazzi (University Côte d’Azur, CNRS, LEAT, France)

Systematically Integrated Phased-Array Antenna Configuration to Enhance Beam Coverage Efficiencies of Millimeter-wave 5G Mobile Devices...274
Junho Park (Pohang University of Science & Technology, Korea (South)); Jaehyun Choi (Pohang University of Science and Technology, Korea (South)); Wonbin Hong (Pohang University of Science and Technology (POSTECH), Korea (South))

140 GHz Additive Manufacturing Low-Cost and High-Gain Fabry-Perot Resonator Antenna...278
Rui Xu, Steven Gao and Benito Sanz-Izquierdo (University of Kent, United Kingdom (Great Britain)); Chao Gu (Queen’s University Belfast, United Kingdom (Great Britain)); Patrick Reynaert (KU Leuven, Belgium); Alexander Standaert (Kuleuven, Belgium); Gregory J. Gibbons and Isakov Dmitry (University of Warwick, United Kingdom (Great Britain)); Michael Gadringer (Graz University of Technology, Austria); Wolfgang Boesch (Graz University of Technology & Institute of Microwave and Photonic Engineering, Austria)

Coffee Break

Oral session F2: Metamaterial absorbing materials for RCS reduction and EMC applications

Tunable Absorber and Rasorber Based on Metamaterial...N/A
Guangxu Qian, Jing Ning, Ke Chen, Tian Jiang, Junming Zhao and Yijun Feng (Nanjing University, China)

On the Use of Engineered Artificial Materials for Realistic Stealth Applications...282
Pierpaolo Usai (Free Space srl, Italy); Filippo Costa (University of Pisa, Italy); Agostino Monorchio (University of Pisa & CNIT, Italy)

Multi-Band Metamaterial Absorbers to Efficient Energy Harvesters for Railway Applications...286
Mohammed Kalaagi, III (Universite Lille 1 & The French Institute of Science and Technology for Transport, Spatial Planning, Development and Networks, France); Divitha Seetharamadoo (IFSTTAR, LEOST & Univ Lille Nord de France, France)

Metasurface-based Electromagnetic Screen for Tunable Reflection, Transmission and Absorption Characteristics...289
André de Lustrac (Institut d’Electronique Fondamentale - Université Paris-Sud, France); Badreddine Ratni (Univ Paris Nanterre, France); Shah Nawaz Buroukar (LEME, France); Gérard-Pascal Piiau and Yohann Duval (Airbus, France)

Lunch

Technical Interactive Session F-TI: Applications [interactive session]

Gain Tunability of Graphene Patch Antennas for the ISM Band at 24 GHz...293
Martino Aldrigo (IMT Bucharest, Romania); Mircea Dragoman (National Institute for Research and Development in Microtechnology (IMT), Romania); Sergiu Iordanescu, Florin Nastase and Dan Vasiache (IMT-Bucharest, Romania); Afshin Ziae (Thales Research & Technology, France)

Circularly Polarized Square Patch Array Antenna with Multiple Rectangular-Slots Fed by Proximity Coupling Technique...297
Citra Pratiwi (Polytechnic of Marine and Fisheries Sidoarjo, Indonesia); Achmad Munir (Institut Teknologi Bandung, Indonesia)

Multimode Antenna for GPS Applications...301
Eva Antonino-Daviu (Universitat Politècnica de València, Spain); Fabien Ferrero (University Nice Sophia Antipolis, CNRS, LEAT & CREMANT, France); Miguel Ferrando-Bataller (Universitat Politècnica de València, Spain)

Design of a Miniature and Reconfigurable Antenna System for Spatial Modulation and Ambient Backscattering...304
Pierre Portos (Université Côte d’Azur & Orange Labs, France); Philippe Ratajczak (Orange Labs, France); Fabien Ferrero (University Nice Sophia Antipolis, CNRS, LEAT & CREMANT, France)
Conceptual Approach of an SDR-operated Multi-feed Antenna for Space Surveillance and Tracking...307
Paul N. Dolea, Tudor P Palade and Emanuel Puscuta (Technical University of Cluj-Napoca, Romania); Octavian Cristea (BITNET CCSS SRL, Cluj-Napoca, Romania); Andra Pastrav (Technical University of Cluj-Napoca, Romania)

