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Pages 1-537



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Tu1A: Advanced Systems for Wireless Power Beaming

Chair: Naoki Hasegawa, Softbank, Japan — Co-Chair: Marco Dionigi, Università di Perugia, Italy















Room 143ABC, 08:00-09:40, Tuesday 18 June 2024

- N/A
Tu1A-1
8:00  **C** **POWER: Persistent Optical Wireless Energy Relay, and DARPA's Pathway to Energy Web Dominance**
Paul Jaffe, DARPA, USA 
- (MWTL)
Tu1A-2
8:20  **C** **A 256-Element Phased-Array Relay Transceiver for 5G Network Using 24-GHz Wireless Power Transfer with Discrete ICs**
Michihiro Ide, Keito Yuasa, Sena Kato, Takashi Tomura, Kenichi Okada, Atsushi Shirane, Tokyo Tech, Japan 
- PAGE 2
Tu1A-3
8:40  **C** **A 24-GHz 4-Element Multi-Beam Wireless Energy Harvesting Array with Class-F Rectifiers Achieving 51.5% PCE**
Mohsen Ghorbanpoor¹, Erwan Le Roux², Amir M. Ahmadi Najafabadi², Oleksandr Vorobyov², Pascal Nussbaum², Hua Wang¹
¹ETH Zürich, Switzerland  ; ²CSEM, Switzerland 
- PAGE 6
Tu1A-4
9:00  **C** **Subwavelength-Scale 2D Superoscillatory Beam Scanning in Huygens' Box for Wireless Power Delivery**
Mohammad Abdolrazzaghi, Roman Genov, George V. Eleftheriades, University of Toronto, Canada 
- PAGE 10
Tu1A-5
9:20  **C** **Improvement of Data Rate of SWIPT System in Phantom by Integrated Metamaterial-Inspired Absorber for Biomedical Applications**
Xin Jiang, Ramesh K. Pokharel, Adel Barakat, Kyushu University, Japan 

Tu1B: Advanced Non-Planar Passive Components

Chair: Tarek Djerafi, INRS, Canada — Co-Chair: Mohamed M. Fahmi, DRDC, Canada













Room 145AB, 08:00-09:40, Tuesday 18 June 2024

- (MWTL)
Tu1B-1
8:00  **C** **Exploiting the Coupling Variation of 3-D-Printed Cavity Filters for Complex Dielectric Permittivity Sensing**
Benjamin Allain¹, Nicolò Delmonte², Lorenzo Silvestri², Stefania Marconi², Gianluca Alaïmo², Ferdinando Auricchio², Maurizio Bozzi²
¹Télécom Saint-Etienne, France  ; ²Università di Pavia, Italy 
- PAGE 14
Tu1B-2
8:20  **C** **A Ka-Band RWG Gysel Power Divider and Combiner Based-on Fixed Characteristic Impedance and Resistor-Less Loaded Ports**
Ahmed Moulay, Abdelkader Zerfaine, Tarek Djerafi, INRS, Canada 
- PAGE 18
Tu1B-3
8:40  **C** **3-D Centrally-Loaded FSS Leveraging Conductive and Dielectric Multimaterial Additive Manufacturing for Broadband Performance**
Xiaojing Lv, Zhen Luo, Yang Yang, UTS, Australia 
- PAGE 22
Tu1B-4
9:00  **C** **10-Gbit/s Close Proximity Communication in 120GHz Band Sheet LAN Using Dielectric Sheet as Transmission Medium**
Akihiko Hirata¹, Yuto Komori¹, Takumi Nishihara¹, Yuma Kawamoto², Tadao Nagatsuma²
¹Chiba Institute of Technology, Japan  ; ²Osaka University, Japan 
- PAGE 26
Tu1B-5
9:20  **C** **Research and Development of WRD600: Innovations in High-Power Double-Ridge Waveguide Combiners for Ultra-Wideband Applications**
Mohamed Mamdouh M. Ali¹, Mostafa O. Shady¹, Mahmoud Elsaadany², Shoukry I. Shams³, Ghyslain Gagnon², Ke Wu⁴
¹Scientific Microwave, Canada  ; ²ÉTS, Canada  ; ³Concordia University, Canada  ; ⁴Polytechnique Montréal, Canada 

Tu1C: Magnetostatic, Ferroelectric, and Phase Change Material Based Microwave Devices

Chair: Ruo Chen Lu, University of Texas at Austin, USA — Co-Chair: Tejinder Singh, Dell Technologies, Canada

Room 146A, 08:00-09:40, Tuesday 18 June 2024

- PAGE 30
Tu1C-1
8:00  **C** **Temperature Compensated Magnetostatic Wave Resonator Microsystem**
Renyuan Wang¹, Connor Devitt², Eric Langlois¹, Sudhanshu Tiwari², Anuj Ashok², Sunil Bhawe²
¹BAE Systems, USA  ; ²Purdue University, USA 
- PAGE 34
Tu1C-2
8:20  **C** **A Novel Wideband RF Turbo Switch Using Phase-Change-Material in a SiGe BiCMOS Process**
Farooq Amin¹, Thomas Beglin¹, Nicholas Edwards¹, Nabil El-Hinnawy², Greg Slovin², David Howard², Doyle Nichols¹, Robert M. Young¹
¹Northrop Grumman, USA  ; ²Tower Semiconductor, USA 
- PAGE 38
Tu1C-3
8:40  **C** **SPST Acoustic Switch Based on Poled Ferroelectrics**
Hersh Desai, Milad Zolfagharloo Koochi, Amir Mortazawi, University of Michigan, USA

