

2018 48th European Microwave Conference (EuMC 2018)

**Madrid, Spain
23-27 September 2018**

Pages 757-1584



**IEEE Catalog Number: CFP18455-POD
ISBN: 978-1-5386-5285-5**

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IEEE Catalog Number:	CFP18455-POD
ISBN (Print-On-Demand):	978-1-5386-5285-5
ISBN (Online):	978-2-87487-051-4

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EuMC01 : Power Amplifier Architectures for High Efficiency and Linearity

Chair: Georg Fischer, FAU Erlangen-Nürnberg, Germany

Co-Chair: Paolo Colantonio, Università di Roma "Tor Vergata", Italy

Time 08:30–10:10, 25 Sept 2018, N101 + N102

- 1 **A High-Efficiency GaN Transistor Module with Thick-Film BST-Based Tunable Matching Network**
Sebastian Preis¹, Alex Wiens², Enrico Lia³, Wolfgang Heinrich¹, Rolf Jakoby², Holger Maune², Olof Bengtsson¹
¹FBH, Germany; ²Technische Universität Darmstadt, Germany; ³ESA-ESTEC, The Netherlands
- 5 **Dynamic Load Modulated Low-Voltage GaN PA Using Novel Low-Loss GaN Varactors**
Raul Amirpour, Sebastian Krause, Rüdiger Quay, Oliver Ambacher, Fraunhofer IAF, Germany
- 9 **Band-Limited Digital Predistortion with Band-Switching Feedback Architecture for 5G mmWave Power Amplifiers**
Soubhik Deb, Masaaki Tanio, Shinichi Hori, Noriaki Tawa, Yasushi Wada, Kazuaki Kunihiro, NEC, Japan
- 13 **Novel DC-Biasing Circuits with Arbitrary Harmonic-Control Capability for Compact High-Efficiency Power Amplifiers**
Shinichi Tanaka, Tomoya Oda, Kento Saiki, Shibaura Institute of Technology, Japan
- 17 **Practical Load Compensation Networks in Chireix Outphasing Amplifiers Using Offset Transmission Lines**
Aleksander Bogusz¹, Jonathan Lees¹, Roberto Quaglia¹, Gavin T. Watkins², Steve C. Cripps¹
¹Cardiff University, UK; ²Toshiba Research Europe, UK

EuMC02: Measurement Systems

Chair: Ilona Rolfes, Ruhr-Universität Bochum, Germany

Co-Chair: Bianca Will, FH Südwestfalen, Germany

Time 08:30–10:10, 25 Sept 2018, N105

- 21 **Impact of On-Silicon De-Embedding Test Structures and RF Probes Design in the Sub-THz Range**
Chandan Yadav, Marina Deng, Sebastien Fregonese, Magali De Matos, Bernard Plano, Thomas Zimmer, IMS (UMR 5218), France
- 25 **On-Wafer Broadband Microwave Measurement of High Impedance Devices — CPW Test Structures with Integrated Metallic Nano-Resistances**
K. Daffe¹, F. Mubarak², V. Mascolo², H. Votsi³, N.M. Ridler⁴, G. Dambrine¹, I. Roch¹, K. Haddadi¹
¹IEMN (UMR 8520), France; ²VSL, The Netherlands; ³University of Surrey, UK; ⁴NPL, UK
- 29 **A Unified, Wave-Based Calibration Framework for Vector Network Analyzers**
Indy Magnus, Yves Rolain, Gerd Vandersteen, Vrije Universiteit Brussel, Belgium
- 33 **Nonlinear Three-Port Characterization of a Class-G Supply Modulated RF Power Amplifier Using a Nonlinear Vector Network Analyzer**
Felice Francesco Tafuri¹, Troels Studsgaard Nielsen², Nikolai Wolff³, Ole Kiel Jensen¹, Jan Hvolgaard Mikkelsen¹, Olof Bengtsson³
¹Aalborg University, Denmark; ²Keysight Technologies, Denmark; ³FBH, Germany
- 37 **On Wafer Millimetre Wave Power Detection Using a PN Junction Diode in BiCMOS 55nm for in-situ Large Signal Characterization**
Joao Carlos Azevedo Goncalves¹, Issa Alaji¹, Daniel Gloria², Vincent Gidel², Frederic Ganesello², Sylvie Lepilliet¹, Guillaume Ducournau¹, François Danneville¹, Christophe Gaquière¹
¹IEMN (UMR 8520), France; ²STMicroelectronics, France

EuMC03 : Couplers and Dividers

Chair: Anthony Ghiotto, IMS (UMR 5218), France

Co-Chair: Roberto Sorrentino, RF Microtech, Italy

Time 08:30–10:10, 25 Sept 2018, N109 + N110

- 41 **Compact Tunable Wilkinson Power Divider with Simple Structure**
Xiaolong Wang¹, Zhewang Ma², Masataka Ohira², C.-P. Chen³, Tetsuo Anada³
¹Jilin University, China; ²Saitama University, Japan; ³Kanagawa University, Japan
- 45 **Liquid Crystal Based Tunable Reflection-Type Power Divider**
*Matthias Nickel¹, Mario Mueh², Roland Reese¹, Ersin Polat¹, M. Jost¹, Christian Damm²,
Rolf Jakoby¹, Holger Maune¹*
¹Technische Universität Darmstadt, Germany; ²Universität Ulm, Germany
- 49 **High Performance 3dB Coupler (Hybrid) with Broadband Flat Amplitude Characteristics**
Uwe Rosenberg¹, Petronilo Martín-Iglesias²
¹Mician Global Engineering, Germany; ²ESA-ESTEC, The Netherlands
- 53 **Design of a SIW Based Hybrid Ring Coupler with Arbitrary Power Splitting Ratio Using Gaussian Process Regression**
Karthik Thothathri Chandrasekaran, Arokiaswami Alphones, Muhammad Faeyz Karim, NTU, Singapore
- 57 **Arbitrary Terminated Coupler with Tunable Negative and Positive Group Delay Responses**
Girdhari Chaudhary, Phanam Pech, Phirun Kim, Yongchae Jeong, Chonbuk National University, Korea

EuMC04: Metamaterials and Periodic Structures

Chair: Ferran Martín, Universitat Autònoma de Barcelona, Spain

Co-Chair: Dmitry Kholodnyak, St. Petersburg Electrotechnical University, Russia

Time 08:30–10:10, 25 Sept 2018, N115

- 61 **Three-Dimensional Frequency Selective Surface with Multiple Transmission Zeros for Wide Stopband**
Jianping Zhu¹, Zhenyong Yu², Cheng Wang¹, Cheng Huang¹, Wanchun Tang²
¹NJUST, China; ²Nanjing Normal University, China
- 65 **Theoretical Minimum of Phase Shift Error of Switchable-Channel Phase Shifters on Left-Handed and Right-Handed Transmission Lines**
Dmitry Kholodnyak, St. Petersburg Electrotechnical University, Russia
- 69 **Slow-Wave Artificial Transmission Lines Based on Stepped Impedance Shunt Stub (SISS) Loading: Analysis and Stopband Bandwidth Enhancement**
Jan Coromina, Jordi Selga, Paris Vélez, Jordi Bonache, Ferran Martín, Universitat Autònoma de Barcelona, Spain
- (NA) **A Microfluidic-Based Reflective-Type 1-Bit Terahertz Digital Metamaterial**
F.-J. Hu, P. Song, H.-F. Liu, L.-C. Tu, HUST, China
- 77 **Practical Design of a Band-Pass Filter Using EBG SIW Technology**
David López¹, Ángela Coves¹, Enrique Bronchalo¹, Germán Torregrosa¹, Maurizio Bozzi²
¹Universidad Miguel Hernández de Elche, Spain; ²Università di Pavia, Italy

EuMC05 : Special Session: 5G Technology in Asia Pacific

Chair: Maurizio Bozzi, Università di Pavia, Italy

Co-Chair: Kamran Ghorbani, Royal Melbourne Institute of Technology, Australia

Time 08:30–10:10, 25 Sept 2018, N116

- | | |
|------|---|
| (NA) | Introduction to the Special Session: 5G Technology in Asia Pacific
<i>Roberto Sorrentino, RF Microtech, Italy</i> |
| (NA) | Filtering Antennas in China
<i>Quan Xue, SCUT, China</i> |
| (NA) | Synthesized Transmission Lines — Past, Present, and Future
<i>Tzyh-Ghuang Ma, NTUST, Taiwan</i> |
| (NA) | Microwave Metasurface Antennas for 5G Network
<i>Zhi Ning Chen, NUS, Singapore</i> |

EuMC06: Non-Planar 3D Waveguide Filters

Chair: Marco Guglielmi, Universitat Politècnica de València, Spain

Co-Chair: Jerzy Michalski, SpaceForest, Poland

Time 08:30–10:10, 25 Sept 2018, N117

- 85 **Spurious Free Non Uniform Width Dielectric Loaded Filters**
Sharjeel Afridi, Ian Hunter, Muhammad Y. Sandhu, University of Leeds, UK
- 89 **Novel Solution for the Coaxial Excitation of Inductive Rectangular Waveguide Filters**
A.A. San Blas¹, J.C. Melgarejo², Vicente E. Boria², M. Guglielmi²
¹Universitat Miguel Hernández d'Elx, Spain; ²Universitat Politècnica de València, Spain
- 93 **Very-Compact Waveguide Bandpass Filter Based on Dual-Mode TM Cavities for Satellite Applications in Ku-Band**
L. Pelliccia¹, Cristiano Tomassoni², F. Cacciamani¹, P. Vallerotonda¹, Roberto Sorrentino¹, J. Galdeano³, C. Ernst³
¹RF Microtech, Italy; ²Università di Perugia, Italy; ³ESA-ESTEC, The Netherlands
- 97 **Failure Analysis of Microwave Air Breakdown for the Cavity Filter with Remainder**
Zhaorong Li, Gang Xu, Rong Zeng, Liming Lv, Wenjie Li, Xiaohua Li, CAEP, China
- 101 **High Quality TE₀₁₁ Mode Cavity Filter for Input Multiplexer Applications**
Fei Li, Jun Yang, Xinshe Yin, CAST, China

EuMC07: Special Session: 20th Anniversary of the European Microwave Week

Chair: Roberto Sorrentino, RF Microtech, Italy

Time 13:50-15:50, 25 Sept 2018, N101 + N102

- | | |
|------|--|
| (NA) | The Years Before the European Microwave Week
<i>Andrew F. Wilson, EuMA, Belgium</i> |
| (NA) | The Last Stand Alone European Microwave Conference — Jerusalem, September 8-12, 1997
<i>Asher Madjar, Independent Researcher, Israel</i> |
| (NA) | The Simultaneous Creation of the European Microwave Week and Association 1997-1998
<i>André Vander Vorst, EuMA, Belgium</i> |
| (NA) | First European Microwave Week 1998 in Amsterdam, The Netherlands
<i>Leo P. Ligthart, EuMA, The Netherlands</i> |
| (NA) | The Evolution of the EuMW and EuMA
<i>Roberto Sorrentino, EuMA, Italy</i> |
| (NA) | The Future Becomes the Present
<i>Steve Nightingale¹, Holger Meinel²</i>
<i>¹CMS Technologies, UK; ²EuMA, Germany</i> |

EuMC08: Waveguide Devices and Circuits

Chair: Maurizio Bozzi, Università di Pavia, Italy

Co-Chair: Nicolas Delhote, XLIM (UMR 7252), France

Time 13:50–15:30, 25 Sept 2018, N109 + N110

- 113 **Wideband Probe-Type Waveguide-to-Microstrip Transition for 28GHz Applications**
Andrey Mozharovskiy, Sergey Churkin, Alexey Artemenko, Roman Maslennikov, Radio Gigabit, Russia
- 117 **A Wideband Millimeter-Wave SIW-to-RWG Transition for Thin Single Layer Substrates with Thick Metal Cladding**
Steffen Hansen¹, Simon Kueppers¹, Nils Pohl²
¹Fraunhofer FHR, Germany; ²Ruhr-Universität Bochum, Germany
- 121 **Novel Compact Bent Transformers Embedding Routing Capability in Waveguide Structures**
F. Teberio¹, Jon M. Percaz¹, Iván Arregui¹, Petronilo Martín-Iglesias², Txema Lopetegui¹, Miguel A.G. Laso¹, Israel Arnedo¹
¹Universidad Pública de Navarra, Spain; ²ESA-ESTEC, The Netherlands
- 125 **Measurements of a 64×64-Way One-Body Two-Dimensional Beam-Switching Hollow-Waveguide Butler Matrix**
Jiro Hirokawa¹, Dong-Hun Kim¹, Masahiro Wakasa¹, Yuki Sunaguchi¹, Takashi Tomura¹, Kentaro Nishimori²
¹Tokyo Institute of Technology, Japan; ²Niigata University, Japan
- 129 **Compact Multi-Beam Forming Network with Three-Way Power Divider Combined Rat-Race Coupler and Branch-Line Coupler**
Yu Ushijima, Hidenori Yukawa, Takeshi Yuasa, Naofumi Yoneda, Mitsubishi Electric, Japan

EuMC09: Metasurfaces

Chair: Tatsuo Itoh, University of California at Los Angeles, USA

Co-Chair: Francisco Medina, Universidad de Sevilla, Spain

Time 13:50–15:30, 25 Sept 2018, N115

- 133 **Blazed Metasurface Grating with Handedness Preservation for Circularly Polarized Incident Wave**
Xiaoqiang Li¹, Cheng Tao¹, Lijun Jiang², Tatsuo Itoh¹
¹University of California at Los Angeles, USA; ²University of Hong Kong, China
- 137 **Design of a Wideband Multilayer Meander-Line Polarizer (6–18GHz) Using a Semi-Analytical Method**
Wafa Abdouni-Abdallah, Muhammad Saeed Khan, Athanasios Konstantinidis, ETIC, UAE
- 141 **Multi-Focus Imaging Utilizing Huygens Metasurface**
Xumin Ding, Zhuochao Wang, Kuang Zhang, Xuemai Gu, Qun Wu, Jiahui Fu, Harbin Institute of Technology, China
- 145 **Circuit Modeling of Electromagnetically Induced Reflection by Multiple Slits on a Metallic Screen**
Fulya Bagci¹, Raúl Rodríguez-Berral², Francisco Mesa², Francisco Medina²
¹Ankara University, Turkey; ²Universidad de Sevilla, Spain
- 149 **Circuital Analysis of Full-Metal Polarisers Based on 3D Unit-Cells**
María García-Vigueras, Carlos Molero, IETR (UMR 6164), France

EuMC10: Non-Planar Filter Realizations

Chair: Vicente E. Boria, Universitat Politècnica de València, Spain

Co-Chair: Stéphane Bila, XLIM (UMR 7252), France

Time 13:50–15:30, 25 Sept 2018, N117

- (NA) **Development of Multiplexers for HTS at 30GHz Based on Dielectric Resonators Channel Filters** (Industrial Session Keynote)
Felipe Loras, Thales Alenia Space, Spain
- 154 **Modal Dispersion Reduction in Multi-Mode Circular Dielectric Waveguides at W-Band Frequencies**
Andre Meyer, Bekir Turan, Martin Schneider, Universität Bremen, Germany
- 158 **Gradient Descent Shape Optimization of Microwave Circuits Using Bézier Curves Parametrization**
Ali Dia¹, Christophe Duroiseau¹, Cyrille Menudier¹, Ludovic Carpentier², Olivier Ruatta¹, Stéphane Bila¹
¹XLIM (UMR 7252), France; ²CNES, France
- 162 **Compact Bandpass Filter in Empty Substrate Integrated Coaxial Line**
Leticia Martinez¹, Juan A. Martinez¹, Alejandro L. Borja¹, Hector Esteban², Vicente E. Boria², Angel Belenguer¹
¹Universidad de Castilla-La Mancha, Spain; ²Universitat Politècnica de València, Spain
- 166 **Improved Fully Canonical Phase Equalized W-Band Waveguide Filter with Dispersive Coupling Inverter**
Daniel Miek¹, Ana Morán-López², Jorge A. Ruiz-Cruz², Michael Höft¹
¹Christian-Albrechts-Universität zu Kiel, Germany; ²Universidad Autónoma de Madrid, Spain

