

2017 47th European Microwave Conference (EuMC 2017)

**Nuremberg, Germany
10-12 October 2017**

Pages 1-663



**IEEE Catalog Number: CFP17455-POD
ISBN: 978-1-5386-3964-1**

**Copyright © 2017, European Microwave Association (EuMA)
All Rights Reserved**

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP17455-POD
ISBN (Print-On-Demand):	978-1-5386-3964-1
ISBN (Online):	978-2-87487-047-7

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

SESSION LIST

- [EuMC01](#) Multiport Planar Coupling Structures
- [EuMC02](#) Tuneable Passive and Active Filters
- [EuMC03](#) Novel Technologies for Future Wireless Communication Systems
- [EuMC04](#) Integrated Antennas — Circuit and Feed Design
- [EuMC05](#) Novel Planar Passive Components
- [EuMC06](#) Radio Frequency Identification (RFID)
- [EuMC07](#) Antenna Array Technology — Design, Manufacturing, and Applications
- [EuMC08](#) GaN-Based Power Amplifiers
- [EuMC09](#) Integrated Antennas — Technology and Design
- [EuMC10](#) Novel Technologies for Passive Components
- [EuMC11](#) Wireless Power Transfer
- [EuMC12](#) Front-End Components for Radio Astronomy, Communications, and Radar
- [EuMC13](#) Antennas in Printed Technology
- [EuMC14](#) Antennas for mm-Wave Applications
- [EuMC15](#) Impedance Matching Solutions for GaN Power Amplifiers
- [EuMC16](#) Special Session: Novel Microwave Devices and Measurements in Central Europe
- [EuMC17](#) RF MEMS and Sensors
- [EuMC18](#) Design Techniques and Implementations of Planar Couplers
- [EuMC19](#) Special Session: Stochastic Electromagnetics
- [EuMC20](#) Wireless Communication Channels
- [EuMC21](#) EuMC Interactive Session 1
- [EuMC22](#) High-Efficiency Power Amplifiers
- [EuMC23](#) Focused Session: Advanced Microwave Materials
- [EuMC24](#) Additive Manufacturing Techniques for RF Applications
- [EuMC25](#) Advanced Waveguide Structures

- EuMC26 Special Session: Microwave Research in Latin America
- EuMC27 Components and Techniques for Microwave Vacuum Electronics
- EuMC28 Amplifiers and Receivers
- EuMC29 Metasurfaces and Frequency-Selective Surfaces
- EuMC30 Sub-THz Components and Electro-Optic Systems
- EuMC31 Novel Synthesis and Design Techniques for Microwave Filters
- EuMC32 Advances in Measurements
- EuMC33 Focused Session: Microwave Vacuum Electronics

- EuMC34 EuMC Interactive Session 2

- EuMC35 Advanced Oscillator Design
- EuMC36 Metamaterials, Periodic Structures, and Applications
- EuMC37 Special Session: Microwave Research in Asia Pacific
- EuMC38 Substrate-Integrated Waveguide Filters and Diplexers
- EuMC39 On-Wafer Device Characterisation
- EuMC40 High-Power Microwave and mm-Wave Sources
- EuMC41 Medical Microwave Applications
- EuMC42 Numerical Modelling of Guided-Wave Structures
- EuMC43 Advanced Dielectric Resonator Filters
- EuMC44 Dielectric Material Characterisation
- EuMC45 Biomedical Sensing and Dielectric Characterisation
- EuMC46 Numerical Modelling of Radiating Structures
- EuMC47 Compact and Advanced Implementations of Waveguide Filters
- EuMC48 Wireless Technologies
- EuMC/EuMIC01 High Performance Si-Based Power Amplifiers
- EuMC/EuMIC02 Special Session: Funding for Research
- EuMC/EuMIC03 Power Amplifier Linearisation
- EuMC/EuMIC04 Interconnects and Packaging
- EuMC/EuMIC05 Reconfigurable and Tuneable RF and Microwave Circuits

- EuMC/EuMIC06 EuMC/EuMIC Interactive Session

- EuMC/EuRAD01 Antenna Systems — Industrial Perspectives
- EuMC/EuRAD02 Microwave Systems
- EuMC/EuRAD03 Focused Session: Conformal Antennas and Arrays
- EuMC/EuRAD04 Beam Steering Antennas and Technologies
- EuMC/EuRAD05 Advanced Radar Technologies and Systems
- EuMC/EuRAD06 Polarisation Diversity and Measurements

- EuMC/EuRAD07 EuMC/EuRAD Interactive Session

- EuMC/EuRAD08 Modelling and Synthesis of Array Antennas
- EuMC/EuRAD09 Radar Signal Sources
- EuMC/EuRAD10 Special Session: Radar Technology and System Applications in Central Europe

EuMC01 : Multiport Planar Coupling Structures

Chair: Bart Nauwelaers, Katholieke Universiteit Leuven, Belgium

Co-Chair: Cristiano Tomassoni, University of Perugia, Italy

Istanbul, Time 08:30 – 10:10, Tuesday 10th October 2017

- 1 **Gysel Type Unbalanced-to-Balanced Equal Power Divider**
Amar Nath Yadav¹, Ratnajit Bhattacharjee²
¹IIT Guwahati, India; ²IIT Guwahati, India
- 5 **Planar Miniaturized Balanced-to-Single-Ended Power Divider with Arbitrary Power Division**
Weiwei Zhang¹, Fadhel M. Ghannouchi², Abul Hasan², Yuanan Liu¹, Yongle Wu¹
¹BUPT, China; ²University of Calgary, Canada
- 9 **Design of a Planar Ultra-Wideband Four-Way Power Divider/Combiner Using Defected Ground Structures**
Michele Squartecchia, Bruno Cimoli, Virginio Midili, Tom K. Johansen, Vitaliy Zhurbenko,
Technical University of Denmark, Denmark
- 13 **Arbitrary Power Division Ratio Power Divider with Prescribed Wideband Negative Group Delay**
Girdhari Chaudhary¹, Juhee Han¹, Yongchae Jeong¹, Jongsik Lim²
¹Chonbuk National University, Korea; ²Soonchunhyang University, Korea
- 17 **Substrate Integrated Waveguide Crossover Formed by Orthogonal TE₁₀₂ Resonators**
Sara Salem Hesari, Jens Bornemann, University of Victoria, Canada

EuMC02 : Tuneable Passive and Active Filters

Chair: José I. Alonso, Universidad Politécnica de Madrid, Spain

Co-Chair: Rolf Jakoby, Technische Universität Darmstadt, Germany

Kopenhagen, Time 08:30 – 10:10, Tuesday 10th October 2017

- N/A **A Coupling Matrix Synthesis for a Tunable Bandpass Filter**
Alexander Jaschke, Mario Schühler, Yaarob Fares, Mengistu Tessema, Fraunhofer IIS,
Germany
- 25 **Design of Dual-Mode Tunable Filter Surrounded by an Electrical Wall to Obtain Shielding Effect**
Ceyhun Karpuz, Gülfem Balasu Firat Unuk, Pinar Öztürk Özdemir, Pamukkale University,
Turkey
- 29 **Temperature-Compensated Open-Loop Tuning of a Dual-Notch Absorptive Bandstop Filter**
Wesley N. Allen, Dimitrios Peroulis, Purdue University, USA
- 33 **An Integrated Microwave Tunable Dual-Band Q-Enhanced LC Band-Pass Filter in 0.13 μ m SiGe BiCMOS**
Farooq Amin, Sanjay Raman, Kwang-Jin Koh, Virginia Tech, USA
- 37 **Design Considerations and Effects of Class-AB Polarization in Active Filters Realized by Means of Active Inductors**
L. Pantoli, V. Stornelli, G. Leuzzi, Università dell'Aquila, Italy

EuMC03 : Novel Technologies for Future Wireless Communication Systems

Chair: Jozef Modelski, Warsaw University of Technology, Poland

Co-Chair: Yang Hao, Queen Mary University of London, UK

Shanghai, Time 08:30 – 10:10, Tuesday 10th October 2017

- N/A **Millimeter-Wave Technology Trends for 5G Antenna Arrays and Massive MIMO Architectures — An Industry View** (Industrial Session Keynote)
Renato Lombardi, Huawei Technologies, Italy
- 42 **Low Power Consumption Vector-Sum Phase Shifters Using Zero-Pi Amplifiers for Millimeter-Wave Beamforming**
Toshihiro Shimura, Takenori Ohshima, Yoji Ohashi, Fujitsu Laboratories, Japan
- 46 **Automotive Antenna Diversity System for Satellite Radio with High Phase Accuracy in Low SNR-Scenarios**
S. Senega, A. Nassar, S. Lindenmeier, Universität der Bundeswehr München, Germany
- 50 **Low Gain Imbalance Low Noise Amplifier-Phase Shifter in 65nm CMOS for 60GHz Phased Array Receiver**
Chul Woo Byeon¹, Chul Soon Park²
¹Wonkwang University, Korea; ²KAIST, Korea
- 54 **Analytical and Measured Estimation for 4-Value Multiplexing OAM Communication Using Loop Array Antennas**
Hiroto Otsuka, Ryohei Yamagishi, Akira Saitou, Ryo Ishikawa, Kazuhiko Honjo, University of Electro-Communications, Japan

EuMC04 : Integrated Antennas — Circuit and Feed Design

Chair: Ullrich R. Pfeiffer, University of Wuppertal, Germany

Co-Chair: Tuami Lasri, IEMN, France

Prag, Time 13:50 – 15:30, Tuesday 10th October 2017

- 58 **Fully Integrated LNA & Antenna for Ultra-Low Noise Figure Receivers**
Paulus Krüger¹, Barend Visser¹, David Prinsloo²
¹North-West University, South Africa; ²ASTRON, The Netherlands
- 62 **An SIW Fed Dual-Band and Dual-Polarized Lens Antenna at K/Ka-Band**
Thomas Jaschke, Hans K. Mitto, Arne F. Jacob, Technische Universität Hamburg-Harburg, Germany
- 66 **Coaxial-Fed Dual-Layer SIW Horn Antenna with Improved E-Plane Radiation Pattern**
Mahbubeh Esmaeili, Jens Bornemann, University of Victoria, Canada
- 70 **A Millimeter-Wave TE₂₀-Mode SIW-Fed Patch Antenna Array with Differential Feeding Network**
Huayan Jin¹, Wenquan Che¹, Wanchen Yang¹, Kuo-Sheng Chin²
¹NUST, China; ²Chang Gung University, Taiwan
- 74 **A Filtering Combined Series- and Parallel-Fed Patch Antenna Array**
Hao-Tao Hu, Fu-Chang Chen, Jian-Feng Qian, Qing-Xin Chu, South China University of Technology, China

EuMC05: Novel Planar Passive Components

Chair: Dominique Baillargeat, XLIM, France

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

Istanbul, Time 13:50 – 15:30, Tuesday 10th October 2017

- 77 **Magnetless Ring Circulators for Full Duplex Division Wireless Communication**
Kyle D. Holzer, Jeffrey S. Walling, University of Utah, USA
- 81 **A Ku Band High-Power, Low-Insertion-Loss Single Pole, Triple Throw Switch**
Kyle D. Holzer, Jeffrey S. Walling, University of Utah, USA
- 85 **Via-Free Microstrip to Slotline Baluns Using Slotted Microstrip Cross-Junction**
Abdelhamid M.H. Nasr, Amr M.E. Safwat, Hadia Elhennawy, Ain Shams University, Egypt
- 89 **Broadband Coupled-Line Matching Network for Two Dissimilar Port Reference Impedances**
Rusan Kumar Barik, Chandu D.S., S.S. Karthikeyan, IIITDM Kancheepuram, India
- 93 **A 26dB Wide Dynamic Range Rectifier Array Employing Three Rectifying Devices**
Xiaoyu Wang, Samar Abdelnasser, Amir Mortazawi, University of Michigan, USA

EuMC06: Radio Frequency Identification (RFID)

Chair: Thomas Ussmueller, University of Innsbruck, Austria

Co-Chair: Alexandru Takacs, LAAS, France

Kopenhagen, Time 13:50 – 15:30, Tuesday 10th October 2017

- 97 **Extremely Temperature-Resistant, Polarimetric Radar Barcode**
Maximilian Pöpperl, Julian Adametz, Martin Vossiek, FAU Erlangen-Nürnberg, Germany
- 101 **Dedicated Antenna Less Power Efficient OOK Transmitter for mm-Cubic IoT Nodes**
Ryo Shirai¹, Tetsuya Hirose², Masanori Hashimoto¹
¹Osaka University, Japan; ²Kobe University, Japan
- 105 **Passive Differential UHF RFID Front-Ends in a 40nm CMOS Technology**
Lukas Zöschner¹, Peter Herkess², Jasmin Grosinger¹, Ulrich Muehlmann², Dominik Amschl¹, Wolfgang Bösch¹
¹Technische Universität Graz, Austria; ²NXP Semiconductors, Austria
- 109 **Space Mapping Design Method for an Antenna Transducer of a Bend Sensor RFID Tag**
Francesco Berra¹, Alessandra Costanzo¹, Jasmin Grosinger², Lukas Görtzschacher²
¹Università di Bologna, Italy; ²Technische Universität Graz, Austria
- 113 **Wireless and Passive Nuclear Radiation Sensors**
C. Arenas, J. Philippe, D. Henry, A. Rumeau, A. Coustou, H. Aubert, P. Pons, LAAS, France

EuMC07: Antenna Array Technology — Design, Manufacturing, and Applications

Chair: Yang Hao, Queen Mary University of London, UK

Co-Chair: Lorenz-Peter Schmidt, FAU Erlangen-Nürnberg, Germany

Shanghai, Time 13:50 – 15:30, Tuesday 10th October 2017

- 117 **Design of a Ka-Band Sparse Array Antenna for Spaceborne SAR Applications**
D.J. Bekers¹, S. Jacobs¹, R.J. Bolt¹, Stefania Monni¹, D. Fortini², C. Germani², P. Capece², G. Toso³
¹TNO, The Netherlands; ²Thales Alenia Space, Italy; ³ESA-ESTEC, The Netherlands
- 121 **Characterization of Dual-Band Dual-Linearly Polarized Transmitarray Antennas**
Kien Pham¹, Ronan Sauleau¹, Erwan Fourn¹, Fatimata Diaby², Antonio Clemente², Laurent Dussopt²
¹IETR, France; ²CEA-LETI, France
- 125 **3D Printed Rotman Lens**
Karina Vieira Hoel¹, Stein Kristoffersen¹, Nathan Jastram², Dejan S. Filipovic²
¹FFI, Norway; ²University of Colorado Boulder, USA
- N/A **A Self-Calibration System Prototype for Ka-Band Active Phased Array Antennas**
Mehdi Salehi, Safieddin Safavi-Naeini, University of Waterloo, Canada
- 132 **Focusing Patterns Within Far and Near Field for a Novel 2D Sparse MIMO Array**
Harun Cetinkaya, Simon Kueppers, Reinhold Herschel, Nils Pohl, Fraunhofer FHR, Germany