- PAGE 42
Tu1C-4
9:00  **C** **Meander Line Transducer Empowered Low-Loss Tunable Magnetostatic Wave Filters with Zero Static Power Consumption**
Xingyu Du, Shun Yao, Yixiao Ding, Zhehao Yu, Alexander J. Geers, Firooz Aflatouni, Mark Allen, Roy H. Olsson III, University of Pennsylvania, USA 
- PAGE 46
Tu1C-5
9:20  **C** **High-Linearity Bandstop Filter with Frequency and Bandwidth Tunability Utilizing Phase-Change Material Switches**
Mark D. Hickie, Cameron Huang, BAE Systems, USA 

Tu1D: Advanced Low-Phase-Noise Signal Generation Techniques

Chair: José Luis Gonzalez-Jimenez, CEA-Leti, France — Co-Chair: Hong-Yeh Chang, National Central University, Taiwan

Room 146B, 08:00-09:40, Tuesday 18 June 2024

- PAGE 50
Tu1D-1
8:00  **C** **A Ka-Band 256-QAM Ninefold Sub-Harmonically Injection-Locked CMOS I/Q Modulator Using Pulsed Oscillator**
Liang-Yu Chen, Po-Yuan Chen, Hong-Yeh Chang, National Central University, Taiwan














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Tu1D-2
8:20  **C** **A Ka-Band High Power and Low Phase Noise GaN MMIC Oscillator with a Compact Open-Loop Folded Resonator Filter**
Ying-Chi Chang¹, Jiayou Wang¹, Yin-Cheng Chang², Chuan-Chung Chen¹, Da-Chiang Chang², Yi Huang³, Shawn S.H. Hsu¹
¹National Tsing Hua University, Taiwan  ; ²NARLabs-TSRI, Taiwan  ; ³University of Liverpool, UK 
- PAGE 58
Tu1D-3
8:40  **C** **An Ultra-Low Phase Noise Substrate-Integrated-Waveguide Oscillator**
Menghan Sun, Di Lu, Jiajun Cai, Ming Yu, SUSTech, China 
- PAGE 62
Tu1D-4
9:00  **C** **19-GHz VCO with Phase Noise of -117dBc/Hz at 1-MHz Offset Using an Array of Near Minimum Size Transistors and Intelligent Post Fabrication Selection**
Farzaneh Jalalibidgoli, Yiorgos Makris, Kenneth K. O., University of Texas at Dallas, USA

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Tu1D-5
9:20  **C** **A 2.9-to-7.2GHz Dual-Core Quad-Mode VCO Achieving 206.5dBc/Hz FoM_T in 55nm CMOS**
Ya Zhao, Chenglong Liang, Chao Fan, Zhongming Xue, Xingguo Dong, Zixun Gao, Youze Xin, Bingjun Tang, Li Geng, XJTU, China 

Tu1E: Photonic-Enabled Systems and Solutions


Chair: Jonathan Comeau, BAE Systems, USA — Co-Chair: Steven M. Bowers, University of Virginia, USA

Room 146C, 08:00-09:40, Tuesday 18 June 2024

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Tu1E-1
8:00  **C Silicon Photonic Integrated Circuit Beamformer for RF Photonic Applications**
Timothy Creazzo¹, Chase Stine¹, Connor Creavin¹, Charles Harrity¹, Kevin Shreve¹, Fuquan Wang¹, Peng Yao¹, Janusz Murakowski¹, Garrett Schneider², Shouyuan Shi², Christopher Schuetz¹, Dennis W. Prather²
¹Phase Sensitive Innovations, USA  ; ²University of Delaware, USA 
- PAGE 74
Tu1E-2
8:20  **C Photonic-Enabled Terahertz Phase Arrays Using Dielectric Rod Waveguides for 6G Wireless Communications**
Guillermo Carpintero¹, D. Headland¹, G. Schwanke², M. Deumer², Simon Nellen², S. Lauck², L. Liebermeister², K. Spanidou¹, M. Ali³, A. Rivera³, R. Kohlhaas²
¹UC3M, Spain  ; ²Fraunhofer HHI, Germany  ; ³Leapwave Technologies, Spain 
- PAGE 78
Tu1E-3
8:40  **C 1-Bit Digital Radio-over-Fiber System with Hybrid Architecture for 40-GHz Band**
Yuma Kase, Jeehoon Park, Shinichi Hori, NEC, Japan 
- (MWTL)
Tu1E-4
9:00  **C Ultrawideband Modular RF Frontend Development for Photonically Enabled Imaging Receiver**
Shouyuan Shi, Fuquan Wang, Jeremy Abney, Zion D. Aranda, Garrett Schneider, Christopher Schuetz, Charles Harrity, Kevin Shreve, Mathew Zablocki, Samhit Dontamsetti, Robert Lawrence, Dennis W. Prather, Phase Sensitive Innovations, USA 
- PAGE 82
Tu1E-5
9:20  **C Experimental Demonstration of a Wideband Frequency Hopping Radio Link**
Sean R. O'Connor, Andrew Voshell, Diamond Moody, Nicholas Tomasello, Eric Konitzer, Wesley Norman, Thomas R. Clark, Johns Hopkins APL, USA 

Tu1E continues next page ...