EuMC11 : Wireless Power System Architectures and Techniques

Chair: Lutfi Albasha, American University of Sharjah, UAE

Co-Chair: Chris Clifton, Sony Semiconductor Solutions, Germany

Time 13:50–15:30, 25 Sept 2018, N118

- 170 **A 5.8-GHz 64-Channel Phased Array Microwave Power Transmission System Based on Space-Time Beamforming Algorithm for Multiple IoT Sensors**
Kentaro Murata, Toshiya Mitomo, Makoto Higaki, Kohei Onizuka, Toshiba, Japan
- 174 **Multi-Antenna Directional Backscatter Tags**
Vivek Mangal¹, Gabriele Atzeni², Peter R. Kinget¹
¹Columbia University, USA; ²Università di Cagliari, Italy
- 178 **A 50% Fractional Bandwidth, Wireless Power Communication System Achieving 6.78Mbps at 13.56MHz Carrier**
Jordan Besnoff¹, Yohay Buchbut², Kobi Scheim², David S. Ricketts³
¹Potomac Technologies, USA; ²Independent Researcher, Israel; ³North Carolina State University, USA
- 182 **Optimal Couplings for a Four-Coils WPT Link**
Franco Mastri¹, Mauro Mongiardo², Giuseppina Monti³, Luciano Tarricone³, Alessandra Costanzo¹
¹Università di Bologna, Italy; ²Università di Perugia, Italy; ³Università del Salento, Italy
- 186 **Arbitrary Magnetic Field Control Technique by Multi-Coil Transmitter Voltage Phase Shifting for Omni-Directional Free-Positioning Magnetic Resonance Wireless Power Delivery**
Yusuke Inada, Toru Kawajiri, Ukyo Takeda, Hiroki Ishikuro, Keio University, Japan

EuMC12: Material Characterization

Chair: Shmuel Auster, Elta Systems, Israel

Co-Chair: Roei Ben-Yishay, ON Semiconductor, Israel

Time 16:10–17:50, 25 Sept 2018, N105

- 190 **Determining Carbon Fiber Composite Loading with Flip-Chip Measurements to 110GHz**
Nina B. Popovic¹, Jasper Drisko¹, Aaron M. Hagerstrom¹, Joshua A. Orlicki², Jennifer M. Sietins², Daniel B. Knorr Jr.², James C. Booth¹, Edward Garboczi¹, Christian J. Long¹, Nathan D. Orloff¹
¹NIST, USA; ²U.S. Army Research Laboratory, USA
- 194 **Impact of Substrate Modes on mTRL-Calibrated CPW Measurements in G Band**
G.N. Phung¹, F.J. Schmückle¹, R. Doerner¹, Wolfgang Heinrich¹, T. Probst², U. Arz²
¹FBH, Germany; ²PTB, Germany
- 198 **Wideband Complex Permittivity Tester for 5G Materials**
Kauko Heinikoski, Lauri Hynynen, Timo Tarvainen, Esju, Finland
- 202 **An Accurate Free Space Method for Material Characterization in W-Band Using Material Samples with Two Different Thicknesses**
Isabella Lau¹, Martin Frank¹, Kilin Shi¹, Fabian Lurz¹, Armin Talai¹, Robert Weigel¹, Alexander Koelpin²
¹FAU Erlangen-Nürnberg, Germany; ²Brandenburgische Technische Universität, Germany
- 206 **Liquids Microwave Characterization Technique Based on Quartz WGM Resonator with Microfluidic Chip**
A.I. Gubin¹, I.A. Protsenko¹, A.A. Barannik¹, H. Hlukhova², N.T. Cherpak¹, S. Vitusevich²
¹NASU, Ukraine; ²Forschungszentrum Jülich, Germany

EuMC13: Non-Planar Passive Components

Chair: Ichihiko Toyoda, Saga University, Japan

Co-Chair: Luca Perregrini, Università di Pavia, Italy

Time 16:10–17:50, 25 Sept 2018, N109 + N110

- (NA) **Complex Border Tracking Algorithm for Determination of Zeros and Poles of Complex Function and its Application in Microwave Analysis** (Industrial Session Keynote)
Jerzy Julian Michalski, SpaceForest, Poland
- 211 **Frequency Selective Ferrite Circulators with Quasi-Elliptic Transmission Response**
Andrea Ashley, Laila Fighera Marzall, Zoya Popović, Dimitra Psychogiou, University of Colorado Boulder, USA
- 215 **Design-Oriented Modelling of Microstrip Ferrite Circulators**
Mauricio Pinto, Laila Fighera Marzall, Andrea Ashley, Dimitra Psychogiou, Zoya Popović, University of Colorado Boulder, USA
- 219 **Two-Way Waveguide Power Divider Using 3D Printing and Electroless Plating**
Yeonsu Lee¹, Sung-min Sim¹, Hye-Lim Kang¹, Ignacio Llamas-Garro², Yi Wang³, Yun-Ho Jang⁴, Jung-Mu Kim¹
¹Chonbuk National University, Korea; ²CTTC, Spain; ³University of Birmingham, UK; ⁴Microfluidics for all, USA
- 223 **A Novel 180° Coupler Based on Double-Sided Substrate Integrated Suspended Line Technology with Patterned Substrate**
Yuan Ma, Kaixue Ma, Yongqiang Wang, UESTC, China

EuMC14: Near-Field Sensing and Parameter Extraction

Chair: *Diego Masotti, Università di Bologna, Italy*

Co-Chair: *Martino Aldrigo, IMT Bucharest, Romania*

Time 16:10–17:50, 25 Sept 2018, N111

- 227 **Impedance Sensor for Fluid Permittivity Measurements up to 20GHz with Single-Liquid Calibration**
Aleksandar Savić, Alexander Stepputtis, Arne F. Jacob, Technische Universität Hamburg-Harburg, Germany
- 231 **Solute Concentration Measurements in Diluted Solutions by Means of Split Ring Resonators**
Paris Vélez¹, Javier Mata-Contreras¹, David Dubuc², Katia Grenier², Ferran Martín¹
¹Universitat Autònoma de Barcelona, Spain; ²LAAS, France
- 235 **Near-Field Soil Moisture Sensor with Energy Harvesting Capability**
M. Boada, A. Lazaro, R. Villarino, E. Gil, D. Girbau, Universitat Rovira i Virgili, Spain
- 239 **Progression of the Multipole Resonance Probe: Advanced Plasma Sensors Based on LTCC-Technology**
Dennis Pohle¹, Christian Schulz¹, Moritz Oberberg¹, Alexandra Serwa², Peter Uhlig², Peter Awakowicz¹, Ilona Rolfes¹
¹Ruhr-Universität Bochum, Germany; ²IMST, Germany
- 243 **Compact Substrate Integrated Wireless Cure Monitoring Sensor for Epoxy Resin**
Jannis Groh, William Barrett Lee, Jan Schür, Felix Distler, Martin Vossiek, FAU Erlangen-Nürnberg, Germany

EuMC15: Transceiver and Building Blocks

Chair: Sergio Sancho, Universidad de Cantabria, Spain

Co-Chair: Cicero Vaucher, NXP Semiconductors, The Netherlands

Time 16:10–17:50, 25 Sept 2018, N115

- 247 **An 80-Gbaud Transmitter Using Bandwidth Interleaving with Sideband Cancelling Method**
Teruo Jyo, Hiroshi Yamazaki, Munehiko Nagatani, Hiroshi Hamada, Hiroyuki Fukuyama, Hideyuki Nosaka, NTT, Japan
- 251 **Linear Front End Module for 4G/5G LTE Advanced Applications**
Florinel Balteanu, Skyworks Solutions, USA
- 255 **High Dynamic Range Low Power Drive Quadrature Millimeter-Wave Demodulator**
B. Zouggari, D. Hammou, Chaouki Hannachi, Serioja Ovidiu Tatu, INRS-EMT, Canada
- 259 **A Ka-Band High Linearity Up-Conversion Mixer with LO Boosting Linearization Technique**
Yi-Hsien Lin¹, Yu-Ci Li¹, Wen-Jie Lin¹, Jeng-Han Tsai², Abdulelah Alshehri³, Mazen Almalki³, Abdulhamid Sayed³, Tian-Wei Huang¹
¹National Taiwan University, Taiwan; ²National Taiwan Normal University, Taiwan; ³KACST, Saudi Arabia
- 263 **MSBT Transponder: Flexible Multi-Mode In-Orbit Reconfigurable Transponder**
Javier Cabo, Ernesto Lopez, José Ignacio Mayor, Thales Alenia Space, Spain

EuMC16: Antennas Based on Artificial Structures

Chair: Mohsen Sazegar, Kymeta, USA

Co-Chair: Ferran Paredes, Universitat Autònoma de Barcelona, Spain

Time 16:10–17:50, 25 Sept 2018, N116

- (NA) **Rethinking Mobile Connectivity: Satellite Broadband Access Using Reconfigurable Holographic Antennas** (Industrial Session Keynote)
Mohsen Sazegar, Ryan A. Stevenson, Nathan Kundtz, Kymeta, USA
- 268 **Dichroic Sub-Reflector for Wide Band Techniques for Single Offset Antenna**
Yu-Lun Su¹, Chung-Chin Jian¹, Yu-Ling Lee¹, Chun-Hsing Li², Thomas Lohrey³
¹Atom Element Matter, The Netherlands; ²National Tsing Hua University, Taiwan; ³Eutelsat, France
- 272 **Assessment on the Dielectric Losses of Artificial Magnetic Conductors for Antenna-on-Chip Applications**
A.J. van den Biggelaar, U. Johannsen, A.B. Smolders, Technische Universiteit Eindhoven, The Netherlands
- 276 **Graphene-Based Fabry-Perot Cavity Leaky-Wave Antennas: Towards an Experimental Validation**
Walter Fuscaldo¹, Silvia Tofani¹, Paolo Burghignoli¹, Paolo Baccarelli², Andrea Notargiacomo³, Sara Cibella³, Marialilia Pea³, Pasquale Carelli³, Neeraj Mishra⁴, Camilla Coletti⁴, Alessandro Galli¹
¹Università di Roma “La Sapienza”, Italy; ²Università di Roma Tre, Italy; ³CNR-IFN, Italy; ⁴IIT@NEST-CNI, Italy

EuMC17: Manufacturing Techniques of Non-Planar Filters

Chair: Jorge A. Ruiz-Cruz, Universidad Autónoma de Madrid, Spain

Co-Chair: Petronilo Martín-Iglesias, ESA-ESTEC, The Netherlands

Time 16:10–17:50, 25 Sept 2018, N117

- 280 **Design of a Compact 3D Printed Coaxial Filter**
Giuseppe Venanzoni¹, Marco Dionigi¹, Cristiano Tomassoni¹, Roberto Sorrentino²
¹Università di Perugia, Italy; ²RF Microtech, Italy
- 284 **Impact of Fabrication Process Tolerances on Characteristics of Sub-THz Silicon Micromachined Filters**
Antti Lamminen, Jaakko Saarilahti, Pekka Pursula, Mikko Kantanen, Vladimir Ermolov, VTT Technical Research Centre of Finland, Finland
- 288 **Frequency Correction Design Technique for Additive Manufactured Cavity Filters**
Alejandro Pons-Abenza¹, Alejandro Alvarez-Melcon¹, Fernando D. Quesada-Pereira¹, Lara Arche-Andradas²
¹Universidad Politécnica de Cartagena, Spain; ²Thales Alenia Space, Spain
- 292 **3D-Printed Low-Pass Filter with Conical Inductors for Broadband RF Applications**
J.M. Lopez-Villegas, A. Salas, N. Vidal, J. Sieiro, Universitat de Barcelona, Spain
- 296 **Bandpass Filter Based on Skeleton-Like Monobloc Dielectric Pucks Made by Additive Manufacturing**
Aurélien Périgaud, Olivier Tantot, Nicolas Delhote, Serge Verdeyme, Stéphane Bila, Dominique Baillargeat, XLIM (UMR 7252), France

EuMC18: Vehicular Connectivity

Chair: Jyri Putkonen, Nokia Bell Labs, Finland

Co-Chair: Jan Barowski, Ruhr-Universität Bochum, Germany

Time 16:10–17:50, 25 Sept 2018, N118

- | | |
|-----|---|
| 300 | Evaluation of Vehicular 4G/5G-MIMO Antennas via Data-Rate Measurement in an Emulated Urban Test Drive
<i>Mahmoud Almarashli, Stefan Lindenmeier, Universität der Bundeswehr München, Germany</i> |
| 304 | Engineering the Environment to Enhance Millimetre-Wave Communications for Connected Vehicles
<i>Shailesh Raut, Aldo Petosa, Communications Research Centre Canada, Canada</i> |
| 308 | Diversity Performance of Benchmark Scenarios for Hidden Vehicle-to-X Antennas Underneath the Roof
<i>Miguel Bueno Diez, Stefan Lindenmeier, Universität der Bundeswehr München, Germany</i> |
| 312 | A Multi-Channel Algorithm for Antenna Diversity of SiriusXM High Band Satellite Reception in Vehicles
<i>A. Nassar, Simon Senega, Stefan Lindenmeier, Universität der Bundeswehr München, Germany</i> |
| 316 | High-Throughput Satellite Connectivity for the Constant Contact Vehicle
<i>Ryan A. Stevenson, David Fotheringham, Tom Freeman, Turner Noel, Tim Mason, Shahram Shafie, Kymeta, USA</i> |

EuMC19: Hyperthermia and Other Biomedical Applications

Chair: Bart Nauwelaers, Katholieke Universiteit Leuven, Belgium

Co-Chair: Luciano Tarricone, Università del Salento, Italy

Time 08:30–10:10, 26 Sept 2018, N105

- 320 **On the Conservation of Materials for Breast Phantoms in the Frequency Range 0.5–50GHz**
S. Di Meo, L. Pasotti, M. Pasian, G. Matrone, Università di Pavia, Italy
- 324 **Methods of Coupling 400KHz and 5.8GHz Energy into a Hollow Non-50 Ohm Co-Axial Transmission Line Structure**
Shaun C. Preston¹, Malcolm White², Christopher P. Hancock¹
¹Bangor University, UK; ²Creo Medical, UK
- 328 **Technical and Clinical Evaluation of the ALBA-4D 70MHz Loco-Regional Hyperthermia System**
Remko Zweije, H.P. Kok, Akke Bakker, Arjan Bel, Johannes Crezee, Academisch Medisch Centrum, The Netherlands
- 332 **RF Heating of Pancreatic Tumours Guided by Hyperthermia Treatment Planning and Limited Thermometry**
H.P. Kok, R. de Kroon Oldenhof, L. Korshuize van Straten, C.E. de Jong, Akke Bakker, Remko Zweije, J. Sijbrands, G. van Tienhoven, Johannes Crezee, Academisch Medisch Centrum, The Netherlands
- 336 **Flexible Microwave Ablation Device with Integrated RF Cut Modality**
Patrick Burn¹, Pallav Shah², Christopher P. Hancock¹
¹Bangor University, UK; ²Imperial College London, UK

EuMC20: Solid State High Power Amplifiers

Chair: Sergio Pires, Ampleon, The Netherlands

Co-Chair: Philippe Eudeline, Thales Air Systems, France

Time 08:30–10:10, 26 Sept 2018, N106

- 340 **Quasi-MMIC High Power Amplifier with Silicon IPD Matching Network**
Junhyung Jeong¹, Phirun Kim¹, Phanam Pech¹, Yongchae Jeong¹, Sangmin Lee²
¹Chonbuk National University, Korea; ²Wavice, Korea
- 344 **New Class-F High Efficiency Multi-Bias Optimised GaN HPA for C-Band Applications**
Wilfried Dementroux, Audrey Thorinius, Lucas Mandica, Frederic Ploneis,
Nicolas Berthou, Thales, France
- 348 **Wideband High Efficiency 50W GaN-HEMT Balanced Power Amplifier**
Quang Huy Le, Gernot Zimmer, Frankfurt UAS, Germany
- 352 **50% High Efficiency X-Band GaN MMIC Amplifier for Space Applications**
A.M. Couturier¹, N. Poitrenaud¹, V. Serru¹, R. Dionisio², J.J. Fontecave¹, M. Camiade¹
¹United Monolithic Semiconductors, France; ²ESA-ESTEC, The Netherlands

EuMC21 : Filter Synthesis Techniques

Chair: Richard Snyder, RS Microwave, USA

Co-Chair: Giuseppe Macchiarella, Politecnico di Milano, Italy

Time 08:30–10:10, 26 Sept 2018, N107

- 356 **Lossy Dual-Mode Bandpass Filter with Non-Uniform Q Method**
Hongliang Guo¹, Jia Ni¹, Jiasheng Hong¹, Petronilo Martín-Iglesias²
¹Heriot-Watt University, UK; ²ESA-ESTEC, The Netherlands
- 360 **Linear Time-Invariant Behavioral Digital Models of Frequency-Periodic RF/Microwave Filters**
José-María Muñoz-Ferreras¹, Dimitra Psychogiou², Roberto Gómez-García¹
¹Universidad de Alcalá, Spain; ²University of Colorado Boulder, USA
- 364 **A Theoretical Synthesis of Coupling Matrix by Eigen Mode Expansion Method and Householder Transform**
Shigeki Takeda¹, Tetsuo Anada², C.-P. Chen²
¹Antenna Giken, Japan; ²Kanagawa University, Japan
- 368 **Application of a Series Open Circuit Stub Transform to Bandpass Filter Design**
J.A.G. Malherbe, University of Pretoria, South Africa
- 372 **Synthesis of Novel Wideband Filter Using Stub-Loaded Parallel-Coupled-Lines**
C.-P. Chen¹, D. Tetsuda¹, Z. Zhang¹, Tetsuo Anada¹, Shigeki Takeda², X. Wang³, Zhewang Ma³
¹Kanagawa University, Japan; ²Antenna Giken, Japan; ³Saitama University, Japan