EuMC08: GaN-Based Power Amplifiers

Chair: Giovanni Ghione, Politecnico di Torino, Italy

Co-Chair: Olof Bengtsson, FBH, Germany

Kiew, Time 16:10 – 17:50, Tuesday 10th October 2017

- 136 **Two Stage 4–8GHz, 5W GaN-HEMT Amplifier**
Stefan May, Daniel Maassen, Felix Rautschke, Georg Boeck, Technische Universität Berlin, Germany
- 140 **Reconfigurable Packaged GaN Power Amplifier Using Thin-Film BST Varactors**
Sebastian Preis¹, Felix Lenze², Alex Wiens², Rolf Jakoby², Wolfgang Heinrich¹, Olof Bengtsson¹
¹FBH, Germany; ²Technische Universität Darmstadt, Germany
- 144 **Extended Operation of Class-F Power Amplifiers Using Input Waveform Engineering**
E. Cipriani¹, P. Colantonio¹, F. Giannini¹, Antonio Raffo², Valeria Vadalà², Gianni Bosi², Giorgio Vannini²
¹Università di Roma “Tor Vergata”, Italy; ²Università di Ferrara, Italy
- 148 **Built-In AM/AM and AM/PM Distortion Study of Generalized Symmetrical Doherty Amplifier**
Hao-Yu Liu, Xiao-Hu Fang, Kwok-Keung M. Cheng, Chinese University of Hong Kong, China
- 152 **A 10-W S-Band Power Amplifier for Future 5G Communication**
Sebastian Drews, Felix Rautschke, Daniel Maassen, Chi Thanh Nghe, Georg Boeck, Technische Universität Berlin, Germany

EuMC09: Integrated Antennas — Technology and Design

Chair: Bart Smolders, Eindhoven University of Technology, The Netherlands

Co-Chair: Jan Hesselbarth, University of Stuttgart, Germany

Prag, Time 16:10 – 17:50, Tuesday 10th October 2017

- 156 **Scan Loss Mitigation via Subarrays: A Full-Scale Concept Demonstrator**
Fannush Shofi Akbar¹, Leonardus P. Ligthart², Gamantyo Hendrantoro¹, Ioan E. Lager²
¹Institut Teknologi Sepuluh Nopember, Indonesia; ²Technische Universiteit Delft, The Netherlands
- N/A **Utilization of Protruded Resonators to Design a Miniaturized Slot Antenna with Dual Band-Notched Characteristic for UWB Communications**
Rahim Hajaligogani¹, Naser Ojaroudi Parchin², Mehdi Salimitorkamani²
¹Gazi University, Turkey; ²Microwave Technology, Iran
- 164 **240GHz Antenna Integrated on Low-Cost Organic Substrate Packaging Technology Targeting High-Data Rate Sub-THz Telecommunication**
Elsa Lacombe¹, Frederic Giancesello¹, Aimeric Bisognin¹, Cyril Luxey², Diane Titz², Heiko Gulan³, Thomas Zwick³
¹STMicroelectronics, France; ²EpOC-UNS, France; ³KIT, Germany
- 168 **3D Metal Printed Monocone Antenna with an Integrated Feed**
Deepak Shamvedi, Oliver J. McCarthy, Eoghan O'Donoghue, Paul O'Leary, Ramesh Raghavendra, WIT, Ireland
- 172 **Properties of Antennas Made with Sprayed Selective Silver Metallization**
Arnaud Jammes, Michael Petisme, Koen Staelens, Jet Metal Technologies, France

EuMC10: Novel Technologies for Passive Components

Chair: Roberto Sorrentino, University of Perugia, Italy

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

Istanbul, Time 16:10 – 17:50, Tuesday 10th October 2017

- 176 **Screen Printed Lumped Element Filters Based on Silver Nanoparticle Ink**
D. Mercier¹, J.P. Michel¹, J. Chautagnat¹, C. Baret¹, C. Bonnard¹, H. Sibuet¹, C. Billard¹, M. Benwadih², O. Haon², R. Coppard², J.Y. Laurent²
¹CEA-LETI, France; ²CEA-LITEN, France
- 180 **Methodology to Develop a Low-Loss Dual-Band Stripline Circulator**
H. Turki¹, L. Huitema¹, Thierry Monediere¹, B. Lenoir², C. Breuil²
¹XLIM, France; ²INOVEOS, France
- 184 **A Semiconductor Based Millimeter-Wave Waveguide Junction Circulator**
Ghassan Nihad Jawad¹, Christopher Duff², Robin Sloan²
¹Baghdad University, Iraq; ²University of Manchester, UK
- 188 **A 3-D Metal-Direct-Printed, Low-Cost, and Light Hexagonal Waveguide Ka-Band Branch Line Coupler**
Motomi Abe, Hidenori Yukawa, Yu Ushijima, Takuma Nishimura, Naofumi Yoneda, Moriyasu Miyazaki, Mitsubishi Electric, Japan
- 192 **Tunable and Input-Matched Attenuator Based on Few-Layer Graphene**
Muhammad Yasir¹, Maurizio Bozzi¹, Luca Perregrini¹, Silvia Bistarelli², Antonino Cataldo², Stefano Bellucci²
¹Università di Pavia, Italy; ²INFN-LNF, Italy

EuMC11: Wireless Power Transfer

Chair: Alessandra Costanzo, University of Bologna, Italy

Co-Chair: Kamran Ghorbani, RMIT University, Australia

Kopenhagen, Time 16:10 – 17:50, Tuesday 10th October 2017

- 196 **Capacitive Wireless Powering for Electric Vehicles with Near-Field Phased Arrays**
José Estrada, Sreyam Sinha, Brandon Regensburger, Khurram Afridi, Zoya Popović,
University of Colorado Boulder, USA
- 200 **A Novel Coupling Factor Independent Highly Efficient Resonant Based Wireless Power Transfer**
Xiaoyu Wang, Omar Abdelatty, Amir Mortazawi, University of Michigan, USA
- 204 **Matched Resonant Inductive WPT Using the Coupling-Independent Regime: Theory and Experiments**
Alessandra Costanzo¹, Wenquan Che², Marco Dionigi³, Franco Mastri¹, Mauro Mongiardo³, Giuseppina Monti⁴, Luciano Tarricone⁴, Qinghua Wang²
¹Università di Bologna, Italy; ²NUST, China; ³Università di Perugia, Italy; ⁴Università del Salento, Italy
- 208 **High Efficiency Wireless Power Transmission System Against Misalignment Between Coils**
Yuji Sakayanagi, Yoshihiko Kuwahara, Shizuoka University, Japan
- 212 **Low-Cost UHF Near-Field Power Transmission for RFID Applications**
Marco Fantuzzi¹, Alessandra Costanzo¹, Smail Tedjini², Pierre Lemaitre-Auger²
¹Università di Bologna, Italy; ²LCIS (EA 3747), France

EuMC12: Front-End Components for Radio Astronomy, Communications, and Radar

Chair: Noriharu Suematsu, Tohoku University, Japan

Co-Chair: Almudena Suarez, University of Cantabria, Spain

Seoul, Time 16:10 – 17:50, Tuesday 10th October 2017

- 216 **216–256GHz Fully Differential Frequency Multiplier-by-8 Chain with 0dBm Output Power**
M.H. Eissa, A. Malignaggi, M. Ko, K. Schmalz, Johannes Borngreber, Ahmet Cagri Ulusoy, Dietmar Kissinger, IHP, Germany
- 220 **Spatial-Frequency-Scanning Data Transmission for mmW Multi-User Wireless Communication Systems**
Enoc Roselló Castillo¹, Parisa Harati¹, Ingmar Kallfass¹, Philipp Hügler², Christian Waldschmidt², Shoichi Shiba³
¹Universität Stuttgart, Germany; ²Universität Ulm, Germany; ³Fujitsu Laboratories, Japan
- N/A **W-Band Frequency Converters for Wideband Microwave Spectroscopy in Radioastronomy**
Sonia García-Álvaro, José A. López-Pérez, María Patino Esteban, Pablo García-Carreño, José A. López-Fernández, IGN, Spain
- 228 **Zero-Bias Schottky Power Detector Design for Six-Port Based Radar Systems**
Fabian Michler, Stefan Lindner, Fabian Lurz, Stefan Erhardt, Robert Weigel, Alexander Koelpin, FAU Erlangen-Nürnberg, Germany
- 232 **A Dual-Band 90-Degree SiGe HBT Active Phase Shifter Using Band-Pass and Band-Stop Designs**
Yasushi Itoh, Hiroaki Takagi, Shonan Institute of Technology, Japan

EuMC13: Antennas in Printed Technology

Chair: Dirk Heberling, RWTH Aachen University, Germany

Co-Chair: Marco Pasian, University of Pavia, Italy

Shanghai, Time 16:10 – 17:50, Tuesday 10th October 2017

- 236 **A Frequency Selective Surface in Multilayer Techniques for Single Reflector Offset Antennas in Ku- and Ka-Band**
Andreas Röhrner¹, Georg Strauss¹, Thomas Lohrey²
¹Hochschule München, Germany; ²Eutelsat, France
- 240 **A Flexible Dielectric Leaky-Wave Antenna at 160GHz**
Martin Geiger, Martin Hitzler, Christian Waldschmidt, Universität Ulm, Germany
- 244 **Design and Characterization of Series and Corporate Feed Differential Arrays for Broadband 60GHz Radar Applications**
Wael Abdullah Ahmad¹, Jeng-Hau Lu², Raqibul Hasan³, Dietmar Kissinger¹, Herman Jalli Ng¹
¹IHP, Germany; ²National Chiao Tung University, Taiwan; ³Universität Kassel, Germany
- 248 **Reduction of Mutual Coupling Between Closely Spaced Patch Antennas Using Dielectric Stratification Technique**
Yanki Aslan, Alexander Yarovoy, Technische Universiteit Delft, The Netherlands
- 252 **A Novel Additive-Manufactured Multiple-Infill Ultra-Lightweight Cavity-Backed Slot Antenna for UWB Applications**
Valentina Palazzi¹, Ryan Bahr², Bijan Tehrani², Jimmy Hester², Jo Bito², Federico Alimenti¹, Paolo Mezzanotte¹, Luca Roselli¹, Manos M. Tentzeris²
¹Università di Perugia, Italy; ²Georgia Institute of Technology, USA

EuMC14: Antennas for mm-Wave Applications

Chair: Ioan Lager, Delft University of Technology, The Netherlands

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

Hongkong, Time 08:30 – 10:10, Wednesday 11th October 2017

- 256 **Mixed-Domain Gating Algorithm for Time-Domain Characterisation of Millimetre-Wave Antennas**
Lars Ohlsson, Iman Vakili, Daniel Sjöberg, Lars-Erik Wernersson, Lund University, Sweden
- N/A **A Zero-IF Auto-Calibration System for Phased Array Antennas**
Mehdi Salehi, Safieddin Safavi-Naeini, University of Waterloo, Canada
- 264 **A Novel Synthesis Method for Millimeter-Wave Antenna with Contoured-Beam at Near-Field Region**
Gang Xu, Rong Zeng, Shitao Chen, Meiyu Shi, Chuan Yu, CAEP, China
- 268 **Analysis of Photoconductive Antenna Power Radiation by Norton Equivalent Circuit**
Alessandro Garufo, Giorgio Carluccio, Nuria Llombart Juan, Andrea Neto, Ioan E. Lager, Technische Universiteit Delft, The Netherlands
- 272 **Investigation and Development of Custom-Designed Calibration Substrates: An Introduction**
M. Willemsen, S. Holzwarth, O. Litschke, IMST, Germany

EuMC15: Impedance Matching Solutions for GaN Power Amplifiers

Chair: Eric Kerhervé, IMS, France

Co-Chair: Christian Fager, Chalmers University of Technology, Sweden

Kiew, Time 08:30 – 10:10, Wednesday 11th October 2017

- 276 **Triband 1.2/1.8/2.7GHz Doherty Power Amplifier Using Novel Output Combining Network**
Bassem M. Abdelrahman, Hesham N. Ahmed, Military Technical College, Egypt
- 280 **Harmonics Suppressed Band-Pass Matching Network for High Efficiency Power Amplifier**
Junhyung Jeong¹, Phirun Kim¹, Yongchae Jeong¹, Jongsik Lim²
¹Chonbuk National University, Korea; ²Soonchunhyang University, Korea
- 284 **A Sequential Power Amplifier at 3.5GHz for 5G Applications**
P. Neininger¹, C. Friesicke¹, S. Krause¹, D. Meder¹, R. Lozar¹, Thomas Merkle¹, Rüdiger Quay¹, Thomas Zwick²
¹Fraunhofer IAF, Germany; ²KIT, Germany
- 288 **Revisiting Power vs. Bandwidth in Broadband CW Amplifiers by Exploring 100V Bias Operation**
Gabriele Formicone, Jeff Burger, James Custer, Richard Keshishian, Integra Technologies, USA
- 292 **Highly Efficient Wideband Harmonic-Tuned Power Amplifier Using Low-Pass Matching Network**
K. Rabbi¹, J. Zhou¹, Y. Huang¹, Y. Zhuang¹, N. McEwan², A. Rayit², R. Rayit²
¹University of Liverpool, UK; ²SARAS Technology, UK

EuMC16: Special Session: Novel Microwave Devices and Measurements in Central Europe

Chair: Jozef Modelski, Warsaw University of Technology, Poland

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

Riga, Time 08:30 – 10:10, Wednesday 11th October 2017

- N/A **Direction-of-Arrival Estimation Using an ESPAR Antenna with Simplified Beam Steering**
L. Kulas, Gdansk University of Technology, Poland
- N/A **Microwave Amplifiers Using GaN HEMTs on Truly Bulk GaN Substrates**
Marcin Góralczyk¹, Dawid Kuchta¹, Wojciech Wojtasiak¹, Andrzej Taube²
¹Warsaw University of Technology, Poland; ²Institute of Electron Technology, Poland
- N/A **Tunable Shielded Dielectric Resonator Short-Circuited at the Disk Face**
Kostiantyn Savin¹, Victor Kazmirenko¹, Yuriy Prokopenko¹, Borys Pratsiuk², Guy A.E. Vandenbosch³
¹NTUU KPI, Ukraine; ²Ciklum, Ukraine; ³Katholieke Universiteit Leuven, Belgium
- N/A **CNT-Based Microwave Filter for C and X Band Applications**
M. Aldrigo¹, M. Dragoman¹, A.C. Bunea¹, D. Neculoiu¹, Stéphane Xavier², Afshin Ziaei²
¹IMT Bucharest, Romania; ²Thales Research & Technology, France
- N/A **SIW Choke-Based Technique for Accurate Dielectric Measurements in the 3.5–5GHz Band**
Valentin Buiculescu, M. Aldrigo, Alexandra Ștefănescu, IMT Bucharest, Romania