Indoor Positioning Using Decawave MDEK1001...311
Raluca Sinedroni, Emanuel Puscuta, Tudor P Palade, Paul N. Dolea, Cristian Codau, Rares Buta and Andra Pastrav (Technical University of Cluj-Napoca, Romania)

Performance Evaluation of the UWB-based CDS Indoor Positioning Solution...315
Emanuel Puscuta, Raluca Sinedroni, Tudor P Palade and Cristian Codau (Technical University of Cluj-Napoca, Romania); Ovidiu Ratu and Stefan Vos (Control Data System, Romania); Vlad Ratiu (Control Data Systems, Romania)

An Overview of Digital Beamforming Implemented on SDR Platforms...319
Cristian Codau, Rares Buta, Andra Pastrav, Tudor P Palade, Paul N. Dolea and Emanuel Puscuta (Technical University of Cluj-Napoca, Romania)

Geophysical Measurements Performed at Targu Ocna Salt Mine to Evaluate Subsurface Homogeneity...323
Andrei Anghel (University Politehnica of Bucharest, Romania); Alina Mihaela Badescu (University POLITEHNICA of Bucharest, Romania); Valentin Dedu (Geo Log Data, Romania); Nicolae Rotar (CAMPUS Research Center, Romania)

Stack-layered Coupled-resonator Filtering Antenna...327
Hossein Sarbandi Farahani and Behrooz Rezaee (Graz University of Technology, Austria); Wolfgang Boesch (Graz University of Technology & Institute of Microwave and Photonic Engineering, Austria)

VLC Quantum Fusion...331
George Suciu (Politehnica University of Bucharest & BEIA Consult International SRL, Romania); Andrei Scheianu (BEIA Consult International SRL, Romania); Ioana Petre (Beia Consult International, Romania); Alexandru Drosu (BEIA Consult International, Romania); Roberta Darabană (Beia Consult International, Romania)

Effect of the Size and Shape of the Ground Plane in Small Antennas Efficiency...335
Jaime Molins-Benítre (Universitat Politècnica de València & ITEAM, Spain); Marta Cabezas-Fabrés (Universidad Politécnica de Valencia, Spain); Eva Antonino-Daviu and Miguel Ferrando-Bataller (Universitat Politècnica de València, Spain)

Localization in 802.15.4Z Standard...339
Joan Domuta, Tudor P. Palade, Emanuel Puscuta and Andra Pastrav (Technical University of Cluj-Napoca, Romania)

Design and Characterization of Compact Antennas for Wireless Sensing Applications...343
Alassane Sidibe and Gaël Loubet (LAAS-CNRS, France); Alexandru Takacs (LAAS-CNRS Université de Toulouse, France); Daniela Dragomirescu (LAAS-CNRS, France)

An HF Channel Measurement Testbed for Underwater/Under-Seawater Communications...347
Miyuki Hirose (Tokyo Denki University, Japan); Idnin Pasya (University Teknologi MARA, Malaysia)

Dual-Band Dual-Rectangular-Loop Circular Polarization Metasurface Antenna for GNSS Receivers...350
Makoto Sumi (NTT DOCOMO, INC., Japan)

ULA Transmit Beamforming on SDR Platform...353
Cristian Codau, Rares Buta, Andra Pastrav, Tudor P Palade, Paul N. Dolea and Emanuel Puscuta (Technical University of Cluj-Napoca, Romania)

Conformal Circularly-Polarized Shoe-Integrated Antenna Based on Leather Substrate and Conductive Fabric for Bluetooth Low Energy Body-Centric Links...355
Riccardo Colella (National Research Council, Italy); Giovanni Andrea Casula (Università di Cagliari, Italy); Zhi Ning Chen (National University of Singapore, Singapore); Luca Catarinucci (University of Salento, Italy); Giuseppe Mazzarella (University of Cagliari, Italy)