Tu1E continued ...

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Tu1E-6
9:30  **C Tunable Optically Fed Radiofrequency Source for Distributing Coherent High-Fidelity Signals**
Charles Harrity¹, Aqib Adib Mahmud¹, Garrett Schneider², Timothy Creazzo¹, Janusz Murakowski¹, David Chester¹, Kimba Clyne¹, Thomas Mascitelli¹, Christopher Schuetz¹, Dennis W. Prather²
¹Phase Sensitive Innovations, USA  ; ²University of Delaware, USA 

Tu1F: AI / ML for Wireless Systems

Chair: Adrian Tang, Jet Propulsion Laboratory, USA — Co-Chair: Qi-jun Zhang, Carleton University, Canada




Room 147AB, 08:00–09:40, Tuesday 18 June 2024

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Tu1F-1
8:00  **C** **A Modular, Distributed and Scalable DOA Estimator for MIMO Systems**
Adou Sangbone Assoa, Ashwin Bhat, Sigang Ryu, Arijit Raychowdhury, Georgia Tech, USA 
- PAGE 94
Tu1F-2
8:20  **C** **An All-Digital Synthesizer Enabled by a Convolutional Neural Network**
Chris M. Thomas¹, Mehdi Abderezai², Liang Dong³, Vincent Leung³
¹Boeing, USA  ; ²HRL Laboratories, USA  ; ³Baylor University, USA 
- PAGE 98
Tu1F-3
8:40  **C** **A Novel CNN-Based Architecture for Over-the-Air 5G OFDM Channel Estimation**
Fábio D.L. Coutinho, Hugerles S. Silva, Petia Georgieva, Arnaldo S.R. Oliveira, Instituto de Telecomunicações, Portugal 
- PAGE 102
Tu1F-4
9:00  **C** **ChirpNet: Noise-Resilient Sequential Chirp Based Radar Processing for Object Detection**
Sudarshan Sharma, Hemant Kumawat, Saibal Mukhopadhyay, Georgia Tech, USA 

Tu2A: Devices and Components for Effective Wireless Power Transfer

Chair: Jasmin Grosinger, Technische Universität Graz, Austria — Co-Chair: Dieff Vital, University of Illinois at Chicago, USA

Room 150AB, 10:10–11:50, Tuesday 18 June 2024
















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Tu2A-1
10:10  **C** **A Novel e-Textile Body-Worn Antenna Array for Wireless Power Transfer and Energy Harvesting**
Yutong Jiang, Zirui Zhang, Xianyue Liao, Zhirun Hu, University of Manchester, UK 
- PAGE 110
Tu2A-2
10:30  **C** **A New Security and Identification Concept for SWIPT Systems in IoT Applications**
Taki E. Djidjekh, Lamoussa Sanogo, Gaël Loubet, Alassane Sidibé, Daniela Dragomirescu, Alexandru Takacs, LAAS-CNRS, France 
- PAGE 114
Tu2A-3
10:50  **C** **A 124–144GHz Rectifier Achieving 22% RF-to-DC Conversion Efficiency in 22nm FD-SOI CMOS Technology**
Xinyu Kong, Ahmet Çağrı Ulusoy, KIT, Germany 
- PAGE 118
Tu2A-4
11:10  **C** **Broadband High-Efficiency Microwave Rectifier with Nonuniform Transmission-Line Input Matching for Harmonic Backscattering Applications**
Lukas Hüssen, Muh-Dey Wei, Renato Negra, RWTH Aachen University, Germany 
- PAGE 122
Tu2A-5
11:30  **C** **A 28GHz Band Highly Efficient GaAs Rectenna MMIC with EM Coupling Structure for an External Highly Efficient Wire Antenna**
Naoki Sakai, Yudai Tondokoro, Akinobu Kobayashi, Keisuke Noguchi, Masaomi Tsuru, Kenji Itoh, Kanazawa Institute of Technology, Japan 