EuMC17: RF MEMS and Sensors

Chair: Mehmet Kaynak, IHP, Germany

Co-Chair: John Papapolymerou, Michigan State University, USA

Prag, Time 08:30 – 10:10, Wednesday 11th October 2017

- 316 **New Power Handling Characterization for RF MEMS Capacitive Switches**
David Molinero, Shawn Cunningham, Art Morris, WiSpry, USA
- 320 **Packaged BiCMOS Embedded RF-MEMS Test Vehicles for Space Applications**
S. Tolunay Wipf¹, Alexander Göritz¹, Matthias Wietstruck¹, M. Cirillo¹, C. Wipf¹, Wolfgang Winkler², Mehmet Kaynak¹
¹IHP, Germany; ²Silicon Radar, Germany
- 324 **Nanometer-Length Characterization with CMOS-MEMS Scanning Microwave Microscopes**
Mostafa Azizi, Neil Sarkar, Duncan Strathearn, Raafat R. Mansour, University of Waterloo, Canada
- 328 **BST Thin Film Bulk Acoustic Resonator Optimization for Un-Cooled IR Sensors Application**
Milad Zolfagharloo Koohi, Amir Mortazawi, University of Michigan, USA

EuMC18: Design Techniques and Implementations of Planar Couplers

Chair: Steve Nightingale, CMS Technologies, UK

Co-Chair: Marco Pasian, University of Pavia, Italy

Istanbul, Time 08:30 – 10:10, Wednesday 11th October 2017

- 331 **A Fully Planar Broadband Rat-Race Coupler with Stepped-Impedance and Coupled Microstrip Lines**
Bo-Yuan Wang¹, Lin-Sheng Wu¹, Tao Guan², Liang-Feng Qiu¹, Junfa Mao¹
¹Shanghai Jiao Tong University, China; ²Huawei Technologies, China
- 335 **General Synthesis Method for Variable Couplers, Switches, Bridges, and Power Dividers and Combiners**
Abbas Omar, OvG Universität Magdeburg, Germany
- 339 **EM-Driven Compact Cell Topology Selection for Explicit Size Reduction of Hybrid Rat-Race Couplers**
Piotr Kurgan, Slawomir Koziel, Reykjavik University, Iceland
- 343 **Rapid Dimension Scaling of Compact Microwave Couplers with Power Split Correction**
Slawomir Koziel¹, Adrian Bekasiewicz¹, John Bandler²
¹Reykjavik University, Iceland; ²McMaster University, Canada
- 347 **Compact Six-Port Junction Using Broadside-Coupled CPW Couplers for a Broadband Six-Port Receiver**
Saad Qayyum, Renato Negra, RWTH Aachen University, Germany

EuMC19: Special Session: Stochastic Electromagnetics

Chair: Peter Russer, Technische Universität München, Germany

Co-Chair: Philippe Besnier, INSA, Germany

Kopenhagen, Time 08:30 – 10:10, Wednesday 11th October 2017

- N/A **Principal Component Analysis Applied in Modeling of Stochastic Electromagnetic Field Propagation**
Michael Haider¹, Johannes A. Russer¹, Andrey Baev², Yury Kuznetsov², Peter Russer¹
¹Technische Universität München, Germany; ²Moscow Aviation Institute, Russia
- N/A **Bringing Chaos Inside the Reverberation Chamber**
Luca Bastianelli¹, Gabriele Gradoni², Franco Moglie¹, Valter Mariani Primiani¹
¹Università Politecnica delle Marche, Italy; ²University of Nottingham, UK
- N/A **Statistics of Reflection and Transmission in the Strong Overlap Regime of Fully Chaotic Reverberation Chambers**
Ulrich Kuhl, Olivier Legrand, Fabrice Mortessagne, Khalid Oubaha, Martin Richter,
Université Côte d'Azur, France
- N/A **Probabilistic and Electrical Assessment of Braid Cables with Restricted Number of Measurements**
Sébastien Lalléchère¹, Sébastien Girard¹, Pierre Bonnet¹, Françoise Paladian¹, Chaouki Kasmi², José Lopes Esteves², Lars-Ole Fichte³
¹Université Clermont Auvergne, France; ²ANSSI, France; ³Helmut-Schmidt-Universität, Germany
- N/A **Characteristics of Stochastic Responses in MTL Hybrid Systems by Using SDAE Formulation**
Lubomir Brancik, Edita Kolarova, Milan Sigmund, Brno University of Technology, Czech Republic

EuMC20: Wireless Communication Channels

Chair: Jyri Putkonen, Nokia Bell Labs, Finland

Co-Chair: Michael Vogt, Ruhr-University Bochum, Germany

Seoul, Time 08:30 – 10:10, Wednesday 11th October 2017

- N/A **The Art of Communication and the Role of Space Systems to Connect Society**
(Industrial Session Keynote)
James Hinds, Airbus, UK
- 372 **5G E-Band Backhaul System Measurements in Urban Street-Level Scenarios**
Zhou Du¹, Eckhard Ohlmer², Kimmo Aronkyyö¹, Jyri Putkonen¹, Jouko Kapanen¹, Daniel Swist²
¹Nokia Bell Labs, Finland; ²National Instruments, Germany
- 376 **Channel Measurements for the Evaluation of Noncoherent Massive MIMO Systems**
Melanie Bense, Robert Weigel, FAU Erlangen-Nürnberg, Germany
- 380 **Receiving GSM Broadcast Channels with an Ultra-Low Power Sub-GHz Transceiver**
Stefan Erhardt, Robert Weigel, Alexander Koelpin, FAU Erlangen-Nürnberg, Germany
- 384 **Temporal Evolution Analysis of Indoor-to-Outdoor Radio Channels in the 868-MHz ISM/SRD Frequency Band**
Sebastian Rauh¹, Thomas Lauterbach², Hendrik Lieske¹, Gerd Kilian³, Joerg Robert¹, Albert Heuberger¹
¹FAU Erlangen-Nürnberg, Germany; ²TH Nürnberg, Germany; ³Fraunhofer IIS, Germany

EuMC21: EuMC Interactive Session 1

Chair: Daniel Mueller, KIT, Germany

Co-Chair: Christian Bornkessel, Technische Universität Ilmenau, Germany

Exhibition Hall, Time 10:00 – 11:40, Wednesday 11th October 2017

- 388 **Design of Filtering Power Dividers for Desired Filter Responses Using Parallel Coupled-Line Filters**
Chih-Jung Chen, National Taiwan Ocean University, Taiwan
- 392 **Synthesis of an N-Way Arbitrary Power Divider**
Sheng Cheng, Michael Pavlick, Johns Hopkins University, USA
- 396 **Miniaturized Wilkinson Power Divider with Complex Isolation Network for Physical Isolation**
Tso-Jung Chang, Ting-Jui Huang, Heng-Tung Hsu, National Chiao Tung University, Taiwan
- 400 **A Millimeter-Wave TE₂₀-Mode SIW-Fed Patch Antenna Array with Differential Feeding Network**
Huayan Jin¹, Wenquan Che¹, Wanchen Yang¹, Kuo-Sheng Chin²
¹NUST, China; ²Chang Gung University, Taiwan
- N/A **A Small-Size Measurement Directional Bridge Based on PCB Integrated Ferrite-Core Loaded Transformer**
Nikolay Drobotun¹, Philipp Mikheev²
¹TUSUR, Russia; ²Micran, Russia
- 408 **Performance Optimization of Capacitively Compensated Directional Couplers**
Chi Thanh Nghe, Felix Rautschke, Georg Boeck, Technische Universität Berlin, Germany

- 412 **Performance Comparison of a Four-Pole Folded Filter Realized with Standard and Empty Substrate Integrated Waveguide Technologies**
José A. Ballesteros¹, Elena Díaz-Caballero², Marcos D. Fernandez¹, Hector Esteban², Angel Belenguer¹, Vicente E. Boria²
¹UCLM, Spain; ²Universitat Politècnica de València, Spain
- 416 **Cost-Effective SIW Band-Pass Filters for Millimeter Wave Applications: A Method to Combine Low Tolerances and Low Prices on Standard PCB Substrates**
Franz Xavier Röhr¹, Roman Sammer¹, Johannes Jakob¹, Werner Bogner¹, Robert Weigel², Uwe Hassel³, Stefan Zorn³
¹Technische Hochschule Deggendorf, Germany; ²FAU Erlangen-Nürnberg, Germany; ³Rohde & Schwarz, Germany
- 420 **Design of Balun Filters with High Frequency Selectivity and Low Insertion Loss**
Yu-Heng Ye¹, Chen-En Jang¹, Kuo-Sheng Chin¹, Eric S. Li²
¹Chang Gung University, Taiwan; ²Taipei Tech, Taiwan
- 424 **General Synthesis Method for Negative Group Delay Response: A Filter Base Approach**
Ranjan Das¹, Qingfeng Zhang², Abhishek Kandwal², Jayanta Mukherjee¹
¹IIT Bombay, India; ²SUSTech, China
- 428 **A Ku-Band Diplexer Based on 3dB Directional Couplers Made by Plastic Additive Manufacturing**
Etienne Laplanche¹, Olivier Tantot¹, Nicolas Delhote¹, Aurélien Périgaud¹, Serge Verdeyme¹, Stéphane Bila¹, Dominique Baillargeat¹, Ludovic Carpentier²
¹XLIM, France; ²CNES, France

- 432 **A Reconfigurable Unequal Filtering Power Divider Based on Switched-Filter Matching Network**
Shih-Fong Chao, Kun-Rong Lin, Yen-Yu Chen, National Kaohsiung Marine University, Taiwan
- 436 **Experimental Characterisation of Planar Groove Gap Waveguide and Cavity**
Titus Oyedokun¹, Riana H. Geschke¹, Tinus Stander²
¹University of Cape Town, South Africa; ²University of Pretoria, South Africa
- 440 **Analysis of an Overmoded Re-Entrant Cavity**
David Marques-Villarroya, Felipe Penaranda-Foix, Beatriz Garcia-Banos, Jose Manuel Catala-Civera, Jose Daniel Gutierrez-Cano, Universitat Politècnica de València, Spain
- 444 **A Metal 3D-Printed T-Junction OMT with an Offset Stepped Post**
Hidekazu Yukawa, Yu Ushijima, Motomi Abe, Naofumi Yoneda, Moriyasu Miyazaki, Mitsubishi Electric, Japan
- N/A **Circulator Integrated in LTCC with Screen Printed Ferrite for Space Application**
Shicheng Yang, Wei Shi, Ting Zhang, Hao Bai, CAST, China
- 452 **A Non-Magnetic Gyrator Utilizing Switched Delay Lines**
Jack Krol, Songbin Gong, University of Illinois at Urbana-Champaign, USA

EuMC22: High-Efficiency Power Amplifiers

Chair: Philippe Eudeline, Thales Air Systems SAS, Switzerland

Co-Chair: Denis Barataud, XLIM, France

Kiew, Time 10:50 - 12:30, Wednesday 11th October 2017

- 456 **Efficiency Enhancement and Linearization of GaN PAs Using Reduced-Bandwidth Supply Modulation**
Morten Olavsbråten¹, Dragan Gecan¹, Maxwell R. Duffy², Gregor Lasser², Zoya Popović²
¹NTNU, Norway; ²University of Colorado Boulder, USA
- 460 **4.5-/4.9-GHz-Band Tunable High-Efficiency GaN HEMT Power Amplifier**
Kazuki Mashimo, Ryo Ishikawa, Kazuhiko Honjo, University of Electro-Communications, Japan
- 464 **Improving Efficiency, Linearity and Linearisability of an Asymmetric Doherty Power Amplifier by Modulating the Peaking Amplifier's Supply Voltage**
Alexander Alt, Jonathan Lees, Cardiff University, UK
- 468 **Wide-Band High-Efficiency GaN HEMT Amplifier Based on Dual-Band Multi-Harmonic Treatments**
Yuki Takagi, Ryo Ishikawa, Kazuhiko Honjo, University of Electro-Communications, Japan
- 472 **The Efficiency/Bandwidth Trade-Off in Class-G Supply-Modulated Power Amplifiers**
Nikolai Wolff, Wolfgang Heinrich, Olof Bengtsson, FBH, Germany

EuMC23: Focused Session: Advanced Microwave Materials

Chair: Oksana Shramkova, Technicolor R&D France, France

Co-Chair: Polina Kapitanova, ITMO University, Russia

Riga, Time 10:50 – 12:30, Wednesday 11th October 2017

- 476 **All-Dielectric Bianisotropic and Multimode Unidirectional Microwave Metasurfaces**
Polina Kapitanova¹, Mikhail Odit¹, Mohammad Danaeifar², A. Sayanskiy¹, Pavel Belov¹, Andrey Miroshnichenko³, Yuri Kivshar³
¹ITMO University, Russia; ²K.N. Toosi University of Technology, Iran; ³Australian National University, Australia
- 480 **Multipole Electromagnetic Wave Scattering by Nonspherical High-Refractive-Index Particles**
Andrey B. Evlyukhin, Boris N. Chichkov, Laser Zentrum Hannover, Germany
- 484 **Recent Development of Conception of Trapped Modes in Low-Loss All-Dielectric Metamaterials**
Vladimir R. Tuz¹, Vyacheslav V. Khardikov², Natalia V. Sydoruk², Denis V. Novitsky³, Sergey L. Prosvirnin²
¹Jilin University, China; ²NASU, Ukraine; ³NASB, Belarus
- 488 **Amplification of Surface Plasmons in Active Nonlinear Hyperbolic Systems**
O.V. Shramkova¹, M. Mattheakis², G.P. Tsironis³
¹Technicolor, France; ²Harvard University, USA; ³University of Crete, Greece
- 492 **Tunable Microwave Metamaterials Based on Ordinary Water**
Andrei V. Lavrinenko¹, Rasmus E. Jacobsen¹, Samel Arslanagic¹, Svetlana Kuznetsova², Andrei Andryeuskii¹, Mikhail Odit³, Polina Kapitanova³
¹Technical University of Denmark, Denmark; ²UNN, Russia; ³ITMO University, Russia