EuMC22 : Non-Conventional Designs in Antenna Technology

Chair: Carlos Montesano, Airbus DS Space, Spain

Co-Chair: David Escot-Bocanegra, INTA, Spain

Time 08:30–10:10, 26 Sept 2018, N108

- 376 **Miniaturization Design of Millimeter Wave Conformal Array Antenna**
Lingli Wang, Ning Mu, Aoyun Liu, Qian Wang, Jingping Liu, NJUST, China
- 380 **Novel Single/Dual Beam Scanning Provided by an Array Composed of Two CRLH SIW LWAs**
Rihem Noumi¹, Jan Machac², Ali Gharsallah¹
¹Université de Tunis El Manar, Tunisia; ²Czech Technical University in Prague, Czech Republic
- 384 **Perforated Rectangular Dielectric Resonator Antenna for Wideband, Dual Band and Single Band Application**
Eeshaan Vernekar, Pragati Patel, Mallikarjun Erramshetty, NIT Goa, India
- 388 **An Electrical-Contactless Substrate-Over-Waveguide Planar Array Slot Antenna**
A.T. Muriel-Barrado, Manuel Sierra-Pérez, José-Manuel Fernández-González, Universidad Politécnica de Madrid, Spain
- 392 **Compact Cavity-Backed Spiral Antennas with Enhanced Axial Ratio and Gain at Low Frequencies**
Andrea García-Estellés, Juan José Sánchez-Martínez, Ana Cristina Gago-Lancho, Francisco Vázquez-Vázquez, Indra Sistemas, Spain

EuMC23: THz Components

Chair: Antti Räisänen, Aalto University, Finland

Co-Chair: Luis Enrique Garcia-Muñoz, Universidad Carlos III de Madrid, Spain

Time 08:30–10:10, 26 Sept 2018, N110

- 396 **300-GHz CMOS Receiver Module with WR-3.4 Waveguide Interface**
*S. Hara¹, Kyoya Takano², Kosuke Katayama², Ruibing Dong², K. Mizuno³,
K. Takahashi³, I. Watanabe¹, N. Sekine¹, A. Kasamatsu¹, Takeshi Yoshida²,
Shuhei Amakawa², Minoru Fujishima²*
¹NICT, Japan; ²Hiroshima University, Japan; ³Panasonic, Japan
- 400 **Monopulse RLSA Antenna with Gap-Waveguide Feeding Network for Space Debris Radar at 94GHz**
Adrián Tamayo-Domínguez, José-Manuel Fernández-González, Manuel Sierra-Castañer, Universidad Politécnica de Madrid, Spain
- 404 **E-Band Radio Fiber as Low-Cost mm-Wave Waveguide Junction**
Stefano Moscato¹, Matteo Oldoni¹, Giuseppe Parisi²
¹SIAE MICROELETTRONICA, Italy; ²SM-Optics, Italy
- 408 **Terahertz Gapless Low Insert Loss Waveguide Switch Technology**
Chuxian Zhang, Qunfeng Chang, Hong Liu, Qian Yu, Libing Cai, CASC, China
- 412 **THz and Microwave Dual-Band Ultrafast Photoconductive Antenna**
*A. Mingardi¹, W.-D. Zhang¹, E.R. Brown¹, Luis Enrique García-Muñoz²,
Guillermo Carpintero del Barrio², Daniel Segovia-Vargas²*
¹Wright State University, USA; ²Universidad Carlos III de Madrid, Spain

EuMC24: Application of Metasurfaces

Chair: Israel Arnedo, Universidad Pública de Navarra, Spain

Co-Chair: Alessandro Galli, Università di Roma "La Sapienza", Italy

Time 08:30–10:10, 26 Sept 2018, N111

- 416 **Ultra-Thin Metasurface Absorbers for Subterahertz Band: Theoretical Aspects and Detector Applications**
Sergei A. Kuznetsov, Andrei V. Arzhannikov, Victor N. Fedorinin, Nazar Nikolaev, Russian Academy of Sciences, Russia
- 420 **Angle-Susceptible Narrowband Terahertz Metasurface for Thin-Film Sensing**
Nazar Nikolaev¹, Sergei A. Kuznetsov¹, Miguel Beruete²
¹Russian Academy of Sciences, Russia; ²Universidad Pública de Navarra, Spain
- 424 **A Compact Lenslet as an Alternative to Corrugated Horns for Astronomy Applications**
Lucas Polo-López¹, Giampaolo Pisano², Jorge A. Ruiz-Cruz¹, Juan Córcoles¹
¹Universidad Autónoma de Madrid, Spain; ²Cardiff University, UK
- 428 **Design of Wide-Band 2-D Holographic Antenna Using Wedge Reflector**
Mohammad Moein Moeini, Homayoon Oraizi, Amrollah Amini, IUST, Iran
- 432 **Fishnet Metamaterial Gradient-Index Lens for Phase Correction of a Horn-Antenna at 60GHz**
Mario Mueh¹, Valentin Mees², Matthias Maasch², Christian Damm¹
¹Universität Ulm, Germany; ²Technische Universität Darmstadt, Germany

EuMC25 : Numerical Modeling of Microwave Components

Chair: Francisco Mesa, Universidad de Sevilla, Spain

Co-Chair: Jan Vrba, Czech Technical University in Prague, Czech Republic

Time 08:30–10:10, 26 Sept 2018, N115

- 436 **Towards a Scalable hp Adaptive Finite Element Code Based on a Nonconformal Domain Decomposition Method**
A. Amor-Martin¹, Luis Emilio García-Castillo¹, Daniel Garcia-Donoro²
¹Universidad Carlos III de Madrid, Spain; ²Xidian University, China
- 440 **Analysis of Elliptical Structures with Constant Axial Ratio by 2.5D Finite Element Method and Transformation Optics**
G.G. Gentili¹, M. Khosronejad¹, R. Nesti², G. Pelosi³, S. Selleri³
¹Politecnico di Milano, Italy; ²INAF, Italy; ³Università di Firenze, Italy
- 444 **Analysis of Dielectric-Loaded Waveguide Filters by the Generalized BI-RME Method**
Simone Battistutta, Maurizio Bozzi, Marco Bressan, Luca Perregrini, Università di Pavia, Italy
- 448 **Extended Full-Wave Analysis of a Multimode Circular Cavity with Insertion Hole**
David Marques-Villarroya, Felipe Penaranda-Foix, Beatriz Garcia-Banos, Jose Manuel Catala-Civera, Universitat Politècnica de València, Spain
- 452 **Analysis of Inhomogeneous Rectangular Waveguides by the Variational Meshless Method**
Vincenzo Lombardi, Maurizio Bozzi, Luca Perregrini, Università di Pavia, Italy

EuMC26: Education on Microwaves

Chair: Germán Torregrosa-Penalva, Universidad Miguel Hernández de Elche, Spain

Co-Chair: Miguel A. G. Laso, Universidad Pública de Navarra, Spain

Time 08:30–10:10, 26 Sept 2018, N116

- 456 **Five Radar Sessions for University Education**
Andreas R. Diewald, Patrick Wallrath, Simon Müller, Hochschule Trier, Germany
- 460 **DBF and SAR Imaging Radar for Academic Lab Courses and Research**
Andreas R. Diewald, Jonas Berg, Lorenz Dirksmeyer, Simon Müller, Hochschule Trier, Germany
- 464 **Amplitude-Monopulse Radar Lab Using WiFi Cards**
Miguel Poveda-García, María Pérez-Buitrago, Antonio Gómez-Alcaraz, Luis Miguel Martínez-Tamargo, Alejandro Martínez-Sala, David Cañete-Rebenaque, José Luis Gómez-Tornero, Universidad Politécnica de Cartagena, Spain
- 468 **Implementation of Remote and Self-Guided Practical Exercises of Electromagnetic Simulation**
V. González¹, J.M. Rodríguez¹, A. Parra¹, J.L. Jiménez¹, I. Gómez¹, J.E. González¹, C. Rueda¹, F.J. Arqués¹, Daniel Segovia-Vargas²
¹Universidad Politécnica de Madrid, Spain; ²Universidad Carlos III de Madrid, Spain
- 471 **Short-Term Educational Experiential Project on Microwave Communication Channel for Borehole Telemetry**
Oleg V. Stukach, Arman B. Mirmanov, HSE, Russia

EuMC27: Integrated Microwave Switches

Chair: Raafat Mansour, University of Waterloo, Canada

Co-Chair: Pierre Blondy, XLIM (UMR 7252), France

Time 08:30–10:10, 26 Sept 2018, N117

- 475 **Characterization of Phase Change Material Germanium Telluride for RF Switches**
Tejinder Singh, Raafat R. Mansour, University of Waterloo, Canada
- 479 **Double-Port Double-Throw (DPDT) Switch Matrix Based on Phase Change Material (PCM)**
A. Hariri, A. Crunteanu, C. Guines, Clément Hallépée, Damien Passerieux, Pierre Blondy, XLIM (UMR 7252), France
- 483 **Ku Band High-Q Switchable Cavity Filter Using Vanadium Dioxide (VO₂) Microwave Disk-Shaped Switch**
M. Agaty, A. Crunteanu, C. Dalmay, Pierre Blondy, XLIM (UMR 7252), France
- 487 **A Fully Printed Switch Based on VO₂ Ink for Reconfigurable RF Components**
Mohammad Vaseem, Su Zhen, Shuai Yang, Atif Shamim, KAUST, Saudi Arabia
- 491 **High Performance and Low Energy Consumption in Phase Change Material RF Switches**
Alexandre Léon¹, Bruno Reig¹, Vincent Puyal¹, Etienne Perret², Philippe Ferrari³, Florence Podevin⁴
¹CEA-LETI, France; ²LCIS (EA 3747), France; ³TIMA (UMR 5159), France; ⁴IMEP-LaHC (UMR 5130), France

EuMC28: Devices and Systems for Biomedical Sensing

Chair: Dominique Schreurs, Katholieke Universiteit Leuven, Belgium

Co-Chair: Michal Mrozowski, Gdansk University of Technology, Poland

Time 10:50–12:30, 26 Sept 2018, N105

- 495 **Metal-Polymer Hybrid Embroidered Microwave Multiresonator for High-Frequency Sensing: Modelling, Simulation, and Experimental Analysis**
Manuel Schimmack, Wolfgang Taute, Michael Höft, Christian-Albrechts-Universität zu Kiel, Germany
- 499 **Radar Imaging Using Bilateral Symmetry of Breast Tissue**
Yoshihiko Kuwahara, Tomoya Ozaki, Shizuoka University, Japan
- 503 **Investigation of a Time Domain Microwave System for Biomedical Applications**
Xuezhi Zeng, Andreas Fhager, Mikael Persson, Herbert Zirath, Chalmers University of Technology, Sweden
- 507 **Microwave Blood Sensing for Monitoring Treatment Efficiency in Hypertensive Patients with Chronic Neurological Disorders**
Kateryna Arkhypova¹, Fedir Folokh², Volodymyr Lychko³, Pavlo Krasov¹, Anatolii Fisun¹, Volodymyr Malakhov²
¹NASU, Ukraine; ²Kharkiv Medical Academy of Post-Graduate Education, Ukraine; ³Sumy State University, Ukraine
- 511 **Non-Invasive Detection and Monitoring of Sustained Glycemic Fluctuations Using mm-Wave Spectroscopy**
Aldo Moreno-Oyervides¹, Pedro Martín-Mateos¹, M. Carmen Aguilera-Morillo¹, Giacomo Ulisse², Fernando Larcher³, Viktor Krozer², Pablo Acedo¹
¹Universidad Carlos III de Madrid, Spain; ²Goethe-Universität Frankfurt, Germany; ³IIS-FJD, Spain

EuMC29: Bias Modulated Power Amplifier

Chair: Vittorio Camarchia, Politecnico di Torino, Italy

Co-Chair: José Carlos Pedro, Universidade de Aveiro, Portugal

Time 10:50–12:30, 26 Sept 2018, N106

- 515 **Analysis of Dissipated Power in Envelope Amplifier Output Filters**
*Sophie Paul¹, Nikolai Wolff¹, Christophe Delepaut², Václav Valenta²,
Wolfgang Heinrich¹, Olof Bengtsson¹*
¹FBH, Germany; ²ESA-ESTEC, The Netherlands
- 519 **Supply Modulation of a Linear Doherty Power Amplifier**
Dan Fishler¹, Tommaso Cappello¹, William Hallberg², Taylor W. Barton¹, Zoya Popović¹
¹University of Colorado Boulder, USA; ²Chalmers University of Technology, Sweden
- 523 **Versatility, Bandwidth and Efficiency: Digital GaN-Based Switch-Mode Supply Modulators**
Florian Hühn, Andreas Wentzel, Wolfgang Heinrich, FBH, Germany
- 527 **Dynamic Over-Voltage Operation of a Discrete-Level Supply-Modulated GaN-Based RF PA**
Nikolai Wolff, Wolfgang Heinrich, Olof Bengtsson, FBH, Germany
- 531 **Gate Bias Modulation for Doherty Power Amplifier**
Abdulrhman Ahmed, Ibrahim Khalil, Mir Masood, John Holt, Joseph Staudinger, NXP Semiconductors, USA

EuMC30: Tunable Planar Filters

Chair: Cédric Quendo, Université de Brest, France

Co-Chair: Simone Bastioli, RS Microwave, Germany

Time 10:50–12:30, 26 Sept 2018, N107

- 535 **Planar RF Duplexer with Multiple Levels of Transfer-Function Reconfigurability**
Dakotah J. Simpson¹, Roberto Gómez-García², Dimitra Psychogiou¹
¹University of Colorado Boulder, USA; ²Universidad de Alcalá, Spain
- 539 **A New Adaptive Reconfigurable Bandpass Filter with Flexible Resonance Control**
Runqi Zhang, Ching-Hsuan Shao, Dimitrios Peroulis, Purdue University, USA
- 543 **Electronically-Controllable Bandpass Planar Filter with Ultra-Large Bandwidth-Tuning Ratio and Enhanced In-Band Amplitude Flatness**
Roberto Gómez-García¹, José-María Muñoz-Ferreras¹, Jesús Jiménez-Campillo², Lara Arche-Andradas², Federico Branca-Roncati², Petronilo Martín-Iglesias³
¹Universidad de Alcalá, Spain; ²Thales Alenia Space, Spain; ³ESA-ESTEC, The Netherlands
- 547 **A Bandwidth-Tunable Active Bandstop Filter Having Variable Loss Compensation Circuits**
Yasushi Itoh, Xiaole Weng, Shiori Omokawa, Shonan Institute of Technology, Japan
- 551 **Mixed-Technology Quasi-Reflectionless Planar Bandpass Filters**
Dakotah J. Simpson¹, Roberto Gómez-García², Dimitra Psychogiou¹
¹University of Colorado Boulder, USA; ²Universidad de Alcalá, Spain

EuMC31 : Innovative Technologies for Tunable Microwave and Millimeter-Wave Circuits

Chair: Mehmet Kaynak, IHP, Germany

Co-Chair: Jorge Perez-Martinez, UPV, Spain

Time 10:50–12:30, 26 Sept 2018, N111

- (NA) **Status and Perspective of RF-MEMS Technology Industrial Applications** (Industrial Session Keynote)
Fabio Coccetti, IRT Saint-Exupéry, France
- 555 **High-Linearity 5.3–7.0GHz 3-Pole Tunable Bandpass Filter Using Commercial RF MEMS Capacitors**
*Tsu-Wei Lin*¹, *Kevin Kai Wei Low*¹, *Roberto Gaddi*², *Gabriel M. Rebeiz*¹
¹University of California at San Diego, USA; ²Cavendish Kinetic, USA
- 559 **Zero-Level Packaged 5W CW RF-MEMS Switched Capacitors**
*Nesrine Belkadi*¹, *Kevin Nadaud*², *Clément Hallépée*¹, *Damien Passerieux*¹, *Pierre Blondy*¹
¹XLIM (UMR 7252), France; ²GREMAN (UMR 7347), France
- 563 **Characterization and Modeling of Epitaxially Grown BST on a Conducting Oxide Electrode**
D. Walk, *P. Salg*, *Daniel Kienemund*, *A. Radetinac*, *L. Zeinar*, *C. Schuster*, *P. Komissinskiy*, *L. Alff*, *Rolf Jakoby*, *Holger Maune*, Technische Universität Darmstadt, Germany
- 567 **Suppression of Acoustic Resonances in Fully-Printed, BST Thick Film Varactors Utilizing Double MIM Structures**
*Daniel Kienemund*¹, *D. Walk*¹, *Nicole Bohn*², *Joachim R. Binder*², *Rolf Jakoby*¹, *Holger Maune*¹
¹Technische Universität Darmstadt, Germany; ²KIT, Germany