Circularly-Polarized SIW Antenna for Novel Backscattering-based X-band Communication Systems...358
Riccardo Colella (National Research Council, Italy)
Considerations on Rigorous UHF RFID Tag Electromagnetic Performance Evaluation in Non Anechoic Environments...362
Riccardo Colella (National Research Council (CNR), Italy); Francesco P. Chietera and Luca Catarinucci (University of Salento, Italy)

Design of a Wideband Circularly Polarized RFID Reader Antenna...365
Anastasis C Polycarpou, Royalty H Chihava and Marios Nestoros (University of Nicosia, Cyprus)

Ultra-wideband Sensor Antenna Design for 5G/UWB Based Real Time Location Systems...369
Abubakar Sharif (University of Electronic Science and Technology China, China); Jinhao Guo (University of Electronic Science and Technology of china, China); Jun Ouyang (University of Electronic Science and Technology of China, China); Kamran Arshad (Ajman University, United Arab Emirates); Muhammad Ali Imran and Qammar H Abbasi (University of Glasgow, United Kingdom (Great Britain))

A Novel Monopole Antenna for 60 GHz mmW Communications...N/A
Tarek Saeid Mneesy (Arab Academy for Science, Technology and Maritime Transport (AASTM) & (AASTM), Egypt); Radwa Hamad (Arab Academy for Science, Technology and Maritime Transport, Egypt); Amira I Zaki (Arab Academy for Science and Technology, Egypt); Wael Ali (AAST, Egypt)

MIMO FM-CW Radar Using Beat Signal Averaging Method...373
Idnin Pasya (University Teknologi MARA, Malaysia)

Characterization of a Meander Line Antenna in a Non-anechoic Environment...376
Stefania Bucucci, Liliana Archidin and Razvan D. Tamas (Constanta Maritime University, Romania)

Ka-Band Slotted SIW Phased Array Antenna...379
Hossein Sarbandi Farahani and Behrooz Rezaee (Graz University of Technology, Austria); Wolfgang Boesch (Graz University of Technology & Institute of Microwave and Photonic Engineering, Austria); Helmut Paulitsch (Graz University of Technology, Austria)

UHF Band Antenna Radiation Pattern Measurements in Multipath Channel Using Time Domain Gating...383
Alexandru Tatomiurescu (Polytechnic University of Bucharest, Romania)

F3: Advances in RFID Antennas Design and Characterization

Integrating UHF RFID Antennas into Surgical Instruments...387
Paul Taylor and John Batchelor (University of Kent, United Kingdom (Great Britain))

Antennas for Wide Area Distributed RFID Systems...391
Michael J Crisp and Rui Chen (University of Cambridge, United Kingdom (Great Britain)); Ajeck M Ndifon and Richard Penty (Cambridge University, United Kingdom (Great Britain))

Reader Antennas Requirements in Chipless RFID Systems with Linear and Circular Polarization...394
Filippo Costa, Simone Genovesi and Giuliano Manara (University of Pisa, Italy)

Glove Integrated Dual-Band Yagi Reader Antenna for UHF RFID and Bluetooth Application...398
Rajesh K Singh, Andrea Michel and Paolo Nepa (University of Pisa, Italy); Alfredo Salvatore (Sensor ID, Italy)

3D-Printed Barcodes as RFID Tags...401
Luca Catarinucci (University of Salento, Italy); Smail Tedjini (University Grenoble Alpes, France); Riccardo Colella (National Research Council (CNR), Italy); Francesco P. Chietera (University of Salento, Italy); Kostantinos Zannas (University Grenoble Alpes, France); Darine Kaddour (University Grenoble Alpes, Italy)

Circularly Polarized Antenna in 3D Printing Technology to Feed a Wearable Fully-Integrated WiFi-RFID Reader for Biomedical Applications...405
Riccardo Colella (National Research Council, Italy); Luca Catarinucci (University of Salento, Italy); Andrea Michel (University of Pisa, Italy)

Trip to Bran and Peles Castles