EuMC24: Additive Manufacturing Techniques for RF Applications

Chair: Kamal Samanta, Sony Europe, UK

Co-Chair: Joachim Oberhammer, KTH, Sweden

Prag, Time 10:50 – 12:30, Wednesday 11th October 2017

- 496 **Experimental Research Activity on Additive Manufacturing of Microwave Passive Waveguide Components**
Giuseppe Addamo¹, Oscar A. Peverini¹, Mauro Lumia¹, Giuseppe Virone¹, Riccardo Tascone¹, Flaviana Calignano², Diego Manfredi²
¹CNR-IEIT, Italy; ²IIT, Italy
- 500 **A Polyjet 3D Printed Alternative for Package to RFIC Interconnects**
Michael Craton, Jennifer A. Byford, John Papapolymerou, Premjeet Chahal, John D. Albrecht, Michigan State University, USA
- 504 **3D-Printed Chalk Powder for Microwave Devices: Experimental Results for a NRD-Guide in Ku-Band**
E. Massoni, P.F. Espin-Lopez, Marco Pasian, Maurizio Bozzi, Luca Perregrini, G. Alaimo, S. Marconi, F. Auricchio, Università di Pavia, Italy
- 508 **Effect of Build Orientation and Surface Finish on Surface Resistance in Microwave Components Produced by Selective Laser Melting**
Nicholas Clark, Samuel Hefford, Adrian Porch, Cardiff University, UK
- 512 **Evaluation of Metal Coating Techniques up to 66GHz and Their Application to Additively Manufactured Bandpass Filters**
W. Feuray¹, A. Delage¹, A. Abdelghani¹, J. Sence¹, Olivier Tantot¹, Stéphane Bila¹, K. Frigui¹, Dominique Baillargeat¹, Serge Verdeyme¹, Nicolas Delhote¹, Koen Staelens²
¹XLIM, France; ²Jet Metal Technologies, France

EuMC25: Advanced Waveguide Structures

Chair: Luca Perregrini, University of Pavia, Italy

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

Istanbul, Time 10:50 – 12:30, Wednesday 11th October 2017

- 516 **Bundled Waveguide Solution for Multibeam Satellite Applications**
Uwe Rosenberg¹, Ralf Beyer¹, Peter Krauß¹, Thomas Sieverding¹, Markus Vögel², Andreas Raith², Jaione Galdeano³, Christoph Ernst³
¹Mician Global Engineering, Germany; ²Rohde & Schwarz, Germany; ³ESA-ESTEC, The Netherlands
- 520 **Dual Band Rectangular Waveguide Polarizer Using Corrugated/Elongated Conductive Plates for Ka-Band**
Yu Ushijima, Hidenori Yukawa, Naofumi Yoneda, Moriyasu Miyazaki, Mitsubishi Electric, Japan
- N/A **Slow-Wave Microstrip Lines: Electrical Model — Application to a Branch-Line Coupler in PCB Technology**
Duc-Long Luong¹, Emmanuel Pistono², Florence Podevin², Philippe Ferrari², Hamza Issa³, Darine Kaddour⁴, Didier Vincent¹
¹Laboratoire Hubert Curien (UMR 5516), France; ²IMEP-LAHC, France; ³Beirut Arab University, Lebanon; ⁴LCIS (EA 3747), France
- 528 **Miniaturized Folded Ridged Half-Mode Substrate Integrated Waveguide**
Thomas R. Jones, Mojgan Daneshmand, University of Alberta, Canada
- 532 **Non-Reciprocal Mode-Converting Substrate Integrated Waveguide**
Amir Afshani, Ke Wu, École Polytechnique de Montréal, Canada

EuMC26: Special Session: Microwave Research in Latin America

Chair: Jose E. Rayas-Sanchez, ITESO, Mexico

Co-Chair: Silvio Barbin, University of Sao Paulo, Brazil

Kopenhagen, Time 10:50 – 12:30, Wednesday 11th October 2017

- 536 **Academic and Industrial Research Activities on RF and Microwaves in Latin America: An Overview**
José E. Rayas-Sánchez, Zabdriel Brito-Brito, ITESO, Mexico
- 540 **Eye Diagram System Margining Surrogate-Based Optimization in a Server Silicon Validation Platform**
Francisco E. Rangel-Patiño¹, José L. Chávez-Hurtado², Andres Viveros-Wacher¹, José E. Rayas-Sánchez², Nagib Hakim³
¹Intel, Mexico; ²ITESO, Mexico; ³Intel, USA
- 544 **Variation on the psSAR in the Brain Due to Differences in the Head Modeling**
Claudio Enrique Fernández-Rodríguez¹, Alvaro Augusto Almeida de Salles²
¹IFRS, Brazil; ²UFRGS, Brazil
- 548 **Overview of Microwave Research at the Universidad Católica San Pablo, Perú**
Guillermo Rafael-Valdivia, Efrain Zenteno-Bolaños, Universidad Católica San Pablo, Peru
- 552 **Extraction of the High Frequency Small Signal Electrical Equivalent Circuit of High Voltage CMOS FET (HVMOS)**
I. Hernández-Díaz¹, H.J. Saavedra-Gómez¹, J.R. Loo-Yau¹, U. Malagón-Reyes¹, P. Moreno¹, J.A. Reynoso-Hernández², L.M. Aguilar-Lobo³
¹CINVESTAV-IPN, Mexico; ²CICESE, Mexico; ³UAG, Mexico

EuMC27: Components and Techniques for Microwave Vacuum Electronics

Chair: Antti Räisänen, Aalto University, Finland

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

Singapur, Time 10:50 – 12:30, Wednesday 11th October 2017

- 556 **Planar Slow Wave Structures for Millimeter-Wave Vacuum Electron Devices**
G. Ulisse, Viktor Krozer, Goethe-Universität Frankfurt, Germany
- 560 **Study of Millimetre Wave Extended Interaction Oscillation Using Pseudospark-Sourced E-Beams**
A.W. Cross¹, H. Yin¹, Liang Zhang¹, W. He¹, G. Shu¹, J. Zhao², Y. Yin³, K. Ronald¹, Alan D.R. Phelps¹
¹University of Strathclyde, UK; ²Xi'an Jiaotong University, China; ³UESTC, China
- N/A **An Improved Energy Spectrum Model and its Application in Multipactor Discharge Simulation**
Wanzhao Cui, Yun Li, Heng Zhang, CAST, China
- N/A **Design of a TE₁₀-to-TE₆₁ Mode Coupler for a 372GHz Gyrotron Travelling Wave Amplifier**
Liang Zhang, Jason Garner, Craig R. Donaldson, W. He, Alan D.R. Phelps, A.W. Cross, University of Strathclyde, UK
- N/A **Equivalent Circuit Modelling of Travelling Wave Accelerating Structures and its Applications**
Nasrin Nasr Esfahani, Patrick Kramer, Christine Vollinger, CERN, Switzerland

EuMC28: Amplifiers and Receivers

Chair: Teresa M. Martín-Guerrero, Universidad de Málaga, Spain

Co-Chair: Ichihiko Toyoda, Saga University, Germany

Kiew, Time 13:50 – 15:30, Wednesday 11th October 2017

- N/A **Design of High Efficiency Doherty Power Amplifier Applying Power Controlling Technology with 15dB Output Power Back-Off**
Tian Qi, SongBai He, UESTC, China
- N/A **On the Measurement of Pulse Recovery Times in Gallium Nitride Low Noise Amplifiers**
Nicholas Novaris, Paul Blount, Charles Trantanella, Custom MMIC, USA
- N/A **Low Power UWB CMOS LNA Using Resistive Feedback and Current-Reused Techniques Under Forward Body Bias**
Jyh-Chyurn Guo, Ching-Shiang Lin, National Chiao Tung University, Taiwan
- 588 **Investigation of a Conformal Amplifier Embedded in an Aerospace Composite Structure**
Thomas C. Baum¹, Richard W. Ziolkowski², Kamran Ghorbani¹, Kelvin J. Nicholson³
¹RMIT University, Australia; ²University of Technology Sydney, Australia; ³DST Group, Australia
- N/A **Wideband IF Signal Processor for Microwave Spectroscopy in Radio Astronomy**
María Patino Esteban, José A. López-Pérez, Pablo García-Carreño, Sonia García-Álvaro, José A. López-Fernández, IGN, Spain

EuMC29: Metasurfaces and Frequency-Selective Surfaces

Chair: Francisco Medina, Universidad de Sevilla, Spain

Co-Chair: Andrei Lavrinenko, Technical University of Denmark, Denmark

Riga, Time 13:50 – 15:30, Wednesday 11th October 2017

- 596 **Spatial Filtering Frequency Selective Surface for Wide-Angle Scanning Phased Arrays**
Cristina Yepes¹, Daniele Cavallo¹, Andrea Neto¹, Erio Gandini², Stefania Monni², Frank E. van Vliet²
¹Technische Universiteit Delft, The Netherlands; ²TNO, The Netherlands
- 600 **Triple-Band Circularly Polarized Antenna on a Two-Layered High Impedance Surface with Two In-Phase Reflection Bands**
Chandu D.S., Rusan Kumar Barik, S.S. Karthikeyan, IIITDM Kancheepuram, India
- 604 **Design of Compact Multiband Frequency Selective Surfaces with Meandered Elements**
Simone Genovesi, Filippo Costa, Agostino Monorchio, Università di Pisa, Italy
- 608 **Design of an Ultra-Thin Antenna with Low RCS Based on Phase Gradient Metasurface**
Bo Li¹, Qi Chen¹, Chun Yang¹, Xiaobo Liu², Anxue Zhang²
¹CAEP, China; ²Xi'an Jiaotong University, China
- N/A **Symmetry Approach to the Dark Modes and Electromagnetically Induced Transparency Engineering**
Elena Bochkova¹, Shah Nawaz Burokur², Anatole Lupu¹
¹C2N (UMR 9001), France; ²LEME (EA 4416), France

EuMC30: Sub-THz Components and Electro-Optic Systems

Chair: Tom Keinicke Johansen, Technical University of Denmark, Denmark

Co-Chair: Jyri Putkonen, Nokia Bell Labs, Finland

Prag, Time 13:50 – 15:30, Wednesday 11th October 2017

- 616 **A 230–300GHz Low-Loss Micromachined Waveguide Hybrid Coupler**
Jan Svedin¹, Robert Malmqvist¹, Bernhard Beuerle², Umer Shah², Joachim Oberhammer²
¹FOI, Sweden; ²KTH, Sweden
- 620 **Coplanar Transitions Based on Aluminum Nitride Interposer Substrate for Terabit Transceivers**
Yunfeng Dong, Tom K. Johansen, Vitaliy Zhurbenko, Peter Jesper Hanberg, Technical University of Denmark, Denmark
- 624 **Modulation Characteristics of a Laser-Diode Hybrid-Integrated into a Ceramic Multilayer Module for Radio-Over-Fiber Applications**
Sumy Mathew, Tilo Welker, Nam Gutzeit, Steffen Spira, Ralf Stephan, Jens Müller, Matthias A. Hein, Technische Universität Ilmenau, Germany
- 628 **Millimeter-Wave Electro-Optic Modulator Using Stacked Patch-Antennas Embedded with Micrometer-Gap for Radio-over-Fiber System**
Hiroshi Murata¹, Hironori Aya¹, Toshiyuki Inoue¹, Atsushi Sanada¹, Yusuf Nur Wijayanto², Atsushi Kanno³, Tetsuya Kawanishi⁴
¹Osaka University, Japan; ²LIPI, Indonesia; ³NICT, Japan; ⁴Waseda University, Japan

EuMC31: Novel Synthesis and Design Techniques for Microwave Filters

Chair: Giuseppe Macchiarella, Politecnico di Milano, Italy

Co-Chair: Luciano Accattino, AC Consult, Germany

Istanbul, Time 13:50 – 15:30, Wednesday 11th October 2017

- 632 **Accurate Design of Corrugated Waveguide Low-Pass Filters Using Exclusively Closed-Form Expressions**
F. Teberio, I. Arnedo, J.M. Percaz, I. Arregui, T. Lopetegi, M.A.G. Laso, Universidad Pública de Navarra, Spain
- 636 **Realization of Filters with Improved Selectivity Using Lumped and Quasi-Lumped Terminating Half Sections**
Sandra Marín, Jorge D. Martínez, Vicente E. Boria, Universitat Politècnica de València, Spain
- 640 **Synthesis of Ladder-Type Acoustic Filters in the Band-Pass Domain**
Iuliia Evdokimova, Alfred Gimenez, Jordi Verdú, Pedro de Paco, Universitat Autònoma de Barcelona, Spain
- 644 **Efficient Implementation of the Aggressive Space Mapping Technique for Microwave Filter Design**
Javier Ossorio, Joaquin Vague, Vicente E. Boria, Marco Guglielmi, Universitat Politècnica de València, Spain
- 648 **Lossy Multiband Filters and Ghost Passbands**
Riana H. Geschke, Leokadia Nepaya, University of Cape Town, South Africa

EuMC32: Advances in Measurements

Chair: Thomas Musch, Ruhr-Universität Bochum, Germany

Co-Chair: Andreas Wentzel, FBH, Germany

Seoul, Time 13:50 – 15:30, Wednesday 11th October 2017

- N/A **Advanced Methods for Network and Spectrum Measurements in mm-Wave and THz Bands** (Industrial Session Keynote)
Joel Dunsmore, Keysight Technologies, USA
- 656 **Novel Experimental Determination of Differential Amplifier Noise Parameters**
Luciano Boglione, NRL, USA
- 660 **Considerations on Accurate Characterization of Differential Devices Using Baluns**
Vadim Issakov¹, Badou Sene¹, Erick Aguilar², Andreas Werthof¹, Snezana Jenei¹, Robert Weigel²
¹Infineon Technologies, Germany; ²FAU Erlangen-Nürnberg, Germany
- 664 **Pulsed RF Characterization of Envelope Tracking Systems for Improved Shaping Function Extraction**
Sophie Paul¹, Nikolai Wolff¹, Christophe Delepaut², Václav Valenta², Wolfgang Heinrich¹, Olof Bengtsson¹
¹FBH, Germany; ²ESA-ESTEC, The Netherlands
- 668 **Benchmarking of RF Measurement Systems for Digital Predistortion Using Iterative Learning Control**
Nikolai Wolff, Wolfgang Heinrich, Olof Bengtsson, FBH, Germany

EuMC33 : Focused Session: Microwave Vacuum Electronics

Chair: John Jelonnek, KIT, Germany

Co-Chair: Wenlong He, University of Strathclyde, UK

Singapur, Time 13:50 – 15:30, Wednesday 11th October 2017

- 672 **Advances in Spatial-Harmonic Magnetrons with Cold Secondary-Emission Cathode**
Dmytro M. Vavriv¹, Vasyliy D. Naumenko¹, Klaus Schuenemann², Vladymyr A. Markov¹, Aleksandr N. Syvorov¹
¹NASU, Ukraine; ²Technische Universität Hamburg-Harburg, Germany
- 676 **Novel Spatial Harmonic Magnetrons and Their Potential Applications**
Nasrin Nasr Esfahani, CERN, Switzerland
- 680 **Measurement of a Broadband High Power Gyro-TWA Operating in W-Band Frequency**
W. He, Craig R. Donaldson, Liang Zhang, A.W. Cross, Alan D.R. Phelps, University of Strathclyde, UK
- 684 **Passive Mode-Locking and Generation of Ultrashort Pulses in Electron Oscillators with Saturable Absorber in the Feedback Loop**
Naum Ginzburg¹, Grigory Denisov¹, Michail Vilkov¹, Irina Zotova¹, Alexander Sergeev¹, Sergey Samsonov¹, Sergey Mishakin¹, Ekaterina Kocharovskaya¹, John Jelonnek², Alexander Marek²
¹Russian Academy of Sciences, Russia; ²KIT, Germany
- 687 **Real-Time, Remote Detection of Radioactive Material Using a High-Power Millimeter/THz Wave Vacuum Device**
Dongsung Kim, Dongho Yu, Ashwini Sawant, Mun Seok Choe, Ingeun Lee, EunMi Choi, UNIST, Korea