EuMC32: Computational Electromagnetics and Material Characterization

Chair: Jan Vrba, Czech Technical University in Prague, Czech Republic

Co-Chair: Maurizio Bozzi, Università di Pavia, Italy

Time 10:50–12:30, 26 Sept 2018, N115

- (NA) **High-Power Effects Modelling Using EM-Based Software Tools** (Industrial Session Keynote)
C. Vicente, Aurora Software and Testing, Spain
- 572 **Pulse-Distortion Analysis for Millimeter-Wave Time-Domain Material Identification**
Sebastian Heunisch, Lars Ohlsson, Lars-Erik Wernersson, Lund University, Sweden
- 576 **Extraction of Relative Permittivity from Measured Reflection Coefficient of Dielectric Materials in the Frequency Range 207–247GHz**
Isam Alawneh, Jan Barowski, Ilona Rolfes, Ruhr-Universität Bochum, Germany
- 580 **Electromagnetic Analysis of Nanoscale Heterogeneity — The Domain-Integrated Perspective**
Ioan E. Lager¹, Guy A.E. Vandebosch², Martin Štumpf³
¹Technische Universiteit Delft, The Netherlands; ²Katholieke Universiteit Leuven, Belgium; ³Brno University of Technology, Czech Republic
- 584 **A Novel Finite-Difference Solution of the Time-Domain Wave Equation with a Stability Criterion Relaxed from Mesh Sizes in Two Directions**
Mohammad Moradi¹, Vahid Nayyeri¹, Seyed-Mojtaba Sadrpour¹, Mohammad Soleimani¹, Omar M. Ramahi²
¹IUST, Iran; ²University of Waterloo, Canada

EuMC33 : Special Session: Microwave Research in Latin America

Chair: Apolinar Reynoso, CICESE, Mexico

Co-Chair: Jose Loo-Yau, Cinvestav-GDL, Mexico

Time 10:50–12:50, 26 Sept 2018, N116

- 588 **Industry-Oriented Research Projects on Computer-Aided Design of High-Frequency Circuits and Systems at ITESO Mexico**
José E. Rayas-Sánchez, Francisco E. Rangel-Patiño, Andrés Viveros-Wacher, José L. Chávez-Hurtado, J. Rafael del-Rey, Felipe Leal-Romo, Zabdiel Brito-Brito, ITESO, Mexico
- (NA) **High Frequency Device Characterisation Laboratory at the “Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE)”, Tonantzintla, Puebla, México**
Roberto S. Murphy, Reydezel Torres, INAOE, Mexico
- (NA) **RF & Microwave Activities in Cinvestav Campus Guadalajara (Cinvestav-GDL)**
J.R. Loo-Yau, P. Moreno, Cinvestav-GDL, Mexico
- (NA) **Microwave Research Activities in CICESE: Quo Vadis?**
J. Apolinar Reynoso-Hernández, María del Carmen Maya-Sánchez, CICESE, Mexico
- (NA) **The Millimeter- & Submillimeter-Wave Laboratory at Universidad de Chile**
F.P. Mena, N. Reyes, R. Finger, L. Bronfman, Universidad de Chile, Chile
- (NA) **Overview of Microwave Research in Peru**
Guillermo Rafael-Valdivia¹, Omar Castellanos Ballesteros²
¹Universidad La Salle, Peru; ²UPSE, Ecuador

EuMC34: Planar Components and Technologies

Chair: Cristiano Tomassoni, Università di Perugia, Italy

Co-Chair: Alexandru Takacs, LAAS, France

Time 10:50–12:30, 26 Sept 2018, N117

- (NA) **Liquid Crystal Based SPDT with Adjustable Power Splitting Ratio in LTCC Technology**
*M. Jost¹, A. Heunisch², A.E. Prasetiadi¹, B. Schulz², Roland Reese¹, Matthias Nickel¹,
Ersin Polat¹, M. Quibeldey³, Holger Maune¹, T. Rabe², R. Follmann³, Rolf Jakoby¹*
¹Technische Universität Darmstadt, Germany; ²BAM, Germany; ³IMST, Germany
- 616 **A Tunable Series Negative Capacitor Using Distributed Amplifier-Based
Reconfigurable Negative Group Delay Circuit**
Minning Zhu, Chung-Tse Michael Wu, Rutgers, USA
- 620 **Compact Ultra-Broadband Power Dividers with Integrated Resistors**
Björn Deutschmann, Arne F. Jacob, Technische Universität Hamburg-Harburg, Germany
- 624 **Four Way Power Divider and Combiner Based on a Luzzatto Divider Using Vertically
Installed Planar Bridge Isolator**
Ahmed Moulay, Tarek Djerafi, INRS-EMT, Canada
- 628 **Compact and Wideband CPW Wilkinson Power Dividers for GaN MMIC Applications**
Batuhan Sutbas, Ekmel Ozbay, Abdullah Atalar, Bilkent University, Turkey

EuMC35: Interactive Session 1

Chair: Miguel A. G. Laso, Universidad Pública de Navarra, Spain

Co-Chair: Jorge A. Ruiz-Cruz, Universidad Autónoma de Madrid, Spain

Time 12:30–13:50, 26 Sept 2018, Exhibition Hall

- 632 **Frequency Dependence of NTC Thermistor Pastes Used in High Frequency Temperature Variable Attenuators**
Nina Slamnik¹, Moamer Hasanovic², Conrad Jordan²
¹University of Sarajevo, Bosnia and Herzegovina; ²Smiths Interconnect, USA
- 636 **Multilayer Miniaturized Wideband Electromagnetic Band-Gaps for Wideband Full-Duplex Transceiver**
Marc Le Roy, Petros Bantavis, André Pérennec, Raafat Lababidi, Denis Le jeune, Lab-STICC (UMR 6285), France
- 640 **Miniaturized Humidity Sensor Based on a Partially Air-Filled Slow-Wave SIW Resonator**
Anh Tu Ho¹, Majid Ndoye², Philippe Ferrari³, Frederic Domingue², Emmanuel Pistono¹
¹IMEP-LaHC (UMR 5130), France; ²UQTR, Canada; ³TIMA (UMR 5159), France
- 644 **A Mechanically Tunable Artificial Magnetic Conductor Using 3-D Printing Technology**
Fengzhou Wang, Tughrul Arslan, University of Edinburgh, UK
- 648 **A Compact Double-Balanced Diode Ring Mixer for Wideband Applications**
Wahab Mohyuddin¹, Gwan Hui Lee¹, Dong Hwi Kim¹, In Bok Kim², Hyun Chul Choi¹, Kang Wook Kim¹
¹Kyungpook National University, Korea; ²LIG Nex1, Korea
- 652 **Fully Inkjet Printed 85GHz Band Pass Filter on Flexible Substrate**
Shuai Yang, Su Zhen, Atif Shamim, KAUST, Saudi Arabia

- 655 **Low Cost S-Band Phase Modulator for Modern TTC Application**
Carlos Hidalgo García¹, Amparo Herrera Guardado¹, Javier Cabo Freixedas²
¹Universidad de Cantabria, Spain; ²Thales Alenia Space, Spain
- 659 **Dual-Frequency Compline Resonators for Four-Port Bandpass Filters**
Efstratios Doumanis¹, George Goussetis²
¹Nokia, Finland; ²Heriot-Watt University, UK
- 663 **Top-Layer Wideband Transition from Waveguide to Planar Differential Line for 60GHz Applications**
Sergey Churkin, Andrey Mozharovskiy, Alexander Myskov, Alexey Artemenko, Roman Maslennikov, Radio Gigabit, Russia
- 667 **RF Characterization of Stripline with Thick MnFe₂O₄ Nanoparticle Films Under DC Magnetic Bias Conditions**
Yuxiao He¹, Eric Drew², Wei-Ya Chen², Z. John Zhang², Timothy Hogan¹, John Papapolymerou¹
¹Michigan State University, USA; ²Georgia Tech, USA
- 671 **Additively Manufactured Frequency Selective Structures on Curved Surfaces**
Jennifer A. Byford, Christopher Oakley, Premjeet Chahal, Michigan State University, USA
- 675 **Fabrication and Evaluation of a Waffle Type Waveguide for Ku-Band Application**
Kenji Itagaki, Sang-Seok Lee, Tottori University, Japan
- 679 **Infinite-Area Isovolumetric Transformation for Electromagnetic Invisibility Cloaks Based on Transformation Electromagnetics**
Yuma Takano, Atsushi Sanada, Osaka University, Japan

- 683 **Bandpass Phase Correction Methodology for Ladder-Type Acoustic Filters**
Iuliia Evdokimova, Jordi Verdú, Pedro de Paco, Universitat Autònoma de Barcelona, Spain
- 687 **Ultra-Wideband Bandpass Low-Cost Multilayer Technologies Filter Using Varnish**
*Hassan Bouazzaoui¹, Kilian Donnart², Alexandre Manchec², Cédric Quendo¹,
Rozenn Allanic¹, Florent Karpus³, Hugo Bouillaud³*
¹Lab-STICC (UMR 6285), France; ²Elliptika, France; ³Protecno, France
- 691 **180-Degree Branch Line Coupler Composed of Two Types of Iris-Loaded Waveguides**
*Hidenori Yukawa, Yu Ushijima, Takeshi Yuasa, Naofumi Yoneda, Moriyasu Miyazaki,
Mitsubishi Electric, Japan*
- 695 **Masthead Combiner Employing Asynchronously Coupled Resonant Junctions**
Eugene A. Ogbodo, Yun Wu, Peter Callaghan, Yi Wang, University of Greenwich, UK
- 699 **Fast Method to Optimize RF Bumper Transparency for Wide-Band Automotive Radar**
M. Chatmen¹, E. Jehamy², A. Benali¹
¹SEGULA Technologies, France; ²Altair Engineering, France
- 703 **Temperature Dependence of Bandpass Filters Built of Silica-Based Post-Wall Waveguide for Millimeter-Wave Applications**
*Yusuke Uemichi¹, Osamu Nukaga¹, Xu Han¹, Kiyoshi Kobayashi¹, Shuhei Amakawa²,
Ning Guan¹*
¹Fujikura, Japan; ²Hiroshima University, Japan
- 707 **Balanced Diplexer Design Using Multi-Layered Substrate Integrated Waveguide Cavities**
Jen-Chih Li¹, Muhammad Mimsyad², Cheng-You Hou³, Chung-I G. Hsu⁴, Min-Hua Ho³
*¹Wistron NeWeb, Taiwan; ²Politeknik Negeri Ujung Pandang, Indonesia; ³NCUE, Taiwan;
⁴YunTech, Taiwan*

EuMC36: Wireless Transceivers and Mobile Systems

Chair: Justin King, University College Dublin, Ireland

Co-Chair: Guan Lei, Nokia Bell Labs, Germany

Time 13:50–15:30, 26 Sept 2018, N105

- 711 **From Component to System Level, Modeling Needs Bring New Measurement Challenges** (Industrial Session Keynote)
Zacharia Ouardirhi, Tony Gasseling, AMCAD Engineering, France
- 712 **IEEE 802.11ad Packet Transmission Based SSB Optical Modulation on Radio-over-Fiber in the 90-GHz Band**
Kohei Fujiwara¹, Atsushi Kanno², Koichi Tokita¹
¹TIRI, Japan; ²NICT, Japan
- 716 **Performance Evaluation of MIMO Architectures with Moving Relays in High-Speed Railways**
Alberto Sanz-Gómara¹, Jose A. Marín-García², José I. Alonso²
¹TechOnRails, Spain; ²Universidad Politécnica de Madrid, Spain
- (NA) **A Low Complexity Approach for Calibration and Characterization of a Millimeter Wave Phased-Array Transceiver-Antenna Module**
Mehdi Salehi¹, Mohammad-Reza Nezhad-Ahmadi², Safieddin Safavi-Naeini¹
¹University of Waterloo, Canada; ²mmSense Technologies, Canada
- 724 **High Accuracy Frequency Detection Method Using 1 to mth Harmonics**
Jun Shimokawatoko, Hiroyuki Mizutani, Kenichi Tajima, Mori Kazutomi, Mitsubishi Electric, Japan

EuMC37: Special Session: High Frequency Flexible Bendable Electronics for Wireless Communication Systems

Chair: Frank Ellinger, Technische Universität Dresden, Germany

Co-Chair: Tilo Meister, Technische Universität Dresden, Germany

Time 13:50–15:30, 26 Sept 2018, N106

- (NA) **Fundamental Science in RF-Engineering and Funding Opportunities in Germany — The Role of the German Research Foundation in “High Frequency Flexible Bendable Electronics for Wireless Communication System” FFlexCom**
Damian Dudek, DFG, Germany
- (NA) **A Flexible Approach Towards Silicon-Graphene Heterojunction Transistors**
Carlos A. Chavarin¹, Carsten Strobel², Julia Kitzmann¹, Mindaugas Lukosius¹, Matthias Albert², Barbara Leszczynska², Sebastian S. Leszczynski², Johann W. Bartha², Christian Wenger¹
¹IHP, Germany; ²Technische Universität Dresden, Germany
- (NA) **Study of Graphene Flexible Electronics for Microwave Application**
Chun-Yu Fan¹, Muh-Dey Wei¹, Mohamed Saeed¹, Ahmed Hamed¹, Renato Negra¹, Zhenxing Wang², Mehrdad Shaygan², Daniel Neumaier²
¹RWTH Aachen University, Germany; ²AMO, Germany
- (NA) **Circuits with Scaled Metal Oxide Technology for Future TOLAE RF Systems**
Daniel Schrüfer¹, Martin Ellinger¹, Michael P.M. Jank², Lothar Frey², Robert Weigel¹, Amelie Hagelauer¹
¹FAU Erlangen-Nürnberg, Germany; ²Fraunhofer IISB, Germany
- (NA) **RF Characterization and De-Embedding of Parasitic Device Interconnects in a Metal-Oxide TFT Technology**
Utpal Kalita, Christian Tueckmantel, Thomas Riedl, Ullrich R. Pfeiffer, Bergische Universität Wuppertal, Germany

EuMC38: SIW and Planar Filter Technologies

Chair: Miguel Ángel Gómez Laso, Universidad Pública de Navarra, Spain

Co-Chair: Felipe Loras, Thales Alenia Space, Spain

Time 13:50–15:30, 26 Sept 2018, N107

- 745 **Development of a Narrowband 30-GHz Band Bandpass Filter with Coaxial Interfaces Using Coplanar Type H-Slot Resonators**
Takashi Shimizu, Kosuke Goto, Yoshinori Kogami, Utsunomiya University, Japan
- 749 **Fabrication-Tolerant AFSIW Filters Based on Quadruplet Through-Hole Mounted Inductive Posts**
Tifenn Martin¹, Anthony Ghiotto¹, Tan-Phu Vuong², Frédéric Lotz³
¹IMS (UMR 5218), France; ²IMEP-LaHC (UMR 5130), France; ³Cobham Microwave, France
- 753 **A Technique for Spurious Suppression in Substrate Integrated Waveguide Filters**
Cristiano Tomassoni¹, Nicolò Delmonte², Giuseppe Macchiarella³, Maurizio Bozzi², Luca Perregrini²
¹Università di Perugia, Italy; ²Università di Pavia, Italy; ³Politecnico di Milano, Italy
- 757 **SIW Cavity Filters with Embedded Planar Resonators in LTCC Package for 5G Applications**
Jameel Showail¹, Markku Lahti², Kautio Kari², Eyad Arabi³, Pekka Rantakari², Ismo Huhtinen², Tauno Vähä-Heikkilä², Atif Shamim¹
¹KAUST, Saudi Arabia; ²VTT Technical Research Centre of Finland, Finland; ³University of Bristol, UK
- 761 **Planar Resonator Embedded Substrate Integrated Waveguide (SIW) Cavity Filter**
Kirti Dhawaj¹, Richard Hadi¹, Tao Yang², Lijun Jiang³, Joshu Kovitz¹, Tatsuo Itoh¹
¹University of California at Los Angeles, USA; ²UESTC, China; ³University of Hong Kong, China

EuMC39: Emerging Rectifier Design and Development

Chair: Christian Person, IMT Atlantique, France

Co-Chair: Alessandra Costanzo, Università di Bologna, Italy

Time 13:50–15:30, 26 Sept 2018, N111

- 765 **Rectenna Array with RF-Uncoupled Closely-Spaced Monopoles for Autonomous Localization**
Marco Fantuzzi, Diego Masotti, Alessandra Costanzo, Università di Bologna, Italy
- 769 **Bow-Tie Antenna Integrated with an HfO₂-Based MIM Diode for Millimetre Wave Harvesting**
M. Aldrigo¹, M. Dragoman¹, S. Iordanescu¹, M. Modreanu², I. Povey², D. Vasilache¹, A. Dinescu¹, M. Shanawani³, Diego Masotti³
¹IMT Bucharest, Romania; ²Tyndall National Institute, Ireland; ³Università di Bologna, Italy
- 773 **Analysis of Highly Efficient Self-Synchronous Class-F Microwave Rectifiers Using Waveform Engineering**
Alexander Alt, Roberto Quaglia, Peng Chen, Sattam Alsahali, Paul J. Tasker, Jonathan Lees, Cardiff University, UK
- 777 **Compact Planar Integrated Rectenna for Batteryless IoT Applications**
A. Takacs, A. Okba, H. Aubert, LAAS, France