Tu2B: Advanced Non-Planar Filter Design

Chair: Cristiano Tomassoni, Università di Perugia, Italy





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

Room 145AB, 10:10–11:50, Tuesday 18 June 2024

- (MWTL)
Tu2B-1
10:10
-  **C** **Direct-Coupled TE-TM Dual-Mode Waveguide Cavities**
Cristiano Tomassoni¹, Simone Bastioli², Richard Snyder², Valentin de la Rubia³
¹Università di Perugia, Italy  ; ²RS Microwave, USA  ; ³UPM, Spain 
- PAGE 126
Tu2B-2
10:30
-  **C** **Practical Design of Waveguide Filters with Quarter-Wavelength Resonators Implementing Transmission Zeros Using Frequency-Variant Couplings**
David Rubio, Santiago Cogollos, Vicente E. Boria, Marco Guglielmi, UPV, Spain 
- PAGE 130
Tu2B-3
10:50
-  **C** **A Novel Six-Port Three-Way Filtering Splitter-Combiner Network Using a Lattice of Coupled Resonators Realized in Ridge Waveguides**
Mohamed M. Fahmi¹, Jorge A. Ruiz-Cruz², Raafat R. Mansour³
¹DRDC, Canada  ; ²UPM, Spain  ; ³University of Waterloo, Canada 
- PAGE 134
Tu2B-4
11:10
-  **C** **A Novel Trisection for Implementing Below-Passband Transmission Zeros in Evanescent-Mode Waveguide Filters**
Monica Martinez-Mendoza¹, Davide Smacchia², José Vicente Morro¹, Pablo Soto¹, Joaquín Vague¹, Marco Guglielmi¹, Vicente E. Boria¹
¹UPV, Spain  ; ²Val Space Consortium, Spain 
- PAGE 138
Tu2B-5
11:30
-  **C** **Design of Multifunctional Filtering Power Divider in Coaxial Technology for Power Combining Applications**
Manoj Kumar, Gowrish Basavarajappa, Karun Rawat, IIT Roorkee, India 

Tu2B continues next page ...

Tu2B continued ...








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Tu2B-6
11:40
-  **C** **Short-End Half-Wavelength Four-Sections Coaxial Stepped Impedance Resonators for Tx Space Bandpass Filter**
Karim Kouny¹, Jessica Benedicto¹, Jean-François Favennec¹, Alejandro Buitrago Bernal¹, Mohamed Belhaj², Nicolas Fil³, Denis Payan³, Eric Rius¹
¹Lab-STICC (UMR 6285), France  ; ²ONERA, France  ; ³CNES, France 

Tu2C: Recent Advances on Microwave Acoustics

Chair: Holger Maune, OvG Universität Magdeburg, Germany

Co-Chair: Amelie Hagelauer, Technische Universität München, Germany

Room 146A, 10:10–11:50, Tuesday 18 June 2024

- (MWTL) Tu2C-1 10:10  **C** **Synthesis and Design of a Highly Selective Band-5 SAW Filter Using Cascaded DMS with Nonuniform Polarities**
Hanyu Tian, Yan Zheng, Yuandan Dong, UESTC, China 
- (MWTL) Tu2C-2 10:30  **C** **23.8-GHz Acoustic Filter in Periodically Poled Piezoelectric Film Lithium Niobate with 1.52-dB IL and 19.4% FBW**
Sinwoo Cho¹, Omar Barrera¹, Jack Kramer¹, Vakhtang Chulukhadze¹, Tzu-Hsuan Hsu², Joshua Campbell¹, Ian Anderson¹, Ruo Chen Lu¹
¹University of Texas at Austin, USA  ; ²National Tsing Hua University, Taiwan 
- PAGE 146 Tu2C-3 10:50  **C** **A Fin-Mounted A5-Mode Lithium Niobate Resonator at 27.58GHz with k^2 of 4.4%, Q_p of 448, and FoM of 19.7**
Jiming Fang, Kai Yang, Fuhong Lin, Haoran Tao, Jie Chen, Chengjie Zuo, USTC, China 
- PAGE 150 Tu2C-4 11:10  **C** **A 56GHz Trilayer AlN/ScAlN/AlN Periodically Poled FBAR**
Wenhao Peng, Suhyun Nam, Ding Wang, Zetian Mi, Amir Mortazawi, University of Michigan, USA 
- PAGE 154 Tu2C-5 11:30  **C** **Experimental Study of Periodically Poled Piezoelectric Film Lithium Niobate Resonator at Cryogenic Temperatures**
Jack Kramer, Omar Barrera, Sinwoo Cho, Vakhtang Chulukhadze, Tzu-Hsuan Hsu, Ruo Chen Lu, University of Texas at Austin, USA 

Tu2D: Advanced mm-Wave Frequency Conversion Techniques

Chair: Stephen Maas, Nonlinear Technologies, USA — Co-Chair: Chinchun Meng, NYCU, Taiwan

Room 146B, 10:10–11:50, Tuesday 18 June 2024





















- (MWTL) Tu2D-1 10:10  **C** **A W-Band Stacked Frequency Quadrupler with a Dual-Driven Core Achieving 10.3% Drain Efficiency**
Yaw A. Mensah, Sunil Rao, Jeffrey W. Teng, John D. Cressler, Georgia Tech, USA 
- PAGE 158 Tu2D-2 10:30  **C** **A F-Band $\times 4$ Frequency Multiplier Chip with High Spectral Purity Using Vertically Stacked Marchand Baluns and TF-MSL**
Rainer Weber, Sandrine Wagner, Arnulf Leuther, Axel Tessmann, Fraunhofer IAF, Germany 
- PAGE 162 Tu2D-3 10:50  **C** **A 43–84GHz, Wideband Frequency Doubler With a Symmetric, AC-Terminated Transformer Balun**
Wonsub Lim, Arya Moradnia, Sanghoon Lee, Jeffrey W. Teng, Christopher T. Coen, Nelson E. Lourenco, John D. Cressler, Georgia Tech, USA 
- PAGE 166 Tu2D-4 11:00  **C** **Strong Fundamental Rejection in Frequency Doublers at 220–260GHz Using a 250-nm InP HBT Process**
Jeff Shih-Chieh Chien, Eythan Lam, Jonathan Tao, James F. Buckwalter, University of California, Santa Barbara, USA 
- PAGE 170 Tu2D-5 11:10  **C** **A Wideband Bi-Directional Active Mixer for 5G Millimeter-Wave Applications**
Pei-Wen Wu¹, Jia-Wei Ye¹, Zi-Hao Fu¹, Yu-Teng Chang², Kun-You Lin¹
¹National Taiwan University, Taiwan  ; ²Yuan Ze University, Taiwan 
- PAGE 174 Tu2D-6 11:30  **C** **A Low Power 185GHz Static CML Frequency Divider in SiGe HBTs Using Band-Switching Technique in 45nm PDSOI BiCMOS**
Hao-Yu Chien, Christopher Chen, Runzhou Chen, Jason Woo, Sudhakar Pamarti, Mau-Chung Frank Chang, Chih-Kong Ken Yang, University of California, Los Angeles, USA 