EuMC34: EuMC Interactive Session 2

Chair: Benjamin Nuss, KIT, Germany

Co-Chair: Ilona Rolfes, Ruhr-University Bochum, Germany

Exhibition Hall, Time 14:30 – 16:10, Wednesday 11th October 2017

- 691 **Slow-Wave Substrate Integrated Waveguide with Partially Polyline Loading**
Yuliang Zhou, Haiyan Jin, Yong Mao Huang, Hailu Jin, UESTC, China
- 695 **Integrated Micromachined Waveguide Absorbers at 220–325GHz**
Bernhard Beuerle, James Campion, Umer Shah, Joachim Oberhammer, KTH, Sweden
- 699 **Urban-Vegetation Ratio Evaluation for Path Loss Model in Amazonian Region for Television Bands**
Germán D. Castellanos, Guillermo Teuta, Escuela Colombiana de Ingeniería, Colombia
- 703 **Analysis of Absorption Mechanism in a Planar Radome Absorber**
Sofian Hamid, Dirk Heberling, RWTH Aachen University, Germany
- 707 **Differential Waveguide Cuvette for Complex Permittivity Measurement of High Loss Liquids at Microwaves**
Z.E. Eremenko, V.M. Skresanov, E.S. Kuznetsova, A.I. Shubnyi, V.V. Glamazdin, M.P. Natarov, NASU, Ukraine
- 711 **How Tough are the Front-End Requirements for 4G-and-Beyond Handsets?**
L.A. Bronckers, A. Roc'h, A.B. Smolders, Technische Universiteit Eindhoven, The Netherlands
- 715 **The Electromagnetic Fields of a 64MHz Quadrature Driven Birdcage Coil in ASTM Phantom**
Mikhail Kozlov¹, L.M. Angelone², W. Kainz²
¹MPI for Human Cognitive & Brain Sciences, Germany; ²FDA, USA

- 719 **Numerical Feasibility Study of New Combined Hyperthermia System for Head and Neck Region**
Ondrej Fiser, Ilja Merunka, Jan Vrba, Czech Technical University in Prague, Czech Republic
- 723 **MIMO Backscatter Channel and Data Transmission Measurements**
Eckhard Denicke, Henning Hartmann, Bernd Geck, Dirk Manteuffel, Leibniz Universität Hannover, Germany
- 727 **The Influence of Time-Variant Propagation Effects Due to Rotating Wind Turbines**
Frank Weinmann, Josef G. Worms, Peter Knott, Fraunhofer FHR, Germany
- 731 **Optimal Delta-Sigma Modulation Based Noise Shaping for Truly Aliasing-Free Digital PWM**
Omer Tanovic, Rui Ma, Koon Hoo Teo, MERL, USA
- 735 **Extreme States and Anomalous Dispersion of Surface Waves in Composite Gyroelectromagnetic Materials**
Illia V. Fedorin¹, Volodymyr I. Fesenko², Vladimir R. Tuz²
¹NTU "KhPI", Ukraine; ²Jilin University, China
- 739 **A Self-Calibration Technique for Microwave Multiport Measurements**
Marc Zimmermanns, Ilona Rolfes, Ruhr-Universität Bochum, Germany
- N/A **Second-Order Error Correction of a Pre-Calibrated Vector Network Analyzer for Wafer-Level Measurements**
Aleksandr A. Savin, TUSUR, Russia

- 747 **Accurate Synchronization Method of 38-GHz 5G Channel Measurement System**
Yi-Qi Lin, Wei-Chung Cheng, Tsung-Hsin Liu, Yu Rong Chen, Wern-Ho Sheen, Zuo-Min Tsai, National Chung Cheng University, Taiwan
- 751 **Architecting a Multi-GHz Real-Time RF Streaming System**
Neil Feiereisel, Shivansh Chaudhary, National Instruments, USA

EuMC35: Advanced Oscillator Design

Chair: Sébastien Chartier, HENSOLDT, Germany

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

Kiew, Time 16:10 – 17:50, Wednesday 11th October 2017

- 755 **A 52-to-67GHz Dual-Core Push-Push VCO in 40-nm CMOS**
*Vadim Issakov¹, Johannes Rimmelspacher¹, Saverio Trotta¹, Marc Tiebout²,
Amelie Hagelauer³, Robert Weigel³*
¹Infineon Technologies, Germany; ²Infineon Technologies, Austria; ³FAU
Erlangen-Nürnberg, Germany
- 759 **Design of Low Phase Noise Feedback-Type Harmonic Oscillator Using SIW-CMSRR
Diplexer**
Zhipeng Li¹, Rong Zeng¹, Zhaorong Li¹, Jingfu Bao²
¹CAEP, China; ²UESTC, China
- 763 **Ku-Band Oscillator Using Integrated Defected Ground Structure Resonator in 0.18 μ m
CMOS Technology**
Nusrat Jahan, Adel Barakat, Ramesh K. Pokharel, Kyushu University, Japan
- 767 **An Improved Ultra-Low-Phase Noise Tunable YIG Oscillator Operating in the 6–12GHz
Range**
Wadim Stein¹, Florian Huber¹, Saygin Bildik², Michael Aigle², Martin Vossiek¹
¹FAU Erlangen-Nürnberg, Germany; ²Rohde & Schwarz, Germany
- 771 **Phase-Sensitivity Analysis of Injection-Locked Mutually Coupled Oscillators**
Mabel Pontón, Silvia Hernández, Almudena Suárez, Universidad de Cantabria, Spain

EuMC36: Metamaterials, Periodic Structures, and Applications

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

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

Riga, Time 16:10 – 17:50, Wednesday 11th October 2017

- 775 **Accurate Circuit Model for a Planar Resonant Blazed Grating**
*C. Molero¹, R. Rodríguez-Berral¹, F. Medina¹, F. Mesa¹, Mohammad Memarian²,
Tatsuo Itoh³*
¹Universidad de Sevilla, Spain; ²Sharif University of Technology, Iran; ³University of
California at Los Angeles, USA
- 779 **A Metasurface Assisted Half-Mode Leaky Waveguide**
Cheng Tao¹, Mohammad Memarian², Tatsuo Itoh¹
¹University of California at Los Angeles, USA; ²Sharif University of Technology, Iran
- 783 **High Miniaturization Potential of Slow-Wave Transmission Lines Based on
Simultaneous Inductor and Capacitor Loading**
*Jordi Selga, Paris Vélez, Jordi Bonache, Ferran Martín, Universitat Autònoma de
Barcelona, Spain*
- 787 **3D Printed Luneburg Lens for Flexible Beam Steering at Millimeter Wave Frequencies**
A. Kubach, A. Shoykhetbrod, Reinhold Herschel, Fraunhofer FHR, Germany
- 791 **A Dual-Band Frequency Selective Surface Using Four Arms Star Geometry Associated
to Trapezoidal Rings for WiFi Applications**
A. Gomes Neto¹, J.C. e Silva¹, J.B. de O. Silva¹, C. Peixeiro²
¹GTEMA-IFPB, Brazil; ²Universidade de Lisboa, Portugal

EuMC37: Special Session: Microwave Research in Asia Pacific

Chair: Kamran Ghorbani, RMIT University, Australia

Co-Chair: Roberto Sorrentino, University of Perugia, Italy

Prag, Time 16:10 – 17:10, Wednesday 11th October 2017

- N/A **Recent Research Activities on Microwave Filters, Amplifiers, and Wireless Power Transfer Systems**
Toshio Ishizaki, Ryukoku University, Japan
- N/A **Efficiency and Bandwidth Enhancement in Power Amplifiers for Wireless Communication**
Karun Rawat¹, Shibani K. Koul²
¹IIT Roorkee, India; ²IIT Delhi, India
- N/A **Antenna Incorporating Artificial Magnetic Conductor**
Raimi Dewan, Mohamad Kamal A. Rahim, Universiti Teknologi Petronas, Malaysia

EuMC38: Substrate-Integrated Waveguide Filters and Diplexers

Chair: Dmitry Kholodnyak, St. Petersburg Electrotechnical University "LETI", Russia

Co-Chair: Quendo Cédric, Lab-STICC, France

Istanbul, Time 16:10 – 17:50, Wednesday 11th October 2017

- 807 **A Novel Class of Half-Mode SIW Filters with Extracted Poles**
Giuseppe Macchiarella¹, Cristiano Tomassoni², E. Massoni³, Maurizio Bozzi³, Luca Perregrini³
¹Politecnico di Milano, Italy; ²Università di Perugia, Italy; ³Università di Pavia, Italy
- N/A **Realization of Single-Layer Ka-Band Dual-Mode Substrate Integrated Waveguide Filters and Diplexer Using a Circular Cavities with Via Perturbation**
W.C. Huang¹, J. Xu¹, Z.Q. Yu², J.Y. Zhou²
¹Huawei Technologies, China; ²Southeast University, China
- 815 **A Dual-Mode Quasi-Elliptic Filter in Air-Filled Substrate Integrated Waveguide Technology**
Cristiano Tomassoni¹, Lorenzo Silvestri², Maurizio Bozzi², Luca Perregrini², Anthony Ghiotto³
¹Università di Perugia, Italy; ²Università di Pavia, Italy; ³IMS (UMR 5218), France
- 819 **An E-Band Hybrid-Coupled Diplexer Built of Silica-Based Post-Wall Waveguide**
Yusuke Uemichi¹, Osamu Nakaga¹, Kei Nakamura¹, Xu Han¹, Yuta Hasegawa¹, Ryouhei Hosono¹, Kiyoshi Kobayashi¹, Ning Guan¹, Shuhei Amakawa²
¹Fujikura, Japan; ²Hiroshima University, Japan
- N/A **Implementation of Negative Coupling in Gap-Waveguide Filters**
M. Arezoomand, A. Pirhadi, S. Karimian, Shahid Beheshti University, Iran

EuMC39: On-Wafer Device Characterisation

Chair: Andreas Stelzer, Johannes Kepler University Linz, Austria

Co-Chair: Lutfi Albasha, American University of Sharjah, UAE

Seoul, Time 16:10 – 17:50, Wednesday 11th October 2017

- 827 **Experimental Investigation of the Lateral Resolution of a Homemade Near Field Microwave Microscope**
Tianjun Lin, Sijia Gu, Tuami Lasri, IEMN, France
- 831 **Nano-Probing Station Incorporating MEMS Probes for 1D Device RF On-Wafer Characterization**
K. Daffe, J. Marzouk, A. El Fellahi, T. Xu, C. Boyaval, S. Eliet, B. Grandidier, S. Arscott, G. Dambrine, K. Haddadi, IEMN, France
- 835 **Impact of Parasitic Coupling on Multiline TRL Calibration**
G.N. Phung¹, F.J. Schmückle¹, Ralf Doerner¹, T. Fritzsche², Wolfgang Heinrich¹
¹FBH, Germany; ²Fraunhofer IZM, Germany
- 839 **Dispersion Behavior of the Apparent Permittivity for Quasi-TEM Transmission Lines up to 110GHz**
Oliver Huber, Gottfried Magerl, Holger Arthaber, Technische Universität Wien, Austria
- 843 **Microwave and Millimeter-Wave Characterization of Conductive Ink Film in Rectangular Waveguide**
Xu-chen Wang, Ana Díaz-Rubio, Sergei Tretyakov, Aalto University, Finland

EuMC40: High-Power Microwave and mm-Wave Sources

Chair: Dmytro Vavriv, NASU, Ukraine

Co-Chair: John Jelonnek, KIT, Germany

Singapur, Time 16:10 – 17:50, Wednesday 11th October 2017

- N/A **Vacuum versus Solid State RF Sources: Complementarity Better Than Competition (Industrial Session Keynote)**
Philippe Thouvenin, Thales Electron Devices, France
- 848 **Analog Predistortion for High Power Amplifier Over the Ku-Band (13,75–14,5GHz)**
Clément Mallet¹, Claude Duvanaud², Laurent Carré¹, Smail Bachir²
¹ACTIA Telecom, France; ²XLIM, France
- 852 **Comparative Study of Envelope Models for Multi-Tone Simulation of Traveling-Wave Tubes**
Djamschid Safi¹, Philip Birtel², Sascha Meyne¹, Arne F. Jacob¹
¹Technische Universität Hamburg-Harburg, Germany; ²Thales Electronic Systems, Germany
- 856 **The Upgrade of the Intermediate Power Amplifier of the TRIUMF 520 MeV Cyclotron's RF System**
N.V. Avrelina, TRIUMF, Canada
- 860 **KIT Coaxial Gyrotron Development: From ITER Towards DEMO**
S. Ruess, K.A. Avramidis, M. Fuchs, G. Gantenbein, S. Illy, P.C. Kalaria, T. Kobarg, I.Gr. Pagonakis, T. Rzesnicki, M. Thumm, J. Weggen, John Jelonnek, KIT, Germany

EuMC41: Medical Microwave Applications

Chair: Andreas Stelzer, Johannes Kepler University Linz, Austria

Co-Chair: André Vander Vorst, European Microwave Association, Belgium

Riga, Time 08:30 – 10:10, Thursday 12th October 2017

- 864 **High Precision Realtime RF-Measurement System for Imaging of Stroke**
*Sebastian Poltschak¹, Markus Freilinger¹, Reinhard Feger¹, Andreas Stelzer¹,
Abouzar Hamidipour², Tommy Henriksson², Markus Hopfer², Ramon Planas²,
Serguei Semenov²*
¹Johannes Kepler Universität Linz, Austria; ²EMTensor, Austria
- 868 **Clinical Use of a Waveguide Hyperthermia System for Superficial Tumors with Deep Infiltration**
*H.P. Kok, G. van Stam, J. Sijbrands, A. Bakker, M.W. Kolff, G. van Tienhoven,
M.C.C.M. Hulshof, J. Crezee, Academisch Medisch Centrum, The Netherlands*
- 872 **Non-Contact Radiative Temperature Measurement of an Object in a Closed Cavity**
Dawei Xu¹, Dirk Rüter¹, Jörg Himmel¹, Daniel Erni², Klaus Thelen¹
¹Hochschule Ruhr West, Germany; ²Universität Duisburg-Essen, Germany
- 876 **Hyperthermia of Deep Seated Pelvic Tumors with a Phased Array of Eight Versus Four 70MHz Waveguides**
*J. Crezee, G. van Stam, J. Sijbrands, S. Oldenburg, E.D. Geijssen, M.C.C.M. Hulshof,
H.P. Kok, Academisch Medisch Centrum, The Netherlands*
- 880 **Microwave Tomography Assisted by Radar Imaging**
Yuki Ono, Yoshihiko Kuwahara, Shizuoka University, Japan