EuMC40: Microwave Photonics

Chair: Jean-Luc Polleux, ESYCOM - ESIEE Paris, France

Co-Chair: Guillermo Carpintero, Universidad Carlos III de Madrid, Spain

Time 13:50–15:30, 26 Sept 2018, N115

- 781 **Microwave Radiation Coupling into a WGM Resonator for a High-Photonic-Efficiency Nonlinear Receiver**
Kerlos Atia Abdalmalak¹, Gabriel Santamaría-Botello¹, Choon Sae Lee², Alejandro Rivera-Lavado¹, Luis Emilio García-Castillo¹, Daniel Segovia-Vargas¹, Luis Enrique García-Muñoz¹
¹Universidad Carlos III de Madrid, Spain; ²Southern Methodist University, USA
- 785 **Silicon Nitride Integrated Optical Beamforming Network for Millimeter Wave Photonics Systems**
Alvaro Morales, Idelfonso Tafur Monroy, Technische Universiteit Eindhoven, The Netherlands
- 789 **A Radio-over-Fiber Link with Hybrid Optical Fiber-Ceramic Multilayer Technology**
Sumy Mathew, Tilo Welker, Steffen Spira, Ralf Stephan, Jens Müller, Matthias A. Hein, Technische Universität Ilmenau, Germany
- 793 **Foundry-Fabricated Heterodyne DFB Laser Microchip for 600MHz–23GHz RF Generation**
Mu-Chieh Lo, Alberto Zarzuelo, Robinson Guzmán, Guillermo Carpintero del Barrio, Universidad Carlos III de Madrid, Spain
- 796 **Photonic Analog-to-Digital Conversion of Microwave Signals Using Spectral-Interval Estimation**
Vladimir A. Cherepenin¹, Sergey M. Kontorov², Victor V. Kulagin¹, Denis A. Prokhorov², Alexey N. Shulunov³, Victor V. Valuev²
¹Russian Academy of Sciences, Russia; ²MEPhI, Russia; ³RC Module, Russia

EuMC41 : Control Circuits

Chair: Noriharu Suematsu, Tohoku University, Japan

Co-Chair: Gilles Dambrine, IEMN (UMR 8520), France

Time 13:50–15:30, 26 Sept 2018, N116

- 800 **A 6-Bit Phase Shifter at E-Band Using a Feedback-Controlled Variable Attenuator**
Tyler N. Ross, Sam Tiller, Kimia T. Ansari, Morris Repeta, Huawei Technologies, Canada
- 804 **A 270-to-300GHz LO-Path Phase Shifting Architecture for Sub-mm-Wave Phased Arrays**
Zyad Iskandar¹, Alexandre Siligaris², Jose Lugo-Alvarez³, Emmanuel Pistono³, Philippe Ferrari³
¹Infineon Technologies, Austria; ²CEA-LETI, France; ³TIMA (UMR 5159), France
- 807 **A 28GHz CMOS Phase Shifter Supporting 11.2Gb/s in 256QAM with an RMS Gain Error of 0.13dB for 5G Mobile Network**
Jian Pang, Ryo Kubozoe, Zheng Li, Masaru Kawabuchi, Kenichi Okada, Tokyo Institute of Technology, Japan
- 811 **Analog Phase Shifter of X-Band Implemented with Novel Trans-Directional Coupled-Line Coupler**
Aleksandr N. Sychev, Igor M. Dobush, Nickolay Y. Rudyi, Sergey M. Struchkov, TUSUR, Russia
- 815 **Substrate Integrated Waveguide SPST Switch with Single SMD PIN Diode**
Valentin Buiculescu, Alexandra Nicoloiu, IMT Bucharest, Romania

EuMC42 : Innovative Materials for Microwave Applications

Chair: Marco Pasian, Università di Pavia, Italy

Co-Chair: Steve Nightingale, CMS Technologies, UK

Time 13:50–15:30, 26 Sept 2018, N117

- | | |
|-----|---|
| 819 | Low-Loss Water-Based Metasurface in Waveguide Environment
<i>Andrei V. Lavrinenko, Rasmus E. Jacobsen, Samel Arslanagic, Technical University of Denmark, Denmark</i> |
| 823 | Characterization of Dielectric Properties, Resultant Isotropy and Anisotropy of 3D Printed Dielectrics
<i>Plamen I. Dankov, Sofia University, Bulgaria</i> |
| 827 | Carbon Nanotube Layer Modeling for Computer Simulation of Optically Controlled Phase Shifters
<i>Serguei Smirnov, Ilya V. Anoshkin, Dmitri V. Lioubtchenko, Joachim Oberhammer, KTH, Sweden</i> |
| 831 | Flexible, Stretchable and Washable Filter Printed Directly on Textile
<i>Sizhe An, Azat Meredov, Atif Shamim, KAUST, Saudi Arabia</i> |

EuMC43: Interactive Session 2

Chair: Juan-Mari Collantes, UPV/EHU, Spain

Co-Chair: Vicente E. Boria, Universitat Politècnica de València, Spain

Time 15:10–16:30, 26 Sept 2018, Exhibition Hall

- 835 **28GHz 1.8dB Insertion Loss SPDT Switch with 24dB Isolation in 65nm CMOS**
Seunghyun Jang, Sunwoo Kong, Hui-Dong Lee, Jeehoon Park, Kwang-Seon Kim, Kwang-Chun Lee, ETRI, Korea
- 839 **Linearity Measurements of Intrinsically Switchable BST FBAR Filters**
Milad Zolfagharloo Koohi, Suhyun Nam, Amir Mortazawi, University of Michigan, USA
- 843 **DPD Linearization Complexity Reduction of Remote Radio Heads in C-RAN with Radio Over Fiber Fronthaul**
Pedro Luis Carro, Carlos Mateo, Paloma García-Dúcar, Jesús de Mingo, Antonio Valdovinos, Universidad de Zaragoza, Spain
- 847 **450W Sequential Power Amplifier with 60% Efficiency at 10dB Back-Off Using Active Doherty-Type Load Modulation**
Florian Dietrich, Muh-Dey Wei, Renato Negra, RWTH Aachen University, Germany
- 851 **Spurious Mode Suppression in the Design of GCPW Submillimeter-Wave Power Amplifiers**
B. Amado-Rey¹, A. Tessmann², Y. Campos-Roca³, Hermann Maßler², Arnulf Leuther², Oliver Ambacher²
¹Albert-Ludwigs-Universität Freiburg, Germany; ²Fraunhofer IAF, Germany; ³Universidad de Extremadura, Spain
- 855 **Measurement of Shock Wave and Particle Velocities in Shocked Dielectric Material from Millimeter-Wave Remote Sensing**
B. Rougier¹, H. Aubert¹, A. Lefrançois²
¹LAAS, France; ²CEA-Gramat, France

- 859 **3D Printed Wideband Microwave Absorbers Using Composite Graphite/PLA Filament**
Kristian G. Kjølgaard, Dag T. Wisland, Tor S. Lande, University of Oslo, Norway
- 863 **An Enhanced Parameter Extraction of the WPT System Model Valid for Wide Operating Range**
Dae Kil Park, Kyung Heon Koo, Incheon National University, Korea
- 866 **Push-Pull Configuration of High Power MOSFETs for Generation of Nanosecond Pulses for Electroporation of Isolated Cancer Stem Cells**
I.W. Davies¹, C. Merla², M. Tanori², A. Zambotti², J. Bishop³, C. Palego¹, Christopher P. Hancock¹
¹Bangor University, UK; ²ENEA, Italy; ³Creo Medical, UK
- 870 **Analog Signal Processing: A Time-Domain Demonstration of Microwave Differentiation**
Jon M. Percz, Magdalena Chudzik, Ibai Calero, F. Teberio, Iván Arregui, Txema Lopetegui, Israel Arnedo, Miguel A.G. Laso, Universidad Pública de Navarra, Spain
- 874 **Liquid Conductivity Detection by Passive Secure UHF RFID Tag**
Chenwei Yang¹, Yonghui Tao², Tiange Lan¹, Hui Man¹
¹CETC 38, China; ²JIT, China
- 878 **FDTD-Based Numerical Estimation of Human Body Blockage Characteristics in 26GHz Band Indoor Propagation**
Masakazu Yamagishi¹, Takashi Hikage¹, Motoharu Sasaki², Mitsuki Nakamura², Yasushi Takatori²
¹Hokkaido University, Japan; ²NTT, Japan
- 882 **Small Footprint Evaluation of Metal Coatings for Additive Manufacturing**
Patrick Krkotić, Albert Aguasca, Juan M. O'Callaghan, Universitat Politècnica de Catalunya, Spain

886	A Flexible Measurement System for Dielectric Waveguide Characterization at mmW Frequencies <i>Felix Distler, Jan Schür, Martin Vossiek, FAU Erlangen-Nürnberg, Germany</i>
890	Efficient Excitation of a Toroidal Dipole Mode in All-Dielectric Quadrumer Clusters <i>Vladimir R. Tuz¹, Vyacheslav V. Khardikov¹, Su Xu¹, Wei Han¹, Yuri S. Kivshar²</i> <i>¹Jilin University, China; ²Australian National University, Australia</i>
894	Noise Figure Verification and Optimization of an Undersampled Software Defined Radio Based Radar Receiver for a Phased Array Radar System <i>Björn Staufenbiel, Olaf Lambert, Michael Krist, Fraunhofer FHR, Germany</i>
898	Diffraction by a Right-Angled Wedge Coated by DPS/DNG Metamaterial Layers: The Case of Plane Waves at Normal Incidence <i>Gianluca Gennarelli¹, Giovanni Riccio²</i> <i>¹CNR-IREA, Italy; ²Università di Salerno, Italy</i>
902	Analysis and Measurement of Passive Intermodulation in Coaxial Cavity Filter <i>Chunjiang Bai, Qi Wang, Jun Li, Wanzhao Cui, Yun He, CAST, China</i>
905	Bifurcation Analysis of Nonlinear, Parametric Interactions of Electromagnetic Waves with Graphene Nanostructures at Photonic Frequencies <i>G.S. Makeeva¹, O.A. Golovanov¹, A.B. Rinkevich²</i> <i>¹Penza State University, Russia; ²Russian Academy of Sciences, Russia</i>
909	Micro-Doppler Spectrogram Denoising Based on Generative Adversarial Network <i>Danyang Huang, Chunping Hou, Yang Yang, Yue Lang, Qing Wang, Tianjin University, China</i>
913	A Proposal of RF Front-End Architecture for 4 Frequency Bands with 2 Reception Paths <i>Hiroto Sakaki, Nobuhiko Ando, Kazutomi Mori, Kenichi Tajima, Mitsubishi Electric, Japan</i>

EuMC44: Microwaves for 5G and Space

Chair: Cesar Barquinero, Indra Sistemas, Spain

Co-Chair: Christoph Baer, Ruhr-Universität Bochum, Germany

Time 16:10–17:50, 26 Sept 2018, N105

- (NA) **Anticipate 5G and New-Space Measurement Challenges** (Industrial Session Keynote)
Jean-Pierre Teyssier, Keysight Technologies, USA
- 918 **Highly Compact GaN-Based All-Digital Transmitter Chain Including SPDT Switch for Massive MIMO**
Florian Hühn, *Andreas Wentzel*, *Wolfgang Heinrich*, FBH, Germany
- 922 **An FPGA-Based Measurement Generator for Cyclically Shifted Binary Signals**
Gordon Notzon, *Robert Storch*, *Thomas Musch*, *Michael Vogt*, Ruhr-Universität Bochum, Germany
- 926 **A High-Performance Ka-Band Cryo-Cooled Receiver for Deep Space Applications**
*A. Mediavilla*¹, *J.L. Cano*¹, *D. Vegas*¹, *E. Artal*¹, *A. Tazon*¹, *L.M. de la Fuente*¹,
*C. Chambon*², *B. Fauroux*², *R. Rayet*², *S. Rawson*², *S. Halté*³
¹Universidad de Cantabria, Spain; ²Callisto, France; ³ESA-ESOC, Germany
- 930 **A Ka-Band Transceiver for CubeSat Satellites: Feasibility Study and Prototype Development**
*A. Cuttin*¹, *F. Alimenti*², *F. Coromina*³, *E. De Fazio*¹, *F. Dogo*¹, *M. Fragiaco*¹,
*P. Gervasoni*⁴, *G. Gotti*¹, *A. Gregorio*¹, *P. Mezzanotte*², *E. Pagana*¹, *V. Palazzi*²,
*F. Pelusi*¹, *Paolo Petrini*⁵, *L. Roselli*², *R. Vincenti Gatti*²
¹PICOSATS, Italy; ²Università di Perugia, Italy; ³ESA-ESTEC, The Netherlands; ⁴Analog Devices, Italy; ⁵Politecnico di Torino, Italy

EuMC45 : Phased-Arrays and MIMO Systems

Chair: Wim van Cappellen, ASTRON, The Netherlands

Co-Chair: Daniel Segovia-Vargas, Universidad Carlos III de Madrid, Spain

Time 16:10–17:50, 26 Sept 2018, N106

- 934 **28GHz Downlink Multi-User MIMO Experimental Verification Using 360 Element Digital AAS for 5G Massive MIMO**
Noriaki Tawa, Toshihide Kuwabara, Yasushi Maruta, Masaaki Tanio, Tomoya Kaneko, NEC, Japan
- 938 **A Scalable Dual-Polarized 256-Element Ku-Band SATCOM Phased-Array Transmitter with 36.5dBW EIRP Per Polarization**
Abdurrahman H. Aljuhani, Tumay Kanar, Samet Zehir, Gabriel M. Rebeiz, University of California at San Diego, USA
- 942 **W-Band High-Efficiency Wideband Planar Array Antenna Based on MEMS Micromachining Technology**
Shi Sen Yao, Yu Jian Cheng, UESTC, China
- 946 **Beam-Steered Radiation from Amplifying Active Integrated Array Antenna**
Srinaga Nikhil N., Ke Wu, École Polytechnique de Montréal, Canada
- 950 **Low-Voltage Phase Shifters Based on $\text{Hf}_x\text{Zr}_{1-x}\text{O}_2$ Ferroelectrics Integrated with Phased Antenna Arrays**
M. Dragoman¹, M. Aldrigo¹, S. Iordanescu¹, M. Modreanu², I. Povey², D. Vasilache¹, A. Dinescu¹, C. Romanitan¹
¹IMT Bucharest, Romania; ²Tyndall National Institute, Ireland

EuMC46: Planar Filter Technology

Chair: Roberto Gomez-Garcia, Universidad de Alcalá, Spain

Co-Chair: Anthony Ghiotto, IMS (UMR 5218), France

Time 16:10–17:50, 26 Sept 2018, N107

- 954 **A Novel S-Band Bandpass Filter (BPF) with Extremely Broad Stopband**
*Photos Vryonides¹, Salman Arain¹, Abdul Quddious¹, Marco A. Antoniadis²,
Symeon Nikolaou¹*
¹Frederick University, Cyprus; ²University of Cyprus, Cyprus
- 958 **A Novel Half-Wavelength Coupled-Resonator Filter with Multiple Attenuation Poles**
Ayaka Shimizu, Toshio Ishizaki, Ryukoku University, Japan
- 962 **Small Size Dual-Band Bandpass Filters with Multiconductor Transmission Lines and Shunt Open Stubs**
*Mario Pérez-Escribano, Juan José Sánchez-Martínez, Enrique Márquez-Segura,
Universidad de Málaga, Spain*
- 966 **Design of Compact Quad-Band Bandpass Filter Using Stepped Impedance Resonators**
Yu-Chen Lu¹, Yung-Wei Chen², Yu-Chian Jiang¹, Hung-Wei Wu¹, Yan-Kuin Su¹
¹Kun Shan University, Taiwan; ²National Cheng Kung University, Taiwan
- (NA) **Design of a Novel Compact Microstrip Diplexer Using Dual-Mode Square Loop Resonators Having Narrow Slits Loaded Open-Circuited Stubs**
Ceyhun Karpuz¹, Ali Kursad Gorur², Alper Turkeli², Engin Dogan³, Adnan Gorur³
¹Pamukkale University, Turkey; ²Nevşehir University, Turkey; ³Niğde Ömer Halisdemir University, Turkey