Tu2E: Does Analog Photonics have a Role in 6G Systems and Beyond?

Chair: Siva Yegnanarayanan, MIT Lincoln Laboratory, USA

Co-Chair: Cheryl Sorace-Agaskar, MIT Lincoln Laboratory, USA











Room 146C, 10:10–11:50, Tuesday 18 June 2024

- N/A
Tu2E-1
10:10  **C** **Generation and Transport of mmWaves for the Next Generation Communication Applications**
Sreeraj S.J., Bhooma Gopalan, Deepa Venkitesh, IIT Madras, India 
- N/A
Tu2E-2
10:30  **C** **TERA6G: Reconfigurable Transceivers Reaching into the Millimeter-Wave Range**
Guillermo Carpintero¹, Hercules Avramopoulos², David de Felipe³, Simon Nellen³, Chris Roeloffzen⁴, Zerihun Tegegne⁵, Angela Alexiou⁶, Joonas Kokkonen⁷, José Costa-Requena⁸, Dimitrios Kritharidis⁹, Eduardo Yusta¹⁰
¹UC3M, Spain  ; ²NTUA, Greece  ; ³Fraunhofer HHI, Germany  ; ⁴LioniX International, The Netherlands  ; ⁵PHIX, The Netherlands  ; ⁶University of Piraeus, Greece  ; ⁷University of Oulu, Finland  ; ⁸Cumucore, Finland  ; ⁹Intracom Telecom, Greece  ; ¹⁰Telefónica I+D, Spain 
- N/A
Tu2E-3
10:50  **C** **Ultrabroadband Indoor Optical Wireless Networks**
A. Nirmalathas¹, T. Song¹, S. Edirisinghe², J. Li³, C. Ranaweera⁴, K. Wang³, C. Lim¹
¹University of Melbourne, Australia  ; ²Jayawardenapura University, Sri Lanka  ; ³Shandong Normal University, China  ; ⁴Deakin University, Australia 
- N/A
Tu2E-4
11:10  **C** **Optical Fronthauling and mm-Wave/Sub-THz Signal Generation Techniques for the 6G and Beyond 6G Wireless Systems**
Amol Delmade, Liam Barry, Dublin City University, Ireland 

Tu2F: AI / ML For Transmitter Systems

Chair: Sudipto Chakraborty, IBM, USA — Co-Chair: Adrian Tang, Jet Propulsion Laboratory, USA

Room 147AB, 10:10–11:50, Tuesday 18 June 2024

- (MWTL)
Tu2F-1
10:10  **C** **MP-DPD: Low-Complexity Mixed-Precision Neural Networks for Energy-Efficient Digital Predistortion of Wideband Power Amplifiers**
Yizhuo Wu¹, Ang Li¹, Mohammadreza Beikmirza¹, Gagan Deep Singh¹, Qinyu Chen², Leo C.N. de Vreede¹, Morteza Alavi¹, Chang Gao¹
¹Technische Universiteit Delft, The Netherlands  ; ²Universiteit Leiden, The Netherlands 
- PAGE 184
Tu2F-2
10:30  **C** **IMS Deep Learning Enabled Generalized Synthesis of Multi-Port Electromagnetic Structures and Circuits for mmWave Power Amplifiers**
Emir Ali Karahan¹, Zheng Liu², Kaushik Sengupta¹
¹Princeton University, USA  ; ²Texas Instruments, USA 
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Tu2F-3
10:50  **C** **Transfer Learning Assisted Fast Design Migration Over Technology Nodes: A Study on Transformer Matching Network**
Chenhao Chu, Yuhao Mao, Hua Wang, ETH Zürich, Switzerland 
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Tu2F-4
11:10  **C** **Optimizing Direct Learning Neural Network Digital Predistortion Through the Lottery Ticket Hypothesis Agent**
Erez Loebel¹, Nimrod Ginzberg², Emanuel Cohen¹
¹Technion, Israel  ; ²Tel-Aviv University, Israel 