EuMC42: Numerical Modelling of Guided-Wave Structures

Chair: Maurizio Bozzi, University of Pavia, Italy

Co-Chair: Peter Zwamborn, TNO, The Netherlands

Prag, Time 08:30 – 10:10, Thursday 12th October 2017

- 884 **Extension of the BI-RME Method to the Analysis of Piecewise-Homogeneous Waveguide Components Including Arbitrarily Shaped Building Blocks**
Simone Battistutta, Maurizio Bozzi, Marco Bressan, Luca Perregrini, Università di Pavia, Italy
- 888 **Eigenvalues Approach for the Analysis of Plasmon Propagation on a Graphene Layer**
L. Pierantoni, D. Mencarelli, M. Stocchi, T. Rozzi, Università Politecnica delle Marche, Italy
- 892 **Transient Electromagnetic-Thermal Simulation of Debye Media Using Alternating-Direction-Implicit Method**
Liang Chen, Min Tang, Qiangqiang Feng, Junfa Mao, Shanghai Jiao Tong University, China
- N/A **A Mode for Predicting Passive Intermodulation Distortion in Microstrip Lines**
Yun He¹, Qi Wang¹, Wanzhao Cui¹, Chunliang Liu²
¹CAST, China; ²Xi'an Jiaotong University, China
- 900 **Electromagnetic Field Simulation of MMICs Including RF Probe Tips**
*D. Müller¹, Jochen Schäfer¹, D. Geenen¹, H. Massler², Axel Tessmann², Arnulf Leuther²,
Thomas Zwick¹, Ingmar Kallfass³*
¹KIT, Germany; ²Fraunhofer IAF, Germany; ³Universität Stuttgart, Germany

EuMC43 : Advanced Dielectric Resonator Filters

Chair: Richard Snyder, RS Microwave, USA

Co-Chair: Ian Hunter, University of Leeds, UK

Istanbul, Time 08:30 – 10:10, Thursday 12th October 2017

- 904 **Design of a Novel Type of Narrow Band BPFs Using High-Q M-PhC Resonators**
Chen-Ping Chen¹, Shun Kikawa¹, Daisuke Tetsuda¹, Tetsuo Anada¹, Shigeki Takeda²
¹Kanagawa University, Japan; ²Antenna Giken, Japan
- 908 **Dual-Mode Dual-Band Conductor-Loaded Dielectric Resonator Filters**
Mustafa S. Bakr¹, Saad W.O. Luhaib¹, Ian C. Hunter¹, Wolfgang Bösch²
¹University of Leeds, UK; ²Technische Universität Graz, Austria
- 911 **Pseudo-Elliptic Inline DR Filters Using Nonresonating Modes**
Payman Rezaee, Michael Höft, Christian-Albrechts-Universität zu Kiel, Germany
- 915 **Tunable Quad-Mode Dielectric Resonator Filter**
Christian Orlob, Christoph Neumaier, SPINNER, Germany
- 919 **Micro-Additive Fabrication of 38GHz Resonators and Filters**
F. David¹, C. Dalmay¹, M. Chatras¹, Ludovic Carpentier², L. Lapierre², P. Blondy¹
¹XLIM, France; ²CNES, France

EuMC44 : Dielectric Material Characterisation

Chair: Thomas Zwick, KIT, Germany

Co-Chair: Ke Wu, Ecole Polytechnique de Montreal, Canada

Oslo, Time 08:30 – 10:10, Thursday 12th October 2017

- 923 **Complex Permittivity Measurements of Curing Epoxy Resin in Glass-Fibre Reinforced Composite**
Jannis Groh, Melanie Lipka, Jan Schür, Martin Vossiek, FAU Erlangen-Nürnberg, Germany
- 927 **Monitoring Changes in Microwave Absorption of Ti64 Powder During Microwave Sintering**
Samuel Hefford, Nyle Parker, Jonathan Lees, Adrian Porch, Cardiff University, UK
- 930 **Industrial Scale Microwave Applicator for High Temperature Alkaline Hydrolysis of PET**
V. Ramopoulos, G. Link, S. Soldatov, John Jelonnek, KIT, Germany
- 934 **Ellipsometry Based on Millimeter Wave Radar Measurements**
Jan Barowski, Ilona Rolfes, Ruhr-Universität Bochum, Germany
- 938 **Micromachined Cavity Resonator Sensors for On Chip Material Characterisation in the 220–330GHz Band**
Dragos Dancila¹, Bernhard Beuerle², Umer Shah², Anders Rydberg¹, Joachim Oberhammer²
¹Uppsala University, Sweden; ²KTH, Sweden

EuMC45: Biomedical Sensing and Dielectric Characterisation

Chair: Bart Nauwelaers, Katholieke Universiteit Leuven, Belgium

Co-Chair: André Vander Vorst, European Microwave Association, Belgium

Riga, Time 10:50 – 12:30, Thursday 12th October 2017

- 942 **Wearable Sensors Based on Modulated Frequency Selective Surfaces**
S. Milici, A. Lazaro, J. Lorenzo, R. Villarino, D. Girbau, Universitat Rovira i Virgili, Spain
- 946 **Broadband Dielectric Spectroscopy Measurements of Liquids Combining Interdigital Capacitor and Coplanar Waveguide**
Xiue Bao¹, Ilja Ocket², Juncheng Bao¹, Dries Kil¹, Luigi Brancato¹, Bart Nauwelaers¹
¹Katholieke Universiteit Leuven, Belgium; ²imec, Belgium
- 950 **Grounded Coplanar Waveguide-Based 0.5–50GHz Sensor for Dielectric Spectroscopy**
Daniel Havelka, Ondrej Krivosudský, Michal Cifra, Czech Academy of Sciences, Czech Republic
- 954 **Characterization of Dielectric Anisotropy of Small Samples from Plant Fresh and Dry Biomass by Microwave Resonance Method**
Plamen I. Dankov, Sofia University, Bulgaria
- 958 **Dielectric Measurements of Mangoes from 0.5GHz to 20GHz Using a Custom Open-Ended Coaxial Probe**
Harshitha Thippur Shivamurthy, Ilaria Maticena, Marco Spirito, Technische Universiteit Delft, The Netherlands

EuMC46: Numerical Modelling of Radiating Structures

Chair: Hervé Aubert, LAAS, France

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

Prag, Time 10:50 – 12:30, Thursday 12th October 2017

- N/A **Multi-Scale Electromagnetic Simulation from Component to System Level (Industrial Session Keynote)**
Timo Euler, CST, Germany
- 963 **A New Class of Nondiffracting Pulses Based on Focusing Leaky Waves**
Walter Fuscaldo, Davide Comite, Alessandro Boesso, Paolo Baccarelli, Paolo Burghignoli, Alessandro Galli, Università di Roma “La Sapienza”, Italy
- 967 **Shape Optimizations of Metallic Sheets for Improved Near-Zone Scattering, Reflection, and Focusing Characteristics**
Aşkın Altınoklu, Özgür Ergül, Middle East Technical University, Turkey
- 971 **A Criterion for Radar Antenna Design to Enhance Efficacy of Polarimetric Entropy in Moving Target Discrimination**
Je-Ruei Bai, Liang-Yu Ou-Yang, Shih-Yuan Chen, National Taiwan University, Taiwan
- 975 **Scanning Microwave Microscopy of Aluminum CMOS Interconnect Lines Buried in Oxide and Water**
Xin Jin¹, Kuanchen Xiong¹, Roderick Marstell¹, Nicholas C. Strandwitz¹, James C.M. Hwang¹, Marco Farina², Alexander Göritz³, Matthias Wietstruck³, Mehmet Kaynak³
¹Lehigh University, USA; ²Università Politecnica delle Marche, Italy; ³IHP, Germany

EuMC47: Compact and Advanced Implementations of Waveguide Filters

Chair: Vicente Enrique Boria Esbert, Universitat Politècnica de Valencia, Spain

Co-Chair: Cristiano Tomassoni, University of Perugia, Italy

Istanbul, Time 10:50 – 12:30, Thursday 12th October 2017

- N/A **Overview of Passive Filter Technologies for Satellite Payloads** (Industrial Session Keynote)
Jean Parlebas, Tesat-Spacecom, Germany
- 981 **On-Board Miniaturized L-Band Input Filter Based on TM-Mode Dielectric Resonator for MSS Applications**
Luca Pelliccia¹, Fabrizio Cacciamani¹, Roberto Sorrentino¹, Francesco Vitulli², Walter Steffè², Franco Diaferia², Elio Picchione², Petronilo M. Iglesias³, Andrew Jones⁴
¹RF Microtech, Italy; ²Thales Alenia Space, Italy; ³ESA-ESTEC, The Netherlands; ⁴ESA-ECSAT, UK
- 985 **Compact Broadband Waveguide Filter with Wide Spurious-Free Range Based on Mixed TM and Combline Resonators**
Cristiano Tomassoni¹, Luca Pelliccia², Fabrizio Cacciamani², P. Vallerotonda², Roberto Sorrentino¹, Jaione Galdeano³, Christoph Ernst³
¹Università di Perugia, Italy; ²RF Microtech, Italy; ³ESA-ESTEC, The Netherlands
- 989 **Enhancing the Performance of Stepped Impedance Resonator Filters in Rectangular Waveguide**
Joaquín Valencia, Marco Guglielmi, Santiago Cogollos, Joaquín Vague, Vicente E. Boria, Universitat Politècnica de València, Spain
- 993 **Compact Doublet Structure for Quasi-Elliptical Filters Using Stereolithographic 3D Printing**
Cristiano Tomassoni, Giuseppe Venanzoni, Marco Dionigi, Roberto Sorrentino, Università di Perugia, Italy

EuMC48: Wireless Technologies

Chair: Lutfi Albasha, American University of Sharjah, UAE

Co-Chair: Zhou Du, Nokia Bell Labs, Finland

Oslo, Time 10:50 – 12:30, Thursday 12th October 2017

- N/A **A Low Complexity Approach for Calibration and Characterization of a Millimeter Wave Phased-Array Transceiver-Antenna Module**
Mehdi Salehi, Mohammad-Reza Nezhad-Ahmadi, Safieddin Safavi-Naeini, University of Waterloo, Canada
- 1001 **A Fully-Printed, BST MIM Varactor for Low ISM-Band Matching Networks up to 1000W**
Daniel Kienemund¹, Thomas Fink², Mike Abrecht², Walter Bigler², Joachim R. Binder³, Rolf Jakoby¹, Holger Maune¹
¹Technische Universität Darmstadt, Germany; ²COMET, Switzerland; ³KIT, Germany
- 1005 **On MM-Wave Quasi-Linear Over-The-Air Modulated Measurements and Coupling Effects**
J. Martens, Anritsu, USA
- 1009 **Measurement of Complex Transfer Function of Analog Transmit-Receive Frontends for Terahertz Wireless Communications**
Iulia Dan¹, Enoc Rosello¹, Parisa Harati¹, Seyyid Dilek¹, Ingmar Kallfass¹, Shoichi Shiba²
¹Universität Stuttgart, Germany; ²Fujitsu Laboratories, Japan
- 1013 **Co-Design of Millimeter-Wave Polymer Fiber and Antenna System for Full Duplex Communication**
Mohadig Widha Rousstia, TE Connectivity, The Netherlands

EuMC/EuMIC01 : High Performance Si-Based Power Amplifiers

Chair: Franco Giannini, University of Rome "Tor Vergata", Italy

Co-Chair: Renato Negra, RWTH Aachen University, Germany

Kiew, Time 08:30 - 10:10, Tuesday 10th October 2017

- 1017 **A 100-145GHz Area-Efficient Power Amplifier in a 130nm SiGe Technology**
Mingquan Bao¹, Zhongxia Simon He², Herbert Zirath²
¹Ericsson, Sweden; ²Chalmers University of Technology, Sweden
- 1021 **A 109-137GHz Power Amplifier in SiGe BiCMOS with 16.5dBm Output Power and 12.8% PAE**
Maciej Kucharski, Johannes Borngräber, Defu Wang, Dietmar Kissinger, Herman Jalli Ng, IHP, Germany
- 1025 **Common-Drain CMOS Power Amplifier: An Alternative Power Amplifier**
Muhammad Abdullah Khan, Renato Negra, RWTH Aachen University, Germany
- 1029 **High-Efficiency Watt-Level MASMOS Power Amplifier for LTE Applications**
Fabien Mesquita¹, Eric Kerhervé¹, Anthony Ghiotto¹, Yann Creveuil², Myrienne Regis²
¹IMS (UMR 5218), France; ²ACCO Semiconductor, France
- 1033 **12/25W Wideband LDMOS Power Amplifier IC (3400-3800MHz) for 5G Base Station Applications**
Xavier Hue¹, Faiza Baroudi¹, Laure Bollinger¹, Margaret Szymanowski², Jean-Christophe Nanan¹
¹NXP Semiconductors, France; ²NXP Semiconductors, USA

EuMC/EuMIC02 : Special Session: Funding for Research

Chair: Hermann Schumacher, Ulm University, Germany

Co-Chair: Ingmar Kallfass, University of Stuttgart, Germany

Seoul, Time 08:30 - 10:10, Tuesday 10th October 2017

- N/A **Electrical, Communications and Cyber Systems at the National Science Foundation**
Dimitris Pavlidis, National Science Foundation, USA
- N/A **Managing and Promoting Innovation in Defence: EDA's Activities Related to Microelectronics**
Patrick Langlois, European Defence Agency, Belgium
- N/A **ESA Programs**
Marie-Geneviève Périchaud, Jouni Latti, ESA-ESTEC, The Netherlands
- N/A **Microwaves for Breaking Ground Research: Fundamental Science in Electrical Engineering and Funding Opportunities in Germany**
Damian Dudek, DFG, Germany

EuMC/EuMIC03 : Power Amplifier Linearisation

Chair: Geneviève Baudoin, ESYCOM, France

Co-Chair: Claude Duvanaud, XLIM, France

Kiew, Time 13:50 - 15:30, Tuesday 10th October 2017

- 1042 **New Ka-Band Analog Predistortion Linearizer Allowing a 2.9GHz Instantaneous Wideband Satellite Operation**
J.-F. Villemazet¹, H. Yahi¹, B. Lefebvre¹, F. Baudeigne¹, J. Maynard¹, G. Soubercaze-Pun², L. Lapierre²
¹Thales Alenia Space, France; ²CNES, France
- 1046 **A Reconfigurable In-Band Digital Predistortion Technique for mmWave Power Amplifiers Excited by a Signal with 640MHz Modulation Bandwidth**
Chao Yu¹, Debin Hou¹, Honglei Sun¹, Fan Meng¹, Xiao-Wei Zhu¹, Jianfeng Zhai¹, Jixin Chen¹, Pinpin Yan¹, Anding Zhu²
¹Southeast University, China; ²University College Dublin, Ireland
- 1050 **Impact of the Normalization Gain of Digital Predistortion on Linearization Performance and Power Added Efficiency of the Linearized Power Amplifier**
Siqi Wang, Mazen Abi Hussein, Olivier Venard, Geneviève Baudoin, ESYCOM, France
- 1054 **Spectrum-Folding Scalar-Feedback Architecture for Wideband DPD with Simple Feedback Circuit**
Suguru Habu¹, Caoyu Li², Yasushi Yamao¹
¹University of Electro-Communications, Japan; ²UESTC, China
- 1058 **Concurrent Dual-Band Digital Predistortion Based on Canonical Piecewise Linear Functions**
Zhijian Yu, Wei Wang, Shanghai Huawei Technologies, China