EuMC47: RF and Millimeter-Wave Identification Techniques

Chair: Herve Aubert, LAAS, France

Co-Chair: Luciano Tarricone, Università del Salento, Italy

Time 16:10–17:50, 26 Sept 2018, N111

- 973 **An Enhanced Chipless RFID System in 60GHz Using Pattern Recognition Techniques**
Larry M. Arjomandi, Nemai C. Karmakar, Monash University, Australia
- 977 **A Fully-Textile Chipless Tag**
Laura Corchia, Giuseppina Monti, Luciano Tarricone, Università del Salento, Italy
- 981 **RFID Tag Coupled with a Magnetic Sensor for Wireless Sensing of Home Electrical Devices**
Rupesh Kumar¹, Ali Louzir², J.-Y. Le Naour²
¹XLIM (UMR 7252), France; ²Technicolor, France
- 985 **A Novel Design Strategy for Small On-Metal UHF-RFID Tags with Long Read Range Based on Complementary Split-Ring Resonator (CSRR)**
Ferran Paredes, Gerard Zamora, Tra M. Nguyen, Ferran Martín, Jordi Bonache, Universitat Autònoma de Barcelona, Spain
- 989 **Orientation Independent Printable Backscattering Chipless RFID Tags Based on L-Resonator**
Vijay Sharma, Sambhav Malhotra, Mohammad Hashmi, IIIT-Delhi, India

EuMC48: Integrated Signal Generation

Chair: Patrice Gamand, Consultingpg, France

Co-Chair: Ichihiko Toyoda, Saga University, Japan

Time 16:10–17:50, 26 Sept 2018, N116

- 993 **Phase Controlled 2.6–3.5GHz Fractional-N PLL IC**
Maurice van Wanum, Lex de Boer, Frank E. van Vliet, TNO, The Netherlands
- 997 **60GHz Tail-Node-Coupled Multi-Core Push-Push VCOs in 22nm FD SOI CMOS Technology**
J. Rimmelpacher¹, Robert Weigel¹, Amelie Hagelauer¹, Vadim Issakov²
¹FAU Erlangen-Nürnberg, Germany; ²Infineon Technologies, Germany
- 1001 **Design of a Low Power 24GHz VCO in 45nm RF-SOI CMOS**
Naglaa El Agroudy, Mohammed El-Shennawy, Niko Joram, Frank Ellinger, Technische Universität Dresden, Germany
- 1005 **Highly Efficient D-Band Fundamental Frequency Source Based on InP-DHBT Technology**
Maruf Hossain, Nils Weimann, Wolfgang Heinrich, Viktor Krozer, FBH, Germany
- 1009 **A 52-to-61GHz Push-Push VCO in 28nm CMOS**
Vadim Issakov¹, Fabio Padovan², J. Rimmelpacher¹, Robert Weigel³, Angelika Geiselbrechtner¹
¹Infineon Technologies, Germany; ²Infineon Technologies, Austria; ³FAU Erlangen-Nürnberg, Germany

EuMC49: Microwave Passive Components

Chair: Roberto Sorrentino, RF Microtech, Italy

Co-Chair: Benjamin Potelon, Université de Brest, France

Time 16:10–17:50, 26 Sept 2018, N117

- 1013 **Realization of Fully 3D Printed W-Band Bandpass Filters Using Aerosol Jet Printing Technology**
Michael Thomas Craton¹, Jakub Sorocki², Ilona Piekarz², Sławomir Gruszczynski², Krzysztof Wincza², John Papapolymerou¹
¹Michigan State University, USA; ²AGH UST, Poland
- 1017 **Towards Carbon Based Artificial Impedance Surfaces for Conformal Aerospace Applications**
A. Todd¹, T.C. Baum², K.J. Nicholson², R.W. Ziolkowski³, K. Ghorbani¹
¹RMIT University, Australia; ²DST Group, Australia; ³University of Technology Sydney, Australia
- 1021 **Signal-Interference-Based Structure with Negative Group Delay Properties**
Miguel A. Sánchez-Soriano¹, Javier Durá¹, Stefano Sirci², Stephan Marini¹
¹Universitat d'Alacant, Spain; ²Universitat Politècnica de València, Spain
- 1025 **A Continuous 2π Phase Shifter for Ka-Band Applications**
Hussam Al-Saedi¹, Suren Gigoyan², Wael M. Abdel-Wahab², Ardeshir Palizban², Safieddin Safavi-Naeini²
¹University of Technology, Iraq; ²University of Waterloo, Canada
- 1029 **Mitigation of Passive Intermodulation on Planar Microstrip Circuits with Distributed Current-Driven Nonlinearities**
Dmitry Kozlov¹, Senad Bulja¹, Ross Lundy¹, Pawel Rulikowski¹, James J. Walsh²
¹Nokia Bell Labs, Ireland; ²Dublin City University, Ireland

EuMC50: Advances in Millimeter-wave Packaging and Additive Manufacturing

Chair: Kamal Samanta, Sony Europe, UK

Co-Chair: Pierre Blondy, XLIM (UMR 7252), France

Time 08:30–10:10, 27 Sept 2018, N105

- 1033 **Bare Die Connections via Aerosol Jet Technology for Millimeter Wave Applications**
Franz Xaver Röhr¹, Johannes Jakob¹, Werner Bogner¹, Robert Weigel², Stefan Zorn¹
¹Technische Hochschule Deggendorf, Germany; ²FAU Erlangen-Nürnberg, Germany
- 1037 **Fully Inkjet-Printed Ramp Interconnects for Wireless Ka-Band MMIC Devices and Multi-Chip Module Packaging**
Bijan K. Tehrani, Manos M. Tentzeris, Georgia Tech, USA
- 1041 **Low-Loss Silicon Micromachined Waveguides Above 100GHz Utilising Multiple H-Plane Splits**
Bernhard Beuerle, James Campion, Umer Shah, Joachim Oberhammer, KTH, Sweden
- 1045 **A Rectangular Waveguide-to-Coplanar Waveguide Transition at D-Band Using Wideband Patch Antenna**
Yunfeng Dong, Tom K. Johansen, Vitaliy Zhurbenko, Peter Jesper Hanberg, Technical University of Denmark, Denmark
- 1049 **Low-Cost D-Band Waveguide Transition on LCP Substrate**
Ahmed Hassona, Álvaro Pérez-Ortega, Zhongxia Simon He, Herbert Zirath, Chalmers University of Technology, Sweden

EuMC51 : Measurement Techniques

Chair: Tuami Lasri, IEMN (UMR 8520), France

Co-Chair: Thomas Musch, Ruhr-Universität Bochum, Germany

Time 08:30–10:10, 27 Sept 2018, N107

- 1053 **Resolution Improvement Method for Non-Destructive Imaging with Near-Field Scanning Microwave Microscopy**
Tianjun Lin, Sijia Gu, Tuami Lasri, IEMN (UMR 8520), France
- 1057 **Demonstration of Improvement of Repeatability in Thru-Reflect-Line Calibration Using Precision Probing Technique**
Ryo Sakamaki, Masahiro Horibe, AIST, Japan
- 1061 **Accurate Millimeter-Wave Carrier Frequency Offset Measurement Using the Six-Port Interferometric Technique**
Mansoor Dashti Ardakani, Chaouki Hannachi, B. Zouggari, Emilia Moldovan, Serioja Ovidiu Tatu, INRS-EMT, Canada
- 1065 **Six-Port Based Multitone and Low-Power Radar System for Waveguide Measurements in Smart Factories**
Benedict Scheiner¹, Fabian Lurz¹, Fabian Michler¹, Sarah Linz¹, Robert Weigel¹, Alexander Koelpin²
¹FAU Erlangen-Nürnberg, Germany; ²Brandenburgische Technische Universität, Germany
- 1069 **Performance Analysis of E-Band Duplex Transceiver Based on Waveguide Diplexer Filters**
Seyyid M. Dilek¹, Ralf Henneberger², Ingmar Kallfass¹
¹Universität Stuttgart, Germany; ²Radiometer Physics, Germany

EuMC52: 5G Antennas

Chair: Ali Louzir, Technicolor, France

Co-Chair: Ioan Lager, Technische Universiteit Delft, The Netherlands

Time 08:30–10:10, 27 Sept 2018, N108

- 1073 **Antenna Module with New Wideband 5G-Antenna Array at 28GHz in Combination with GNSS- and 4G/WLAN/DSRC in Automotive Environment**
Sertan Hastürkoğlu, Stefan Lindenmeier, Universität der Bundeswehr München, Germany
- 1077 **5G Vehicle MIMO Antenna Capacity Based on a Rigorous Electromagnetic Channel Modeling**
Christian Ballesteros, Andreas Pfadler, Jordi Romeu, Lluís Jofre, Universitat Politècnica de Catalunya, Spain
- 1081 **Rod Waveguides as Future 5G Antennas for Mobile Devices**
Resti Montoya Moreno, Juha Ala-Laurinaho, Ville Viikari, Aalto University, Finland
- 1085 **A Wideband Dielectric Resonator Antenna with Truncated Ground for 5G Applications**
Ahmad Abdalrazik¹, Adel B. Abdelrahman², Ahmed Allam¹, Mohammed Abo-Zahhad³
¹E-JUST, Egypt; ²South Valley University, Egypt; ³Assiut University, Egypt

EuMC53: Advanced Technologies for Microwave Passive Components

Chair: Richard Snyder, RS Microwave, USA

Co-Chair: Ferran Martín, Universitat Autònoma de Barcelona, Spain

Time 08:30–10:10, 27 Sept 2018, N109 + N110

- (NA) **Compact Duplexer Design with High Isolation Based on Low-Temperature Cofired Ceramics (LTCC) Process for LTE Band 1**
Yang-Chih Huang, Po-Yuan Tsai, Tzong-Lin Wu, National Taiwan University, Taiwan
- 1093 **A Novel Type of Broadband Radial Stub**
Maciej Ćwikliński, Christian Friesicke, Friedbert van Raay, Hermann Maßler, Rüdiger Quay, Oliver Ambacher, Fraunhofer IAF, Germany
- 1097 **Experimental Comparison of Integrated Transformers in a 28nm Bulk CMOS Technology**
J. Rimmelspacher¹, S. Breun¹, A. Werthof², Angelika Geiselbrechtinger², Robert Weigel¹, Vadim Issakov²
¹FAU Erlangen-Nürnberg, Germany; ²Infineon Technologies, Germany
- 1101 **A Folded Edge-Coupled Transformer Balun in GaAs with Excellent Balance from 9 to 20GHz**
Sudipta Chakraborty¹, Leigh E. Milner², Anthony E. Parker¹, Michael C. Heimlich¹
¹Macquarie University, Australia; ²DST Group, Australia
- 1105 **Large-Scale Fabrication of RF MOSFETs on Liquid-Exfoliated MoS₂**
Kuanchen Xiong¹, Lei Li¹, Asher Madjar¹, James C.M. Hwang¹, Zhaoyang Lin², Yu Huang², Xiangfeng Duan², Alexander Göritz³, Matthias Wietstruck³, Mehmet Kaynak³
¹Lehigh University, USA; ²University of California at Los Angeles, USA; ³IHP, Germany

EuMC54: Antenna Technology

Chair: Mario Pauli, KIT, Germany

Co-Chair: Nutapong Somjit, University of Leeds, UK

Time 08:30–10:10, 27 Sept 2018, N117

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| 1109 | 120-GHz and 240-GHz Broadband Bow-Tie Antennas in eWLB Package for High Resolution Radar Applications
<i>Faisal Ahmed¹, Muhammad Furqan¹, Andreas Stelzer²</i>
<i>¹DICE, Austria; ²Johannes Kepler Universität Linz, Austria</i> |
| 1113 | On-Chip Millimeter Wave Surface Wave Launcher for Off-Chip Leaky Wave Antennas
<i>Jochen Schäfer, Heiko Gulan, Daniel Müller, Thomas Zwick, KIT, Germany</i> |
| 1117 | Mutual Coupling Reduction in UWB Modified Maltese Shaped DRA Array for MIMO Applications
<i>Kedar Trivedi, Dhaval Pujara, Nirma University, India</i> |
| 1121 | Noise Advantage Measurement of a Small Antenna, Actively Matched with a Non-Foster Form
<i>Fernando Albarracín-Vargas¹, V. González², Daniel Segovia-Vargas³</i>
<i>¹Universidad Nacional de Colombia, Colombia; ²Universidad Politécnica de Madrid, Spain; ³Universidad Carlos III de Madrid, Spain</i> |
| 1125 | A Compact Dual-Band MIMO Antenna with High Isolation for WLAN Applications
<i>Zixian Yang, Fang Li, Xiaowei Yang, Fazong Li, CAEP, China</i> |

EuMC55: Wireless IoT and Localization

Chair: Mehmet Karaaslan, Teledyne e2v, UK

Co-Chair: Sema Dumanli Oktar, Bogazici University, Turkey

Time 10:50–12:30, 27 Sept 2018, N107

- 1129 **2% EVM 920MHz 13dBm Constant Envelope $\pi/2$ Shift BPSK Modulation Transmitter for IoT**
Hideshi Motoyama, Sachio Iida, Ken Yamamoto, Noboru Sasho, Masahisa Tamura, Norihito Suzuki, Naoto Yoshikawa, Katsuyuki Tanaka, Hiroshi Aoki, Norio Shoji, Seiji Kobayashi, Sony Semiconductor Solutions, Japan
- 1133 **Hybrid RSSI-AoA Positioning System with Single Time-Modulated Array Receiver for LoRa IoT**
Kyung-Jin Baik, Sangjoon Lee, Byung-Jun Jang, Kookmin University, Korea
- 1137 **Enhanced GSM Broadcast Receiver Using the Phase Output of a Sub-GHz Transceiver**
Stefan Erhardt¹, Bernhard Gaede¹, Robert Weigel¹, Alexander Koelpin²
¹FAU Erlangen-Nürnberg, Germany; ²Brandenburgische Technische Universität, Germany
- 1141 **Performance Analysis of an Ultra Wideband Transceiver for Real-Time Localization**
Fabian Michler¹, Harun Deniz¹, Fabian Lurz¹, Robert Weigel¹, Alexander Koelpin²
¹FAU Erlangen-Nürnberg, Germany; ²Brandenburgische Technische Universität, Germany

EuMC56: Antennas for Space Applications

Chair: David Escot-Bocanegra, INTA, Spain

Co-Chair: Santiago Sobrino Arias, Thales Alenia Space, Spain

Time 10:50–12:30, 27 Sept 2018, N108

- (NA) **On Board Deep Space Steerable Antennas for Extremely Harsh Environments**
(Industrial Session Keynote)
Víctor Sánchez, Fernando Martín, Francisco J. Cano, SENER Ingeniería y Sistemas, Spain
- 1147 **Circularly Polarized Lens Antenna for Tbps Wireless Communications**
*Marta Arias Campo¹, Darwin Blanco¹, Giorgio Carluccio¹, Oliver Litschke²,
Simona Bruni², Nuria Llombart¹*
¹Technische Universiteit Delft, The Netherlands; ²IMST, Germany
- 1151 **Integrated Lens Antennas for E-Band**
*Sabin Kumar Karki, Juha Ala-Laurinaho, Aki Karttunen, Ville Viikari, Aalto University,
Finland*
- 1155 **A Compact Circularly-Polarized Lens-Horn Antenna with Very Low Axial Ratio and SLL**
*Fernando Rodríguez Varela, José Luis Besada Sanmartín, Belén Galocha-Iragüen,
Universidad Politécnica de Madrid, Spain*
- 1159 **Antenna Performances in Satellite Communications Small Ground Stations: New Patterns Representation for a Faster Evaluation**
Gianluca Dassano¹, Mario Orefice¹, Fulvio Fresia², Fritz Schurig³
¹Politecnico di Torino, Italy; ²F2SatConsulting, France; ³Eutelsat, France

EuMC57: Special Session: Additive Manufacturing

Chair: Petronilo Martín-Iglesias, ESA-ESTEC, The Netherlands

Co-Chair: Paul Booth, Airbus Defence & Space, UK

Time 10:50–12:30, 27 Sept 2018, N109 + N110

- (NA) **Additive Micro-Fabricated W-Band Resonators and Bandpass Filters**
N. Jquirim, N. Parou, F. David, C. Dalmay, Pierre Blondy, XLIM (UMR 7252), France
- (NA) **Additive Manufactured Filters for Satellite Payloads**
P. Booth, E. Vallés-Lluch, Airbus Defence & Space, UK
- (NA) **Study of Designing and Manufacturing of a Ku-Band Pyramidal Horn Antenna with Integrated Transition Using 3-D Printing Technology**
J. Haumant¹, D. Diedhiou¹, Alexandre Manchec¹, A. Martin-Guennou², Y. Quéré², Cédric Quendo², Rozenn Allanic²
¹Elliptika, France; ²Lab-STICC (UMR 6285), France
- (NA) **Low-Loss Metal Additive Manufactured Passive Waveguide Components**
T. Debogovic, E. Menargues, A. Dimitriadis, S. Capdevila, M. Billod, E. de Rijk, SWISSto12, Switzerland
- (NA) **Silver Metallization of 77GHz 3D Printed Horn Antennas**
Arnaud Jammes¹, Edouard des Gayets¹, Koen Staelens¹, Samuel Stremsdoerfer¹, Reinhard Feger², Thomas Lampersberger², Andreas Stelzer²
¹Jet Metal Technologies, France; ²Johannes Kepler Universität Linz, Austria