Tu3B: Advanced Filter Synthesis Techniques

Chair: Ming Yu, SUSTech, China — Co-Chair: Simone Bastioli, RS Microwave, USA













Room 145AB, 13:30-15:10, Tuesday 18 June 2024

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Tu3B-1
13:30  **C** **Synthesis of Underdetermined Filter Topologies with Nonresonating Nodes within a Limited Range**
Yi Zeng, Ming Yu, SUSTech, China 
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Tu3B-2
13:50  **C** **Circuit Model Extraction of Coupled-Resonator Diplexers with Common Resonator from Two-Port S-Parameters**
Yuliang Chen, Huan Meng, Wing Hung Hung, Junyi Liu, Ke-Li Wu, CUHK, China 
- PAGE 203
Tu3B-3
14:10  **C** **Synthesis Design of Wideband 3-D Polarization-Rotating Spatial Filter**
Tao Wei¹, Wanping Zhang¹, Hanxuan Li¹, Bo Li¹, Lei Zhu²
¹NJUPT, China  ; *²University of Macau, China* 
- PAGE 207
Tu3B-4
14:30  **C** **Analytical Synthesize and Dimensioning of FDC Waveguide Filters**
Yimin Yang¹, Qiuyi Wu¹, Beizun Liu¹, Ming Yu²
¹Xidian University, China  ; *²SUSTech, China* 
- PAGE 211
Tu3B-5
14:50  **C** **Design of Monoblock Antenna-Loaded Bandpass Filters with General Synthesis Theory of Complex-Loaded Filters**
Xiao Tan, Yuliang Chen, Ke-Li Wu, CUHK, China 

Tu3C: Sub-THz and THz Circuits and Systems

Chair: Hamed Rahmani, New York University, USA — Co-Chair: Chun-Hsing Li, National Taiwan University, Taiwan













Room 146A, 13:30-15:10, Tuesday 18 June 2024

- (MWTL)
Tu3C-1
13:30  **C** **An Energy-Efficient 56-Gb/s D-Band TX-to-RX Link Using CMOS ICs and Transmitarray Antennas**
J.L. Gonzalez-Jimenez, A. Siligaris, A. Hamani, F. Foglia Manzillo, P. Courouve, N. Cassiau, C. Dehos, A. Clemente, CEA-Leti, France 
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Tu3C-2
13:50  **C** **An FMCW-Modulated-Oscillator-Based Wide-Band Terahertz Detector in 16nm FinFET**
Jia Zhou, Christopher Chen, Mau-Chung Frank Chang, University of California, Los Angeles, USA 
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Tu3C-3
14:10  **C** **235-GHz Amplifier-Frequency-Multiplier Chain with Optimal Harmonic Impedance Matching Network in 40-nm CMOS**
Chih-Hsueh Lin, Chun-Sheng Lin, Chun-Hsing Li, National Taiwan University, Taiwan 
- PAGE 223
Tu3C-4
14:20  **C** **A 240-GHz Wideband LNA with Dual-Peak- G_{\max} Cores and Customized High-Speed Transistors in 40-nm CMOS**
Yu-Kai Chen, Wei-Zhe Su, Yi-Fan Tseng, Chun-Hsing Li, National Taiwan University, Taiwan 
- PAGE 227
Tu3C-5
14:30  **C** **Micromachined Waveguide-Integrated Sub-THz Crossover Switch**
Armin Karimi, Umer Shah, Joachim Oberhammer, KTH, Sweden 
- (MWTL)
Tu3C-6
14:50  **C** **Sub-THz Photoconductive Evanescent-Mode Waveguide SPST Switch**
Thomas R. Jones, Dimitrios Peroulis, Purdue University, USA 

Tu3D: Building Blocks for Advanced mm-Wave Systems



Chair: Kenneth Mays, Boeing, USA — Co-Chair: Wooram Lee, Pennsylvania State University, USA

Room 146B, 13:30-15:10, Tuesday 18 June 2024

- PAGE 231
Tu3D-1
13:30  **C** **Design of a W-Band Transformer-Based Switchless Bidirectional PALNA in 65-nm CMOS Process**
Chun-Chia Chien¹, Yunshan Wang¹, Yuen-Sum Ng¹, Chau-Ching Chiong², Huei Wang¹
¹National Taiwan University, Taiwan  ; ²Academia Sinica, Taiwan 
- PAGE 235
Tu3D-2
13:50  **C** **39 GHz Transmit/Receive Front-End-Module With Back-Off Efficiency Enhancement for 5G Communication**
Hang Yu, Mehran Hazer Sahlabadi, Slim Boumaiza, University of Waterloo, Canada 
- PAGE 239
Tu3D-3
14:10  **C** **A Compact 28-GHz Transmitter Front-End with Co-Optimized Wideband Chip-Antenna Interface Achieving 18.5-dBm P1dB and 1.0-W/mm² Power Density for Phased Array Systems**
Zilu Liu¹, Li Wang¹, Hamed Fallah¹, Zhijian Chen², C. Patrick Yue¹
¹HKUST, China  ; ²SCUT, China 
- PAGE 243
Tu3D-4
14:30  **C** **Broadband Low-Noise Ka-Band Front-End MMIC in a 0.15- μ m GaN-on-SiC HEMT Technology**
Fabian Thome, Philipp Neining, Sebastian Krause, Peter Brückner, Rüdiger Quay, Fraunhofer IAF, Germany 
- PAGE 247
Tu3D-5
14:50  **C** **A Ka-Band Low-Power Ultra-Compact Reconfigurable Amplifier with Reverse Bypass Mode for Multi-Element Phased Array Transceivers**
Youngjoo Lee, Hyeonhak Lim, Dohoon Chun, Byung-Wook Min, Yonsei University, Korea 

Tu3D continues next page ...