EuMC/EuMIC04 : Interconnects and Packaging

Chair: Shmuel Auster, Elta Systems, Israel

Co-Chair: Jan Hesselbarth, University of Stuttgart, Germany

Riga, Time 13:50 - 15:30, Tuesday 10th October 2017

- N/A **Future Antenna and Packaging Alternatives for High Reliability Millimeter Wave Applications: Challenges and New Approach to RF Antenna Manufacturing (Industrial Session Keynote)**
Thomas Gottwald, Schweizer Electronic, Germany
- 1061 **Sub-THz Micromachined Waveguides for Wafer Level Integration of MMICs**
Pekka Pursula, Antti Lamminen, Mikko Kantanen, Jaakko Saarilahti, Vladimir Ermolov, VTT Technical Research Centre of Finland, Finland
- 1065 **Low-Loss mm-Wave Transition from On-Chip Microstrip to Rectangular Waveguide**
Daniel López Cuenca, Jan Hesselbarth, Golzar Alavi, Universität Stuttgart, Germany
- 1069 **SiP Solutions for Wireless Transceiver Impedance Matching Networks**
Graciele Batistell¹, Timo Holzmänn¹, Stephan Leuschner², Andreas Wolter², Antonio Passamani³, Johannes Sturm¹
¹CUAS, Austria; ²Intel, Germany; ³Intel, Austria
- 1073 **Scalable Ka Band Switch Matrix in Compact LTCC Package for Satellite Communication Application**
A. Barigelli¹, Franco Diaferia¹, P. Panfili¹, M. Scipioni¹, Francesco Vitulli¹, A. Biondi², D. Resca², F. Scappaviva², G. Nicolai³, D. Di Gregorio³
¹Thales Alenia Space, Italy; ²MEC, Italy; ³Elital, Italy

EuMC/EuMIC05 : Reconfigurable and Tuneable RF and Microwave Circuits

Chair: Patrick Scheele, HENSOLDT, Germany

Co-Chair: Anthony Ghiotto, IMS, France

St. Petersburg, Time 13:50 – 15:30, Tuesday 10th October 2017

- 1077 **Novel Phase Reconfigurable Synthesized Transmission Line and its Application to Reconfigurable Hybrid Coupler**
Huy Nam Chu, Hua-Chien Liao, Gao-Yi Li, Tzyh-Ghuang Ma, Taiwan Tech, Taiwan
- 1081 **Realizing Reconfigurable Stub Impedance Matching Networks Using MEMS Switches**
Farzad Yazdani, Raafat R. Mansour, University of Waterloo, Canada
- 1085 **Liquid-Crystal-Based Amplitude Tuner Fabricated in LTCC Technology**
A.E. Prasetyadi¹, M. Jost¹, B. Schulz², M. Quibeldey³, T. Rabe², R. Follmann³, Rolf Jakoby¹
¹Technische Universität Darmstadt, Germany; ²BAM, Germany; ³IMST, Germany
- 1089 **Design of a Reconfigurable Rectangular Waveguide Phase Shifter with Metallic Posts**
Lucas Polo-López, J.L. Masa-Campos, Jorge A. Ruiz-Cruz, Universidad Autónoma de Madrid, Spain
- 1093 **Liquid Crystal Based Phase Shifter in a Parallel-Plate Dielectric Waveguide Topology at V-Band**
R. Reese, E. Polat, M. Jost, M. Nickel, Rolf Jakoby, Holger Maune, Technische Universität Darmstadt, Germany

EuMC/EuMIC06 : EuMC/EuMIC Interactive Session

Chair: Felix Rautschke, Berlin Institute of Technology, Germany

Co-Chair: Ilona Rolfes, Ruhr-University Bochum, Germany

Exhibition Hall, Time 14:30 – 16:10, Tuesday 10th October 2017

- 1097 **6–18GHz 13W Reactive Matched GaN Power Amplifier MMIC**
Hong-Qi Tao¹, Wei Hong¹, Bin Zhang²
¹Southeast University, China; ²CETC 55, China
- 1101 **Low-Loss and Compact 2.4-GHz CMOS Bandpass Filter with Finite Transmission Zeros**
Ru-Yu Wang, Sen Wang, Taipei Tech, Taiwan
- N/A **A Q-Band Broadband On-Chip Antenna with Switches Backed by an Off-Chip Reflector in 0.18- μ m CMOS SOI Technology**
Yexi Song¹, Yunqiu Wu¹, Yin Tian², Chao Yu¹, Kai Kang¹
¹UESTC, China; ²Sichuan Jiuzhou Electric Group, China
- N/A **Theory of Resonant Frequency Spectrum of Tunable Multi-Loop Spin-Wave Optoelectronic Oscillators**
A.A. Nikitin, V.V. Vitko, A.V. Kondrashov, A.B. Ustinov, B.A. Kalinikos, St. Petersburg Electrotechnical University, Russia
- 1112 **Ultra Wideband 3D Interconnects Using Aerosol Jet Printing up to 110GHz**
Jubaid Abdul Qayyum¹, Marvin Abt², Aljoscha Roch², Ahmet Cagri Ulusoy¹, John Papapolymerou¹
¹Michigan State University, USA; ²Fraunhofer CCD, USA
- 1116 **Substrate-Less Oscillator Module Realized by Gap Waveguide Technology for Millimeter Wave Applications**
B. Ahmadi, A. Banai, Sharif University of Technology, Iran
- N/A **Controlling the Oscillator Frequency Synchronization by a Low-Frequency Drive**
Anastasiia Y. Nimets¹, Klaus Schuenemann¹, Dmytro M. Vavriv²
¹Technische Universität Hamburg-Harburg, Germany; ²NASU, Ukraine

- 1124 **Relationship Between a Pruned Volterra Model Structure and Impairments in an I/Q Modulator**
Carlos Crespo-Cadenas, Javier Reina-Tosina, María J. Madero-Ayora, Juan A. Becerra-González, Universidad de Sevilla, Spain
- 1128 **An Investigation on Current Collapse Induced Memory Effects of GaN Power Amplifier for LTE Base Station Applications**
Yoji Murao, Tomoya Kaneko, NEC, Japan
- 1132 **Power Amplifier Efficiency Ceilings Due to Signal Modulation Type**
Earl McCune, Eridan Communications, USA
- 1136 **Digital Predistortion Based on B-Spline CPWL Models in a RoF LTE Mobile Fronthaul**
Carlos Mateo, Pedro L. Carro, Paloma Garcia-Ducar, Jesus de Mingo, Iñigo Salinas, Universidad de Zaragoza, Spain
- 1140 **A Concurrent Triple-Band Digital Transmitter Using Feedforward Noise Cancellation for Delta-Sigma Modulation**
SungWon Chung¹, Rui Ma¹, Shintaro Shinjo², Koji Yamanaka², Koon Hoo Teo¹
¹MERL, USA; ²Mitsubishi Electric, Japan
- 1144 **Performance of the First Three Preproduction 35–50GHz Receiver Front-Ends for Atacama Large Millimeter/Submillimeter Array**
Yuh-Jing Hwang¹, Chau-Ching Chiong¹, Yau-De Huang¹, Chi-Den Huang², Ching-Tang Liu², Fang-Chia Hsieh², Yen-Hsiang Tseng², Po-Han Chiang¹, Chih-Cheng Chang¹, Chin-Ting Ho¹, Shou-Ting Jian¹, Chien-Feng Lee¹, Yi-Wei Lee¹, Alvaro Gonzalez³, John Effland⁴, Kamaljeet Saini⁴, Marian Pospieszalski⁴, Ricardo Finger⁵, Valeria Tapia⁵, Nicolas Reyes⁵
¹Academia Sinica, Taiwan; ²NCSIST, Taiwan; ³NAOJ, Japan; ⁴NRAO, USA; ⁵Universidad de Chile, Chile

- 1148 **Microstrip Fractal-Based Phase Shifter: An UHF Phase Shifter Based on with Hilbert's Fractal Delay Lines**
Elias M.F. de Oliveira¹, Leon P. Pontes², Crislane P.N. da Silva², Marcos T. de Melo², Bruno G.M. de Oliveira³, Ignacio Llamas-Garro⁴
¹UFRPE, Brazil; ²UFPE, Brazil; ³IFPE, Brazil; ⁴CTTC, Spain
- 1151 **An UHF Rectifier with 100% Bandwidth Based on a Ladder LC Impedance Matching Network**
Spyridon Nektarios Daskalakis¹, Apostolos Georgiadis¹, Ana Collado¹, Manos M. Tentzeris²
¹Heriot-Watt University, UK; ²Georgia Institute of Technology, USA
- 1155 **Wide Dynamic Range Rectifier Circuit with Sequential Power Delivery Technique**
Koshi Hamano¹, Ryuya Tanaka¹, Satoshi Yoshida¹, Hiroto Sakaki¹, Kenjiro Nishikawa¹, Shigeo Kawasaki², Kunihiro Kawai³, Hiroshi Okazaki³, Shoichi Narahashi³, Naoki Shinohara⁴
¹Kagoshima University, Japan; ²JAXA, Japan; ³NTT DOCOMO, Japan; ⁴Kyoto University, Japan
- 1159 **Towards New Vistas in Preamplifier Design for MRI**
Daniel H. Johansen, Juan D. Sanchez-Heredia, Vitaliy Zhurbenko, Jan H. Ardenkjær-Larsen, Technical University of Denmark, Denmark

EuMC/EuRAD01 : Antenna Systems — Industrial Perspectives

Chair: Matthias Geissler, IMST, Germany

Co-Chair: Ioan Lager, Delft University of Technology, The Netherlands

Hongkong, Time 10:50 – 12:30, Wednesday 11th October 2017

- 1163 **Slim Ka-Band Triple Band Polariser Network for User and Gateway Antenna Feed Application**
Un-Pyo Hong, Michael Schneider, Ralf Gehring, Airbus, Germany
- 1167 **Design and Testing of a Polarimetric X-Band Antenna for Avionic Weather Radar**
G. Galgani¹, G. Scozza¹, R.J. Bolt², N. Haider², Stefania Monni², F. Delbary³
¹IDS Ingegneria Dei Sistemi, Italy; ²TNO, The Netherlands; ³Rockwell Collins, France
- 1171 **RF Analysis at K Band of a Radome-Covered Ground Station at Polar Latitudes**
A. Martellosio¹, Marco Pasian¹, F. Concaro², Piermario Besso²
¹Università di Pavia, Italy; ²ESA-ESOC, Germany
- 1175 **Radiometric Accuracy and One-Year-Stability of Sentinel-1A Determined Using Point Targets**
Kersten Schmidt, Nuria Tous Ramon, Marco Schwerdt, DLR, Germany
- 1179 **Test on the Prototype of a Multiple-Beam Reflector Antenna Subsystem**
Qinghua Lai, Chu Gao, Xiaotao Wang, Chen Zhang, ECRIEE, China

EuMC/EuRAD02 : Microwave Systems

Chair: Ilona Rolfes, Ruhr-University Bochum, Germany

Co-Chair: Bianca Will, FH Südwestfalen, Germany

Seoul, Time 10:50 – 12:30, Wednesday 11th October 2017

- 1183 **System Design of a Fast W-Band Line Scan Camera Using a Broadband SFCW Approach**
Andries Küter, Stefan Reible, Thomas Geibig, Dirk Nüßler, Fraunhofer FHR, Germany
- 1187 **High-Resolution FMCW Millimeter-Wave and Terahertz Thickness Measurements**
N.S. Schreiner¹, B. Baccouche¹, W. Sauer-Greff², R. Urbansky², F. Friederich¹
¹Fraunhofer ITWM, Germany; ²Technische Universität Kaiserslautern, Germany
- 1191 **A Low-Cost Multi-Target Simulator for FMCW Radar System Calibration and Testing**
Werner Scheiblhofer¹, Reinhard Feger¹, Andreas Haderer², Andreas Stelzer¹
¹Johannes Kepler Universität Linz, Austria; ²Inras, Austria
- 1195 **An M-Sequence-Based Baseband Network Analyzer Using a Combination of Hardware and Software Correlator**
Gordon Notzon, Lukas Polzin, Robert Storch, Thomas Musch, Michael Vogt, Ruhr-Universität Bochum, Germany
- 1199 **A Modular Multiport Vector Network Analyzer for Electromagnetic Tomography Applications**
Markus Freilinger¹, Sebastian Poltschak¹, Reinhard Feger¹, Andreas Stelzer¹, Abouzar Hamidipour², Markus Hopfer², Ramon Planas², Tommy Henriksson², Serguei Semenov²
¹Johannes Kepler Universität Linz, Austria; ²EMTensor, Austria

EuMC/EuRAD03 : Focused Session: Conformal Antennas and Arrays

Chair: Peter Knott, Fraunhofer FHR, Germany

Co-Chair: Loic Bernard, ISL, France

Hongkong, Time 13:50 – 15:30, Wednesday 11th October 2017

- 1203 **An Algorithm for Calculating Green's Functions of Curved Multilayer Metasurface Structures**
Zvonimir Sipus, Marko Bosiljevac, University of Zagreb, Croatia
- 1207 **Design and Manufacturing of Conformal Antenna Array on a Conical Surface at 5.2GHz**
V. Jaeck¹, L. Bernard¹, K. Mahdjoubi², Ronan Sauleau², S. Collardey², P. Pouliquen³, P. Potier³
¹ISL, France; ²IETR, France; ³DGA, France
- 1211 **A Conformal Multi-Frequency Antenna Array for Safety-of-Life Satellite Navigation**
Kazeem A. Yinusa, Lukasz A. Greda, Achim Dreher, DLR, Germany
- 1215 **Sequentially Shifted Beamforming from a Conformed Conical Array**
Sumit Karki, J. Ignacio Echeveste, Thomas Pairon, Christophe Craeye, Université catholique de Louvain, Belgium
- 1218 **Flexible UHF/VHF Vivaldi Antenna for Broadband and Gas Balloon Applications**
Anthony Presse, Jean Marie Floc'h, Anne Claude Tarrot, IETR, France