EuMC59: Modelling of Radiating Structures

Chair: Alessandro Galli, Università di Roma "La Sapienza", Italy

Co-Chair: Francisco Mesa, Universidad de Sevilla, Spain

Time 13:50–15:30, 27 Sept 2018, N109 + N110

- 1182 **Singular Edge and Corner Basis Functions for Scattering from Conducting Plates**
Roberto D. Graglia¹, Andrew F. Peterson², Paolo Petrini¹
¹Politecnico di Torino, Italy; ²Georgia Tech, USA
- 1186 **Electromagnetic Finite Element Solver for HPC Environments Using Direct Substructuring Method**
Daniel Garcia-Donoro¹, Wujie Mei¹, A. Amor-Martin², Luis Emilio García-Castillo²
¹Xidian University, China; ²Universidad Carlos III de Madrid, Spain
- 1190 **Near-Field to Far-Field Propagation of Correlation Information for Noisy Electromagnetic Fields**
Michael Haider¹, Andrey Baev², Yury Kuznetsov², Johannes A. Russer¹
¹Technische Universität München, Germany; ²Moscow Aviation Institute, Russia
- 1194 **Two-Dimensional Non-Periodic Metasurface for Dual Polarization Retroreflection**
Cheng Tao, Xiaoqiang Li, Tatsuo Itoh, University of California at Los Angeles, USA
- 1198 **Through-the-Multilayered Wall Imaging Using Passive Synthetic Aperture Radar**
Hajar Abedi, Bijan Zakeri, Babol Noshirvani University of Technology, Iran

EuMC/EuMIC01 : III-V Low Noise Amplifiers

Chair: Luisa de la Fuente, Universidad de Cantabria, Spain

Co-Chair: Julien Lintignat, XLIM (UMR 7252), France

Time 08:30–10:10, 25 Sept 2018, N111

- 1202 **An X-Band Robust GaN Low-Noise Amplifier MMIC with Sub 2dB Noise Figure**
Oguz Kazan¹, Fatih Kocer², Ozlem Aydin Civi¹
¹Middle East Technical University, Turkey; ²Analog Devices, USA
- 1205 **Robust X-Band GaN LNA with Integrated Active Limiter**
Çağdaş Yağbasan, Ahmet Aktuğ, Aselsan, Turkey
- 1209 **An Ultra-Broadband Low-Noise Distributed Amplifier in InP DHBT Technology**
*T. Shivan¹, Maruf Hossain¹, D. Stoppel¹, Nils Weimann², S. Schulz¹, R. Doerner¹,
Viktor Krozer¹, Wolfgang Heinrich¹*
¹FBH, Germany; ²Universität Duisburg-Essen, Germany
- 1213 **Compensation of Performance Degradation Due to Thermal Effects in GaN LNA Using Dynamic Bias**
Johan Bremer, Lowisa Hanning, Niklas Rorsman, Mattias Thorsell, Chalmers University of Technology, Sweden
- 1217 **X-Band Low Noise Figure T/R Switch-Module Using a Superconducting T/R Switch**
*Hiroaki Ikeuchi, Tamio Kawaguchi, Noritsugu Shiokawa, Yuichi Sawahara,
Hiroyuki Kayano, Toshiba, Japan*

EuMC/EuMIC02 : Doherty Power Amplifiers

Chair: Nathalie Delteil, IMS (UMR 5218), France

Co-Chair: Denis Barataud, XLIM (UMR 7252), France

Time 13:50–15:30, 25 Sept 2018, N105

- 1221 **Fully Integrated Asymmetric Doherty Amplifier Based on Two-Power-Level Impedance Optimization**
Ryo Ishikawa, Yoichiro Takayama, Kazuhiko Honjo, University of Electro-Communications, Japan
- 1225 **1-Package 500W High Efficiency LDMOS Doherty Power Amplifier**
Jean-christophe Nanan, Yuanyuan Dong, Sandra De Meyer, Damien Scatamacchia, NXP Semiconductors, France
- 1229 **A 50W Highly Linear 3-Way Integrated Wideband Doherty PA for Small-Cell Application**
Hao Zhang¹, Sandra De Meyer¹, Claude Duvanaud², Smail Bachir²
¹NXP Semiconductors, France; ²XLIM (UMR 7252), France
- 1233 **High-Power Asymmetrical Three-Way GaN Doherty Power Amplifier at C-Band Frequencies**
Edon Derguti, Erdin Ture, Sebastian Krause, D. Schwantuschke, Rüdiger Quay, Oliver Ambacher, Fraunhofer IAF, Germany
- 1237 **Comparison of S-Band Analog and Dual-Input Digital Doherty Power Amplifiers**
Anna Piacibello¹, Marco Pirola¹, Vittorio Camarchia¹, Chiara Ramella¹, Roberto Quaglia², Xinyu Zhou³, Wing-Shing Chan³
¹Politecnico di Torino, Italy; ²Cardiff University, UK; ³CityU, China

EuMC/EuMIC03 : Si-Based Amplifiers

Chair: Vadim Issakov, Infineon Technologies, Germany

Co-Chair: Beatriz Aja, Universidad de Cantabria, Spain

Time 13:50–15:30, 25 Sept 2018, N111

- 1241 **Three-Path SiGe BiCMOS LNA on Thinned Silicon Substrate for IoT Applications**
Sefa Özbek, Markus Grözing, Golzar Alavi, Joachim N. Burghartz, Manfred Berroth, Universität Stuttgart, Germany
- 1245 **An E-Band Variable Gain Low Noise Amplifier in 90-nm CMOS Process Using Body-Floating and Noise Reduction Techniques**
Yunshan Wang, Chun-Nien Chen, Yi-Ching Wu, Huei Wang, National Taiwan University, Taiwan
- 1249 **Variable Gain Distributed Amplifier with Capacitive Division**
Christian v. Vangerow¹, Daniel Stracke¹, Dietmar Kissinger², Thomas Zwick¹
¹KIT, Germany; ²IHP, Germany
- 1253 **A S-Band 3D Surface Mount Packaged SiGe and GaN Tx Module Using Flip-Chip Bonding and a Device Embedded PCB Substrate**
Kengo Kawasaki, Eigo Kuwata, Hidenori Ishibashi, Tomohiro Yao, Kiyoshi Ishida, Kazuhiro Maeda, Hironobu Shibata, Masaomi Tsuru, Kazutomi Mori, Mitsuhiro Shimosawa, Hiroshi Fukumoto, Mitsubishi Electric, Japan
- 1257 **Mixed Technologies Packaged High Power Front-End for Broadband 28GHz 5G Solutions**
Mohammed Ayad, A.M. Couturier, Pascal Poilvert, Laurent Marechal, Philippe Auxemery, United Monolithic Semiconductors, France

EuMC/EuMIC04 : EuMC/EuMIC Interactive Session

Chair: Jose A. Garcia, Universidad de Cantabria, Spain

Co-Chair: Luisa de la Fuente, Universidad de Cantabria, Spain

Time 13:30–15:30, 25 Sept 2018, Exhibition Hall

- 1261 **Non-Linear Distortion in Ultra Wideband GaN Power Amplifiers**
*Emilio Delgado-Pascual¹, Eduardo Oreja-Gigorro¹, Juan José Sánchez-Martínez¹,
María Luz Gil-Heras¹, Virginia Bueno-Fernández¹, Antonio Bódalo-Márquez¹,
Jesús Grajal²*
¹Indra Sistemas, Spain; ²Universidad Politécnica de Madrid, Spain
- 1265 **Characterization of Bond Wire Interconnects in QFN Packages**
Qun Xiao, MACOM, USA
- 1269 **Rapid Design of Compact Impedance Matching Transformers for Energy Harvesting Applications by Means of Inverse and Forward Surrogates**
Slawomir Koziel¹, Adrian Bekasiewicz²
¹Reykjavik University, Iceland; ²Gdansk University of Technology, Poland
- 1273 **Optimization of PCB Transitions for Vertical Solderless Coaxial Connectors up to 67GHz**
Paul Stärke, David Fritsche, Corrado Carta, Frank Ellinger, Technische Universität Dresden, Germany
- 1277 **A Three-Layer Resist Process for T- and I-Gates in High Electron Mobility Transistor Fabrication**
*S. Riedmüller¹, J.-C. Jacquet², M. Madel¹, C. Chang³, G. Callet³, S. Piotrowicz²,
S. Delage², J. Grünenpütt¹, H. Blanck¹, F. Scholz⁴*
¹United Monolithic Semiconductors, Germany; ²III-V Lab, France; ³United Monolithic Semiconductors, France; ⁴Universität Ulm, Germany

1281	GaAs Balanced Amplifier for Ka-Band Space Communications System <i>L. Pantoli¹, A. Barigelli², G. Leuzzi¹, F. Vitulli², Andrea Suriani²</i> <i>¹Università dell'Aquila, Italy; ²Thales Alenia Space, Italy</i>
1285	Ka-Band P-I-N Diode Based Digital Phase Shifter <i>Daniel Kramer, MACOM, USA</i>
1289	An E-Band Variable-Gain Amplifier Using a Programmable Attenuator <i>Kimia T. Ansari, Tyler N. Ross, Morris Repeta, Huawei Technologies, Canada</i>
1293	4-18GHz AlGaIn/GaN Based Distributed Power Amplifier MMIC <i>B. Bunz, H. Sledzik, Patrick Schuh, Martin Oppermann, HENSOLDT Sensors, Germany</i>
1297	On Stability Analysis and Loop Oscillation of Multi-Finger GaN FET Cells for High Power Amplifiers <i>Ammar Issaoun, Petra Hammes, Martin Fagerlind, Francis Chai, Thomas Roedle, Ampleon, The Netherlands</i>
1301	Characterization and Electrical Modeling Including Trapping Effects of AlN/GaN HEMT 4×50μm on Silicon Substrate <i>Mohamed Bouslama¹, Ahmad Al Hajjar¹, Raphael Sommet¹, Farid Medjdoub², Jean-Christophe Nallatamby¹</i> <i>¹XLIM (UMR 7252), France; ²IEMN (UMR 8520), France</i>
1305	A 28-GHz CMOS 2×4 Phased Array Chip with High-Precision Phase-Adjusting Function Between Subarrays for Beam Multiplexing <i>Toshihiro Shimura, Takenori Ohshima, Shohei Ishikawa, Shunsuke Fujio, Kazuyuki Ozaki, Hikaru Ishikawa, Kenichi Nishikawa, Masahiko Shimizu, Yoji Ohashi, Fujitsu Laboratories, Japan</i>

- 1309 **A Class E Digital Transmitter for 16-APSK**
Gavin T. Watkins, Toshiba Research Europe, UK
- 1313 **X Band GaN Based MMIC Power Amplifier with 36.5dBm P_{1-dB} for Space Applications**
Armagan Gurdal, Burak Alptug Yilmaz, Omer Cengiz, Ozlem Sen, Ekmel Ozbay, Bilkent University, Turkey
- 1317 **A W-Band Frequency Tripler with Integrated Waveguide Filter Matching**
Cheng Guo¹, Jeff Powell¹, Xiaobang Shang², Michael J. Lancaster¹, Jun Xu³, Colin Viegas⁴
¹University of Birmingham, UK; ²NPL, UK; ³UESTC, China; ⁴STFC RAL, UK
- 1321 **Electrothermal X-Parameters for Dynamic Modeling of RF and Microwave Power Transistors**
Sean J. Gillespie¹, David E. Root¹, Mihai Marcu², Peter H. Aaen¹
¹University of Surrey, UK; ²Keysight Technologies, USA
- 1325 **A Ku-Band Injection-Locked Push-Push Oscillator Using Two-Wavelength Ring Resonator**
Elton N. Lima, Takayuki Tanaka, Ichihiko Toyoda, Saga University, Japan
- 1329 **Millimeter-Wave Detection on Basis of Graphene Photo-Thermoelectric Effect**
Yukang Feng¹, Matthew DeJarld², Robert M. Weikle II¹, Linli Xie¹, Paul M. Campbell², Rachael L. Myers-Ward², D. Kurt Gaskill², N. Scott Barker¹
¹University of Virginia, USA; ²U.S. Naval Research Laboratory, USA
- 1333 **Frequency Multipliers Based on Hybrid Technology with High Harmonic Suppression**
Álvaro Díez López, Amparo Herrera Guardado, Juan Carlos Pérez Ambrojo, Universidad de Cantabria, Spain

- 1337 **New Compact Antenna Diversity with a Fully Integrated Microwave Circuit for Automotive Satellite Radio Reception**
Simon Senega¹, Jürgen Röber², A. Nassar¹, Robert Weigel², Christian Heuer³, Stefan Lindenmeier¹
¹Universität der Bundeswehr München, Germany; ²FAU Erlangen-Nürnberg, Germany; ³Fuba Automotive Electronics, Germany
- 1341 **A Hybrid Bipolar Wideband VCO with Linearized Tuning Behaviour for a New Generation TTC Transponder**
Jaime Casanueva Pérez¹, Amparo Herrera Guardado¹, Javier Cabo Freixedas², Juan Carlos Pérez Ambrojo²
¹Universidad de Cantabria, Spain; ²Thales Alenia Space, Spain
- 1345 **Characterization of Flex to Printed Circuit Board Interconnections Using Insertion Connectors**
Ch. Person¹, Duc Nguyen¹, J.Ph. Coupez¹, Ph. Minard², D. Lo Hine Tong², P. Borel³, D. Izoard³
¹Lab-STICC (UMR 6285), France; ²Technicolor, France; ³CTP, France

EuMC/EuRAD01 : THz Electronics

Chair: Jan Stake, Chalmers University of Technology, Sweden

Co-Chair: William Deal, Northrop Grumman, USA

Time 10:50–12:30, 26 Sept 2018, N110

- 1349 **A W-Band Spatial Power-Combining Amplifier Using GaN MMICs**
Lorene A. Samoska, Mark Taylor, Jose Velazco, Andy Fung, Robert Lin, Alejandro Peralta, Rohit Gawande, Jet Propulsion Laboratory, USA
- 1353 **A Compact Room-Temperature 510–560GHz Frequency Tripler with 30-mW Output Power**
Jose V. Siles, Ken B. Cooper, Choonsup Lee, Robert Lin, Goutam Chattopadhyay, Imran Mehdi, Jet Propulsion Laboratory, USA
- 1357 **High Power High Efficiency 270–320GHz Source Based on Discrete Schottky Diodes**
Diego Moro-Melgar, Oleg Cojocari, Ion Oprea, ACST, Germany
- 1361 **An Integrated Coherent Startup 79-GHz Pulse Oscillator for a Sequential Sampling Pulse Radar**
A. Leibetseder¹, C. Wagner¹, Andreas Stelzer²
¹DICE, Austria; ²Johannes Kepler Universität Linz, Austria
- 1365 **High-Spurious-Harmonic-Rejection 32–53GHz and 50–106GHz Frequency Doublers Using Digital Logic and DC Negative Feedback**
Seong-Kyun Kim¹, Arda Simsek², Miguel Urteaga¹, Mark J.W. Rodwell²
¹Teledyne Scientific & Imaging, USA; ²University of California at Santa Barbara, USA

EuMC/EuRAD02 : Radar Antennas

Chair: Carlos Montesano, Airbus DS Space, Spain

Co-Chair: Santiago Sobrino Arias, Thales Alenia Space, Spain

Time 13:50–15:30, 26 Sept 2018, N108

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| 1369 | A Compact Simultaneous K/S-Band Monopulse Tracking Feed for Future Earth Observation Applications
<i>César Barquintero¹, Julián I. Gómez¹, A. Mediavilla², José Luis Besada³, Belén Galocha-Iragüen³</i>
<i>¹Indra Sistemas, Spain; ²Universidad de Cantabria, Spain; ³Universidad Politécnica de Madrid, Spain</i> |
| 1373 | Near-Field Beam Focusing and Steering Generator Based on 3D Curved Substrate Integrated Waveguide
<i>Ya Fei Wu, Yu Jian Cheng, UESTC, China</i> |
| 1377 | Enhancing Angle Estimation for Off-Boresight Targets Using Biomimetic Antenna Arrays
<i>Patrik Grüner, Son Nguyen, Tobias Chaloun, Christian Waldschmidt, Universität Ulm, Germany</i> |
| 1381 | On the Use of Dielectric Honeycomb as Microwave Substrate for 3D Long Range Radar Antennas
<i>G. Posada, Julián I. Gómez, C. Zarzuelo, Indra Sistemas, Spain</i> |
| 1385 | An On-Board Differential Patch Array for 79GHz Single-Channel Radar Applications
<i>Wael A. Ahmad, Dietmar Kissinger, Herman Jalli Ng, IHP, Germany</i> |