Tu3D continued ...

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Tu3D-6
15:00  **C** **A 90–100GHz Vector Modulator 7-Bit Phase Shifter with Voltage Summation Topology**
Tal Elazar, Eran Socher, Tel-Aviv University, Israel 

Tu3E: Generation, Amplification, and Radiation of mm-Wave and sub-THz Signals Using Microwave Photonic and Electronic Techniques

Chair: Kamran Entesari, Texas A&M University, USA — Co-Chair: Siva Yegnanarayanan, MIT Lincoln Laboratory, USA

Room 146C, 13:30–15:10, Tuesday 18 June 2024





- PAGE 254
Tu3E-1
13:30  **C** **Photonic Generation of Tunable Sub-THz Signals Using Two Semiconductor Lasers with Highly Asymmetric Mutual Coupling**
Chin-Hao Tseng, Bin-Kai Liao, Sheng-Kwang Hwang, National Cheng Kung University, Taiwan **A**
- PAGE 257
Tu3E-2
13:50  **C** **Efficient Synthesis of Broadband Linear Frequency-Modulated Quadrature Signals for Coherent Electro-Optical Sensor Systems**
Marius Schmidt, Christian Carlowitz, FAU Erlangen-Nürnberg, Germany **A**
- PAGE 261
Tu3E-3
14:10  **C** **Photonic Synthesis of Continuously Tunable (5–170GHz) Microwave Signals with Frequency Independent Phase Noise**
Amany Kassem, Zichuan Zhou, Izzat Darwazeh, Zhixin Liu, University College London, UK **A**
- PAGE 265
Tu3E-4
14:30  **C** **Photonic Microwave Amplification Using Optically Injected Semiconductor Lasers at Stable Locking Dynamics**
Guan-Ting Lu, Chin-Hao Tseng, Sheng-Kwang Hwang, National Cheng Kung University, Taiwan **A**
- PAGE 269
Tu3E-5
14:50  **C** **On-Chip Terahertz Topological Filter Antenna for 6G**
Sonu Kumar, Nikhil Navaratna, Arokiaswami Alphones, Ranjan Singh, NTU, Singapore **A**

Tu3F: Wireless Solutions for Autonomous Sensors

Chair: Mohammad H. Zarifi, University of British Columbia, Canada

Co-Chair: Jasmin Grosinger, Technische Universität Graz, Austria













Room 147AB, 13:30–15:10, Tuesday 18 June 2024

- PAGE 273
Tu3F-1
13:30  **C** **Integrated Dual-Mode Energy Harvesting for Self-Sustaining Sensor Nodes: Synergy of Solar and RF Energies**
Yasser Qaragoz, Sofie Pollin, Dominique Schreurs, KU Leuven, Belgium **A**
- PAGE 277
Tu3F-2
13:50  **C** **Augmented Reality-Assisted Battery-Less Microwave-Based Sensors for Smart Health Monitoring of Coatings**
Vishal Balasubramanian, Mohammad H. Zarifi, University of British Columbia, Canada **A**
- PAGE 281
Tu3F-3
14:10  **C** **Spatial Multiplexing Technique for MIMO Backscatter Communication**
Hyunmin Jeong, Hoyong Kim, Nohgyeom Ha, Sangkil Kim, Pusan National University, Korea **A**
- PAGE 284
Tu3F-4
14:30  **C** **A Stand-Alone Moisture Content Sensor Based on a Loaded Self-Oscillating Antenna**
A. Di Florio Di Renzo, S. Trovarello, O. Afif, L. Franceschelli, M. Tartagni, D. Masotti, A. Costanzo, Università di Bologna, Italy **A**

Tu4A: Emerging Passive Multiport Components

Chair: *Bayaner Arigong, FAMU-FSU, USA* — Co-Chair: *Hualiang Zhang, UMass Lowell, USA*









Room 150AB, 15:40-17:20, Tuesday 18 June 2024

- N/A
Tu4A-1
15:40  **C** **Advancing Performance in 3DHI**
Dev Palmer, DARPA, USA 
- (MWTL)
Tu4A-2
16:00  **C** **Image Dielectric Guides-Based Crossover for Millimeter-Wave Applications**
Farooq Faisal, Mohamed Chaker, Tarek Djerafi, INRS, Canada 
- PAGE 289
Tu4A-3
16:20  **C** **A Novel Compact Uniplanar Isolation Circuit for Three-Port Baluns**
Xianfeng Que, Lingtao Jiang, Yanjie Wang, SCUT, China 
- PAGE 293
Tu4A-4
16:40  **C** **A Compact 1.08–5.94GHz Balun With 1°/0.07dB Phase-/Amplitude-Imbalances Using Reverse Series Paths**
Chenghui Wang, Xun Luo, UESTC, China 
- PAGE 297
Tu4A-5
17:00  **C** **Incorporating Resistive Foil RF Attenuators and Equalizers on and within PCBs from DC to 60GHz: Design, Analysis, and Experimental Validation**
Maurio Grando¹, Randy Direen¹, John Richardson², Susana Martinez², John Andresakis³, Lisa Wilhelm³
¹*Invictus Animus Research and Design, USA*  ; ²*Quantic X-Microwave, USA*  ; ³*Quantic Ohmega Ticer, USA* 