EuMC/EuRAD04 : Beam Steering Antennas and Technologies

Chair: Christian Person, IMT Atlantique, France

Co-Chair: Georg Fischer, FAU Erlangen-Nuremberg, Germany

Hongkong, Time 16:10 – 17:50, Wednesday 11th October 2017

- 1222 **76–81GHz LTCC Antenna for an Automotive Miniature Radar Frontend**
Frank Sickinger¹, Ernst Weissbrodt¹, Martin Vossiek²
¹Valeo Schalter und Sensoren, Germany; ²FAU Erlangen-Nürnberg, Germany
- 1226 **The Cost-Effective Integration of Radiating Elements into an X-Band Multipack**
Horst Bilzer, Christian Holtzhausen, Felix Thurow, Manuel Böck, Leigh Glasgow, Peter Rützel, HENSOLDT, Germany
- 1230 **X Band Distributed Phase Shifter Based on Sol-Gel BCTZ Varactors**
D. Mercier¹, A. Niembro-Martin¹, H. Sibuet¹, C. Baret¹, J. Chautagnat¹, C. Dieppedale¹, C. Bonnard¹, J. Guillaume¹, G. Le Rhun¹, C. Billard¹, P. Gardes², P. Poveda²
¹CEA-LETI, France; ²STMicroelectronics, France
- 1234 **Monopulse RLSA Antenna at 24GHz Based on a Gap-Waveguide Cavity Feed**
Manuel Sierra-Castañer¹, Adrián Tamayo Domínguez¹, Mariano Barba Gea¹, Eva Rajo-Iglesias², Jose Luis Vazquez-Roy²
¹Universidad Politécnica de Madrid, Spain; ²Universidad Carlos III de Madrid, Spain
- 1238 **Frequency Beam Steering Antenna for Millimeter Wave Checkpoint Scanners**
Mohammad Alibakhshikenari¹, Bal S. Virdee², Aurora Andújar³, Jaume Anguera³, Ernesto Limiti¹
¹Università di Roma "Tor Vergata", Italy; ²London Metropolitan University, UK; ³Fractus, Spain

EuMC/EuRAD05: Advanced Radar Technologies and Systems

Chair: Volker Ziegler, Airbus Group Innovations, Germany

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

Hongkong, Time 08:30 – 10:10, Thursday 12th October 2017

- 1241 **MIMO versus Conventional Radar Performance Against Jammers**
Eli Brookner, Independent Researcher, USA
- 1245 **A 36–40GHz Full 360° Ultra-Low Phase Error Passive Phase Shifter with a Novel Phase Compensation Technique**
Cheng-Yu Chen, Yun-Shan Wang, Yu-Hsuan Lin, Yuan-Hung Hsiao, Yi-Ching Wu, Huei Wang, National Taiwan University, Taiwan
- 1249 **X-Band Antenna Module for Advanced Navigational Phased Array Radar**
Stefan Radziewicz, Nils Hansen, Jan-Philip Mohncke, Arne F. Jacob, Technische Universität Hamburg-Harburg, Germany
- 1253 **SiGe BiCMOS X-Band Transceiver-Chip for Phased-Array Systems**
Peter Lohmiller, Rolf Reber, P. Schuh, Martin Oppermann, Sébastien Chartier, HENSOLDT, Germany
- 1257 **Ultra-High Resolution Airborne Experiments with a New Ka-Band SAR Sensor**
Gabriel El-Arnauti, Olaf Saalman, Andreas R. Brenner, Fraunhofer FHR, Germany

EuMC/EuRAD06: Polarisation Diversity and Measurements

Chair: Dietmar Kissinger, Technische Universität Berlin, Germany

Co-Chair: Alexander Koelpin, FAU Erlangen-Nuremberg, Germany

Kiew, Time 08:30 – 10:10, Thursday 12th October 2017

- 1261 **Improvement of Dynamic Range for Arbitrary Radar Systems Using Antenna Polarization Modulation**
Daniel Schindler¹, Jürgen Hasch¹, Felix Mueller¹, Christian Waldschmidt²
¹Robert Bosch, Germany; ²Universität Ulm, Germany
- 1265 **Performance Characterization of a Polarisation Agile Wideband AESA**
C. Fischer, S. Appel, W. Gautier, W. Gruener, HENSOLDT, Germany
- 1269 **Over 15-Gb/s MIMO Wireless Transmission Using Ultra Wideband Antennas in SHF Band**
Noriaki Kaneda¹, Chen Zhu¹, Xiaoqiang Li², Tatsuo Itoh², Young-Kai Chen¹
¹Nokia Bell Labs, USA; ²University of California at Los Angeles, USA
- 1273 **ARC₄² — A Double-Arch Positioner for Bistatic RCS Measurements with Four Degrees of Freedom**
Matthias Röding¹, Gerd Sommerkorn¹, Stephan Häfner¹, Alexander Ihlow¹, Snezhana Jovanoska², Reiner S. Thomä¹
¹Technische Universität Ilmenau, Germany; ²Fraunhofer FKIE, Germany

EuMC/EuRAD07 : EuMC/EuRAD Interactive Session

Chair: Jan Barowski, Ruhr-University Bochum, Germany

Co-Chair: Ilona Rolfes, Ruhr-University Bochum, Germany

Exhibition Hall, Time 10:00 – 11:40, Thursday 12th October 2017

- 1277 **Reflectarray with Split Ring Resonators at 83.5GHz**
Jonathan Mayer, Jerzy Kowalewski, Marc Vieweger, Joerg Eisenbeis, Tobias Mahler, Thomas Zwick, KIT, Germany
- 1281 **Circularly Polarized Conical Dielectric Resonator Antenna for X-Band Applications: An Experimental Study**
Sounik Kiran Kumar Dash, Taimoor Khan, Mandovi Borthakur, NIT Silchar, India
- 1285 **Optimization of Broadband Smooth Wall Microwave Horn Antennas**
Burkhard Plaum, Universität Stuttgart, Germany
- 1289 **Printed Planar Double Inverted-F Antenna with Large Frequency Reconfigurability Range**
Jean Marie Floc'h, Imen Ben Trad, IETR, France
- 1293 **Multiport Model of Hertzian Dipoles Coupled in the Near-Field**
Johannes A. Russer¹, Michel T. Ivrlač¹, Michael Haider¹, Sidina Wane², Damienne Bajon³, Peter Russer¹, Josef A. Nassek¹
¹Technische Universität München, Germany; ²NXP Semiconductors, France; ³ISAE, France
- 1297 **High-Sensitivity HTS Multi-Channel Receiver Front-End for 900MHz Band Mobile Base Station**
Tamio Kawaguchi, Hiroaki Ikeuchi, Hiroyuki Kayano, Yuichi Sawahara, Noritsugu Shiokawa, Toshiba, Japan

- 1301 **OROTRON Intracavity Millimeter-Wave Spectroscopy of Weakly Bound Complexes Containing Molecular Hydrogen**
L.A. Surin, Russian Academy of Sciences, Russia
- 1305 **Circularly Polarized Duplex Antenna with High Port-to-Port Isolation**
Peisheng Zhang, Zeming Xie, Xianjing Lin, South China University of Technology, China
- 1309 **Novel TM₀ Surface Wave Launcher for Integrated Planar Leaky Wave Antennas**
Jochen Schäfer, Heiko Gulan, Benjamin Göttel, Thomas Zwick, KIT, Germany
- 1313 **Modified 0.6–50GHz Ultra-Wideband Double-Ridged Horn Antenna Design for Parameters Improvement**
Pavel D. Kuroptev, Vladimir V. Levyakov, Alexey V. Fateev, TUSUR, Russia
- 1317 **Full SMT Low Cost X-Band Multichannel T/R-Module**
Marion Filleböck, Felix Thurow, HENSOLDT, Germany
- 1321 **Design of a 2-Bit Unit-Cell for Electronically Reconfigurable Transmitarrays at Ka-Band**
Fatimata Diaby¹, Antonio Clemente¹, Luca Di Palma¹, Laurent Dussopt¹, Kien Pham², Erwan Fourn³, Ronan Sauleau²
¹CEA-LETI, France; ²IETR, France; ³Université de Rennes, France
- 1325 **Probing Concept for an Antenna Array for 60GHz Band**
Zunnurain Ahmad, Jan Hesselbarth, Universität Stuttgart, Germany
- 1329 **Microwave Receiving System for Antenna Measurement Using Optical Devices up to 40GHz**
Satoru Kurokawa¹, Masanobu Hirose¹, Tsutomu Mitui², Shintaro Arata²
¹AIST, Japan; ²Koden Electronics, Japan

- 1333 **Polarization Optimization of Compact Antenna Arrays for Direction of Arrival Estimation**
Mariana Pralon¹, Matthias A. Hein¹, Reiner S. Thomä¹, Leandro Pralon², Bruno Pompeo², Gabriel Beltrao², Giovanni Del Galdo³, Markus Landmann³
¹Technische Universität Ilmenau, Germany; ²CTEx, Brazil; ³Fraunhofer IIS, Germany
- N/A **Fast Direction Finding System with Four Dipole Antennas for IoT Applications**
Soo-Ji Lee¹, Dong-Jin Lee², Seung-Tae Khang³, Ghoo Kim³, Jong-Sang Yu³, Jong-Won Yu³
¹ADD, Korea; ²KINS, Korea; ³KAIST, Korea
- 1341 **Damper-to-Damper Path Loss Characterization for Intra-Vehicular Wireless Sensor Networks**
Carlos A.M. Costa Júnior¹, Hao Gao¹, Thibault Le Polain², Rainier van Dommele¹, Bart Smolders¹, Miguel Dheans², Peter Baltus¹
¹Technische Universiteit Eindhoven, The Netherlands; ²Tenneco, Belgium
- N/A **Convolutional Neural Network for Human Micro-Doppler Classification**
Yue Lang¹, Chunping Hou¹, Yang Yang¹, Danyang Huang¹, Yuan He²
¹Tianjin University, China; ²NUDT, China

EuMC/EuRAD08: Modelling and Synthesis of Array Antennas

Chair: Jochen Dederer, HENSOLDT, Germany

Co-Chair: Boris Levitas, Geozondas, Lithuania

Hongkong, Time 10:50 – 12:30, Thursday 12th October 2017

- 1349 **Applying Antenna Synthesis Methods on a Path Based MIMO Channel Model for Verification**
Tobias Mahler, Thibault Deletoille, Johannes Frey, Jerzy Kowalewski, Thomas Zwick, KIT, Germany
- 1353 **Pattern Recovery of a Beam-Tilting Phased Array Antenna on a Doubly Wedge-Deformed Surface**
Giulia Mansutti, Francesco Rigobello, M. Saeed Khan, Antonio-D. Capobianco, Università di Padova, Italy
- 1357 **Effects of Finite Aperture and Random Phase Errors for a Space Debris Radar Antenna Array**
Giuseppe Siciliano¹, Marco Pasian¹, Luca Perregrini¹, Magdalena Mendijur², Piermario Besso²
¹Università di Pavia, Italy; ²ESA-ESOC, Germany
- 1361 **An Alternative Design Approach for Multi-Feed Spatial Power Combining Reflectarray Antenna**
Tse-Tong Chia¹, Felicia Ying-Fei Tai², Kelly Xinjie Siah³
¹DSO National Laboratories, Singapore; ²NUS, Singapore; ³Raffles Institution, Singapore
- 1365 **Accurate Modelling and Experimental Validation of a Large Antenna Array in Ka-Band**
Benoit Lesur¹, Christophe Melle¹, David Chaimbault¹, Alain Karas¹, Marc Thevenot², Eric Arnaud², Thierry Monediere²
¹Zodiac Data Systems, France; ²XLIM, France

EuMC/EuRAD09: Radar Signal Sources

Chair: Nils Pohl, Ruhr University Bochum, Germany

Co-Chair: Marion Filleböck, HENSOLDT, Germany

Kiew, Time 10:50 - 12:30, Thursday 12th October 2017

- 1369 **Modeling of Range Accuracy for a Radar System Driven by a Noisy Phase-Locked Loop**
Frank Herzel, Herman Jalli Ng, Dietmar Kissinger, IHP, Germany
- 1373 **Optoelectronic Waveforms Generation: PCSS Characterization and Genetic Algorithm**
Gwenaél Reineix¹, Romain Négrier¹, Michèle Lalande¹, Vincent Couderc¹, Joël Andrieu¹, Laurent Desrumaux²
¹XLIM, France; ²DGA, France
- 1377 **A Software-Defined and Filter-Free 0–26.5GHz Ultra-Wideband RF Transmitter Enabled by Photonics**
D. Onori, F. Scotti, F. Laghezza, A. Bogoni, P. Ghelfi, CNIT, Italy
- 1381 **A Generalised Brownian Motion Model of RF Spectral Dispersion Due to Phase Noise**
Kashif Siddiq¹, Robert J. Watson², Steve R. Pennock²
¹Navtech Radar, UK; ²University of Bath, UK

EuMC/EuRAD10: Special Session: Radar Technology and System Applications in Central Europe

Chair: Kostyantyn Lukin, IRE NASU, Ukraine

Co-Chair: Jerzy Michalski, SpaceForest, Poland

Oslo, Time 16:10 - 17:50, Thursday 12th October 2017

- N/A **Passive Radar Research in Poland**
K. Kulpa, M. Malanowski, M. Bączyk, D. Gromek, M. Wielgo, Warsaw University of Technology, Poland
- N/A **Quantum Radar and Noise Radar Concepts**
Konstantin Lukin, NASU, Ukraine
- N/A **Feasibility of Air Target Detection Using Pulsar FSR Net**
Hristo Kabakchiev¹, Vera Behar², Ivan Garvanov³, Dorina Kabakchieva⁴, Avgust Kabakchiev⁵, Herman Rohling⁶, Mark Bentum⁷, Jorge Fernandes⁸
¹Sofia University, Bulgaria; ²IICT-BAS, Bulgaria; ³ULSIT, Bulgaria; ⁴UNWE, Bulgaria; ⁵BULATSA, Bulgaria; ⁶Technische Universität Hamburg-Harburg, Germany; ⁷University of Twente, The Netherlands; ⁸INESC-ID Lisboa, Portugal
- N/A **Fully Autonomous Tracking and Data Transmission System for Sounding Rocket**
Przemysław Kant, Adrian Szwaba, Jerzy Michalski, SpaceForest, Poland
- N/A **Applications of Microwaves in Medicine and Biology**
Jan Vrba¹, Jiri Kubes², Ferdinand Třebický³, Pavla Novakova³, František Vožeh⁴, Jan Barcal⁴, Luca Vannucci⁵, Jan Vrba Jr¹, David Vrba¹, Ladislav Oppl¹, Ondřej Fiser¹, Ilja Merunka¹, Jesus Cumana¹
¹Czech Technical University in Prague, Czech Republic; ²Proton Therapy Center, Czech Republic; ³Bulovka Hospital, Czech Republic; ⁴Charles University, Czech Republic; ⁵Czech Academy of Sciences, Czech Republic