EuMC/EuRAD03 : THz Communications

Chair: Marion K. Matters-Kammerer, Technische Universiteit Eindhoven, The Netherlands

Co-Chair: Manuel Sierra Castañer, Universidad Politécnica de Madrid, Spain

Time 13:50–15:30, 26 Sept 2018, N110

- 1389 **Towards 100Gbps: A Fully Electronic 90Gbps One Meter Wireless Link at 230GHz**
*Pedro Rodríguez-Vázquez¹, J. Grzyb¹, Neelanjan Sarmah¹, Bernd Heinemann²,
Ullrich R. Pfeiffer¹*
¹Bergische Universität Wuppertal, Germany; ²IHP, Germany
- 1393 **An Analog-Only Small Cell Unit with Millimeter-Wave Wireless Backhaul for Mobile Communication**
*Simone Maier¹, Heinz Schlesinger¹, Günter Kaltbeitzel¹, Stefan Merk¹, Stefan Woerner¹,
Thierry E. Klein², Wolfgang Templ¹*
¹Nokia Bell Labs, Germany; ²Nokia Bell Labs, USA
- 1397 **Performance Evaluation of a 220–260GHz LO Tunable BPSK/QPSK Wireless Link in SiGe HBT Technology**
*J. Grzyb¹, P. Rodriguez Vazquez¹, Neelanjan Sarmah¹, Bernd Heinemann²,
Ullrich R. Pfeiffer¹*
¹Bergische Universität Wuppertal, Germany; ²IHP, Germany
- 1401 **Analog Carrier Recovery for Broadband Wireless Communication Links**
Parisa Harati¹, Aleks Dyskin², Ingmar Kallfass¹
¹Universität Stuttgart, Germany; ²Technion, Israel
- 1405 **15Gbps Wireless Link Using W-Band Resonant Tunnelling Diode Transmitter**
*Jue Wang¹, Abdullah Al-Khalidi¹, Razvan Morariu¹, Afesomhe Ofiare¹, Liquan Wang²,
Edward Wasige¹*
¹University of Glasgow, UK; ²SAST, China

EuMC/EuRAD04 : Emerging Antenna Fabrication Technologies

Chair: Jean-Yves Dauvignac, Université Côte d'Azur, France

Co-Chair: Ville Viikari, Aalto University, Finland

Time 16:10–17:50, 26 Sept 2018, N108

- 1409 **3D Printed Slotted Waveguide Array Antenna for Automotive Radar Applications in W-Band**
K. Lomakin¹, D. Simon², M. Sippel¹, K. Helmreich¹, E. Seler², Z. Tong², R. Reuter², G. Gold¹
¹FAU Erlangen-Nürnberg, Germany; ²NXP Semiconductors, Germany
- 1413 **A 24-GHz Radar with 3D-Printed and Metallized Lightweight Antennas for UAV Applications**
Thomas Lampersberger¹, Reinhard Feger¹, Andreas Haderer², Christian Egger¹, Martin Friedl¹, Andreas Stelzer¹
¹Johannes Kepler Universität Linz, Austria; ²INRAS, Austria
- 1417 **Additive Manufactured Antenna in Mixed Material Technology for 24GHz FMCW Miniaturized Radar**
Cristina Yepes¹, Erio Gandini¹, Raymond van Dijk¹, Fabien Bruning², Hessel Maalderink², Stefania Monni¹, Frank E. van Vliet¹
¹TNO, The Netherlands; ²AMSYSTEMS Center, The Netherlands
- 1421 **A New Waveguide Slot Array Antenna with High Isolation and High Antenna Bandwidth Operation on Ku- and K- Bands for Radar and MIMO Systems**
Mohammad Alibakhshikenari¹, Bal Singh Virdee², Chan H. See³, Raed Abd-Alhameed⁴, Francisco Falcone⁵, Ernesto Limiti¹
¹Università di Roma "Tor Vergata", Italy; ²London Metropolitan University, UK;
³University of Bolton, UK; ⁴University of Bradford, UK; ⁵Universidad Pública de Navarra, Spain

Study on Antenna Mutual Coupling Suppression Using Integrated Metasurface Isolator for SAR and MIMO Applications

Mohammad Alibakhshikenari¹, Bal Singh Virdee², Chan H. See³, Raed Abd-Alhameed⁴, Francisco Falcone⁵, Aurora Andújar⁶, Jaume Anguera⁶, Ernesto Limiti¹

¹Università di Roma "Tor Vergata", Italy; ²London Metropolitan University, UK;

³University of Bolton, UK; ⁴University of Bradford, UK; ⁵Universidad Pública de Navarra, Spain; ⁶Fractus Antennas, Spain

EuMC/EuRAD05 : THz Radar

Chair: Maria Pilar Jarabo-Amores, Universidad de Alcalá, Spain

Co-Chair: Nils Pohl, Ruhr-Universität Bochum, Germany

Time 16:10–17:50, 26 Sept 2018, N110

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| 1429 | Long Range-Doppler Demonstration of a 95GHz FMCW Radar
<i>Raquel R. Monje, Ken B. Cooper, Robert J. Dengler, Corey J. Cochrane, Stephen L. Durden, Adrian Tang, Mathieu Choukroun, Jet Propulsion Laboratory, USA</i> |
| 1433 | Size Determination in Particle Streams Using a Multistatic Dual Frequency Millimeter Wave Radar
<i>Alwin Reinhardt, Alexander Teplyuk, Reinhard Knöchel, Michael Höft, Christian-Albrechts-Universität zu Kiel, Germany</i> |
| 1437 | Differential Absorption Radar at 170GHz for Atmospheric Boundary Layer Water Vapor Profiling
<i>Richard J. Roy, Ken B. Cooper, Matthew Lebsock, Luis Millán, Jose V. Siles, Raquel R. Monje, Jet Propulsion Laboratory, USA</i> |
| 1441 | CM-CFAR Parameter Learning Based Square-Law Detector for Foreign Object Debris Radar
<i>Kudret Akçapınar, Süleyman Baykut, TÜBİTAK BİLGEM, Turkey</i> |
| 1445 | Signal Reduction by Tree Leaves in Low-THz Automotive Radar
<i>Shahrzad Sabery, Fatemeh Norouzian, Peter Gardner, Edward Hoare, Mikhail Cherniakov, Marina Gashinova, University of Birmingham, UK</i> |

EuMC/EuRAD06 : Array Technology and Characterization

Chair: Claire Migliaccio, Université Côte d'Azur, France

Co-Chair: Arne F. Jacob, Technische Universität Hamburg-Harburg, Germany

Time 10:50–12:30, 27 Sept 2018, N117

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| (NA) | Spaceborne Radiometers and Active Antennas for Space Applications (Industrial Session Keynote)
<i>Antonio Montesano, Airbus Defence & Space, Spain</i> |
| 1449 | Differential Multi-Layer Compact Grid Antenna Array for 79GHz Automotive Radar Applications
<i>M. Mosalanejad¹, I. Ocket¹, C. Soens², Guy A.E. Vandenbosch¹</i>
<i>¹imec, Belgium; ²Katholieke Universiteit Leuven, Belgium</i> |
| 1453 | A Full-Array-Grid-Compatible Wideband Tx/Rx Multipack Using Multifunctional Chips on GaN and SiGe
<i>Ralf Rieger, Andreas Klaaßen, Patrick Schuh, Martin Oppermann, HENSOLDT Sensors, Germany</i> |
| 1457 | Diagnostics of the Phased Array for E-Band Using Holography Data
<i>Mikko K. Leino, Md. Mazidul Islam, Juha Ala-Laurinaho, Ville Viikari, Aalto University, Finland</i> |
| 1461 | A Zero-IF Auto-Calibration System for Phased Array Antennas
<i>Mehdi Salehi, Safieddin Safavi-Naeini, University of Waterloo, Canada</i> |

EuMC/EuRAD07 : EuMC/EuRAD Interactive Session

Chair: Manuel Sierra Castañer, Universidad Politécnica de Madrid, Spain

Co-Chair: Daniel Segovia-Vargas, Universidad Carlos III de Madrid, Spain

Time 12:30–13:50, 27 Sept 2018, Exhibition Hall

- 1465 **Implementing Wideband Monopole/Dipole Antennas on Paper Substrates**
Ch. Person¹, Duc Nguyen¹, J.Ph. Coupez¹, Ph. Minard², D. Lo Hine Tong², P. Borel³, D. Izoard³
¹Lab-STICC (UMR 6285), France; ²Technicolor, France; ³CTP, France
- 1469 **Frequency Doubler Based Outphasing System for Millimeter Wave Vector Signal Generation**
Arthur Chung¹, Marwen Ben Rejeb¹, Ali Darwish², H. Alfred Hung², Slim Boumaiza¹
¹University of Waterloo, Canada; ²U.S. Army Research Laboratory, USA
- 1473 **A 2D Method for Acquiring the Radiation Pattern of Two-Identical Vivaldi Antennas by Using a Stepped-Frequency Continue Wave (SFCW) Radar and a Rotation Stage**
J.L. Solano, V. Ortega, R.S. Silla, W. Schröder, L. Schüssele, Hochschule Offenburg, Germany
- 1477 **Dipole Antenna Printed on Paper Substrate for WLAN Applications**
D. Lo Hine Tong¹, Ph. Minard¹, Ch. Person², J.Ph. Coupez², P. Borel³, D. Izoard³
¹Technicolor, France; ²Lab-STICC (UMR 6285), France; ³CTP, France
- 1481 **EBG Enhanced Broadband Dual Antenna Configuration for Passive Self-Interference Suppression in Full-Duplex Communications**
Prafulla Deo¹, Dariush Mirshekar-Syahkal¹, Gan Zheng²
¹University of Essex, UK; ²Loughborough University, UK
- 1485 **A Real-Time Non-Destructive Water Status Monitoring System at Terahertz Band**
C. Quemada, J.C. Iriarte, D. Marín, C. Miranda, R. Gonzalo, L.G. Santesteban, I. Ederra, Universidad Pública de Navarra, Spain

- 1489 **W-Band Millimeter-Wave On-Chip Log-Periodic Dipole Antenna with Integrated Balun Filter in GIPD Process**
H.-C. Wang, C.-C. Chou, H.-R. Chuang, National Cheng Kung University, Taiwan
- 1493 **Design of a Dual-Band Feed System for S/X-Band VLBI Observations**
Moon-Hee Chung, KASI, Korea
- 1497 **Low-Loss Loaded Line Phase Shifter for Radar Application in X Band**
Xiaoliang Sun, José-Manuel Fernández-González, Manuel Sierra-Pérez, Belén Galocha-Iragüen, Universidad Politécnica de Madrid, Spain
- 1501 **Mode Conversion Processes in Multilayer Spherical Resonators**
Ingo Wolff, IMST, Germany
- 1505 **A Stand Alone Millimetre Wave Imaging Scanner: System Design and Image Analysis Setup**
Andries Küter, Christopher Schwäbig, Christian Krebs, Ralf Brauns, Stefan Kose, Dirk Nüßler, Fraunhofer FHR, Germany
- 1509 **Dispersion of THz Modes Localized on Layered Superconductor Controlled by DC Magnetic Field**
T. Rokhmanova¹, S.S. Apostolov¹, N. Kvitka², V.A. Yampol'skii¹
¹NASU, Ukraine; ²V.N. Karazin Kharkiv National University, Ukraine
- 1513 **E-Band Impulse Radio Transceiver with 2-Bit Pulse-Position Modulation**
Hiroshi Matsumura, Ikuo Soga, Shoichi Shiba, Kazuaki Oishi, Yoichi Kawano, Yasuhiro Nakasha, Toshihide Suzuki, Fujitsu Laboratories, Japan
- 1517 **A DC to 40GHz, High Linearity Monolithic GaAs Distributed Amplifier with Low DC Power Consumption as a High Bit-Rate Pre-Driver**
Laura Diego¹, Benoît Haentjens¹, Charles A. Mjema¹, Iban Barrutia², Amparo Herrera², Yan Haentjens¹
¹Vectrawave, France; ²Universidad de Cantabria, Spain

1521	Design of Broadband Gap Waveguide Transitions for Millimeter-Wave Antenna Arrays <i>Miguel Ferrando-Rocher, Daniel Sánchez-Escuderos, Jose I. Herranz-Herruzo, Alejandro Valero-Nogueira, Universitat Politècnica de València, Spain</i>
1525	A Circularly Polarized Circular Antenna Array for Satellite TV Reception <i>Ahmed Alieldin, Yi Huang, Manoj Stanley, Sumin Joseph, University of Liverpool, UK</i>
1529	Design and Demonstration of Linearly-Polarized Transmit-Arrays in X-Band <i>Hamza Kaouach¹, Mohamed Ali Belaid²</i> <i>¹LAPLACE (UMR 5213), France; ²University of Sousse, Tunisia</i>
1533	Distributed Signal Processing of High-Resolution FMCW MIMO Radar for Automotive Applications <i>Farhan B. Khalid, Dian Tresna Nugraha, André Roger, Romain Ygnace, Markus Bichl, Infineon Technologies, Germany</i>
1537	Real-Time Synthetic Aperture Radar for Automotive Embedded Systems <i>Florian Fembacher, Farhan B. Khalid, Gabor Balazs, Dian Tresna Nugraha, André Roger, Infineon Technologies, Germany</i>
1541	Dual-Channel Single Sideband Transmitter in 45nm CMOS SOI for a 70GHz OFDM Radar <i>Daniel Schindler¹, Michael Thiel¹, Mohamed Elkhoully¹, Yikun Yu¹, Benedikt Schweizer², Jürgen Hasch¹, Christian Waldschmidt²</i> <i>¹Robert Bosch, Germany; ²Universität Ulm, Germany</i>

EuMC/EuRAD08: Innovative Signal Processing in Array Technology

Chair: Ioan Lager, Technische Universiteit Delft, The Netherlands

Co-Chair: Wnuk Marian, Military University of Technology, Switzerland

Time 13:50–15:30, 27 Sept 2018, N108

- 1545 **Efficient Shaped-Beam Reflectarray Design Using Machine Learning Techniques**
Daniel R. Prado¹, Jesús A. López-Fernández², Manuel Arrebola², George Goussetis¹
¹Heriot-Watt University, UK; ²Universidad de Oviedo, Spain
- 1549 **Interpolation of Missing Antenna Measurements or RCS Data Using the Matrix Pencil Method**
Nicolas F. Reginelli¹, Tapan K. Sarkar¹, Magdalena Salazar-Palma²
¹Syracuse University, USA; ²Universidad Carlos III de Madrid, Spain
- 1553 **Quality Analysis of Antenna Reflection Coefficient in Massive MIMO Antenna Array Module**
Marko E. Leinonen, Nuutti Tervo, Marko Sonkki, Aarno Pärssinen, University of Oulu, Finland
- 1557 **Characteristics of Circularly Polarized Multimode Helical Beams**
Giulio Richichi, Gary Junkin, Universitat Autònoma de Barcelona, Spain
- 1561 **Parallel Fed Patch Array for Microwave-Based Vital Sign Monitoring of Elderly People**
Sassan Schäfer, Andreas R. Diewald, Daniel Schmiech, Simon Müller, Hochschule Trier, Germany

EuMC/EuRAD09: Array Beamforming Techniques

Chair: Jozef Modelski, Warsaw University of Technology, Poland

Co-Chair: Patrik Grüner, Universität Ulm, Germany

Time 13:50–15:30, 27 Sept 2018, N117

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| 1565 | Accurate PPCC-Based DoA Estimation Using Multiple Calibration Planes for WSN Nodes Equipped with ESPAR Antennas
<i>Mateusz Groth, L. Kulas, Gdansk University of Technology, Poland</i> |
| 1569 | A New Super-Resolution Technique for Direction (and Time) of Arrival Detection
<i>Abbas Omar, OvG Universität Magdeburg, Germany</i> |
| 1573 | Analog Beamforming Based on Fourier Rotman Lens for Multibeam Applications
<i>Pavel Turalchuk¹, Irina Munina¹, Alexey Shitvov²</i>
<i>¹St. Petersburg Electrotechnical University, Russia; ²Cardiff University, UK</i> |
| 1577 | Initial Design of Phase-Frequency Scanned Array Using CRLH Leaky-Wave Antennas
<i>Qingshan Yang¹, Xiaowen Zhao¹, Yunhua Zhang²</i>
<i>¹Chinese Academy of Sciences, China; ²UCAS, China</i> |
| 1581 | Experimental Demonstration of a Software-Defined-Radio Adaptive Beamformer
<i>Daniel Gaydos, Payam Nayeri, Randy Haupt, Colorado School of Mines, USA</i> |