Tu4B: Reconfigurable Filters and Passive Devices

Chair: *Julien Lintignat, XLIM (UMR 7252), France* — Co-Chair: *Charles F. Campbell, Qorvo, USA*











Room 145AB, 15:40-17:20, Tuesday 18 June 2024

- (MWTL)
Tu4B-1
15:40  **C** **Multifunctional Bandpass Filter with Codesigned Tunable Attenuator and Reflectionless Phase Shifter Functionalities**
Zixiao Zhang, Dimitra Psychogiou, University College Cork, Ireland 
- PAGE 301
Tu4B-2
16:00  **C** **Liquid Metal-Enabled Multi-Functional Passive Device**
Yi-Wen Wu, Lu Qian, Yi Wang, University of Birmingham, UK 
- PAGE 305
Tu4B-4
16:20  **C** **Monolithically Integrated Liquid Crystal Tunable Reflective Load for Millimeter-Wave Phase Shifter Applications**
Hassan Kianmehr, Raafat R. Mansour, University of Waterloo, Canada 
- PAGE 309
Tu4B-5
16:40  **C** **Reconfigurable Quadrature Couplers**
Charles F. Campbell, Qorvo, USA 

Tu4C: mm-Wave Technology Opportunities and Challenges for 5G/6G Applications

Chair: Jeong-sun Moon, HRL Laboratories, USA















Room 146A, 15:40-17:20, Tuesday 18 June 2024

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- | | | |
|-----------------------------|---|---|
| N/A
Tu4C-1
15:40 |  | C 3D Heterogeneous Integration (3DHI): Revolutionizing RF Systems
<i>Thomas Kazior, DARPA, USA</i>  |
| PAGE 314
Tu4C-2
16:00 |  | C A <5dB NF, >17dBm OP_{1dB} F-Band GaN-on-SiC HEMT LNA with a Monolithic Substrate-Integrated Waveguide Filter
<i>Fabian Thome¹, Dirk Schwantuschke¹, Peter Brückner¹, Xiaopeng Wang², James C.M. Hwang², Rüdiger Quay¹</i>
¹ Fraunhofer IAF, Germany  ; ² Cornell University, USA  |
| (MWTL)
Tu4C-3
16:20 |  | C Advancements in 300nm GaN-on-Si Technology with Industry's First Circuit Demonstration of Monolithically Integrated GaN and Si Transistors
<i>Qiang Yu, Ali A. Farid, Ibukunoluwa Momson, Jeffrey Garrett, Heli Vora, Samuel Bader, Ahmad Zubair, Pratik Koirala, Michael Beumer, Andrey Vyatskikh, Paul Nordeen, Thomas Hoff, Marko Radosavljevic, Said Rami, Frank O'Mahony, Han Wui Then, Intel, USA</i>  |
| PAGE 318
Tu4C-4
16:40 |  | C Enabling Monolithic Integration of an Advanced 7-Layer Silicon Back-End-Of-Line (BEOL) on 40nm GaN for Next Generation MMICs
<i>Jonathan Roderick¹, George Siddiqi¹, Dan Denninghoff¹, Daniel Berkoh¹, Joe Tai¹, Sunil Rao¹, Jonathan Lynch¹, Clayton Tu¹, Hasan Sharifi¹, Daniel Kuzmenko¹, Jana Georgieva¹, Warren McArthur², Seyed Mirshafieyan², David Howard²</i>
¹ HRL Laboratories, USA  ; ² Tower Semiconductor, USA  |

Tu4D: Advanced mm-Wave Transceiver Subsystems

Chair: Mahdi Javid, Qorvo, USA — Co-Chair: Payam Heydari, University of California, Irvine, USA






Room 146B, 15:40-17:20, Tuesday 18 June 2024

-
- | | | |
|-----------------------------|---|---|
| N/A
Tu4D-1
15:40 |  | C From Waves to Insights: AI-Enhanced mmWave Systems
<i>Alberto Valdes-Garcia, IBM, USA</i>  |
| (MWTL)
Tu4D-2
16:00 |  | C A 37-43.5-GHz Fully Integrated 16-Element Phased-Array Transceiver with 64-QAM 7.2-Gb/s Data Rates Supporting Dual-Polarized MIMO
<i>Xin Chen¹, Xiaokang Niu², Xuan Wang¹, Haipeng Duan¹, Jing Feng¹, Lin Lu¹, Long He², Qin Chen¹, Depeng Cheng², Lei Luo², Xu Wu¹, Jiachen Si¹, Xujun Ma³, Xiangning Fan¹, Lianming Li¹</i>
¹ Southeast University, China  ; ² Purple Mountain Laboratories, China  ;
³ SAMOVAR (UMR 5157), France  |
| (MWTL)
Tu4D-3
16:20 |  | C A 60-GHz Highly Reused Joint Radar-Communication Transceiver with Reconfigurable Dual-Mode Gilbert Cells in 65-nm CMOS
<i>Lin Lu¹, Xujun Ma², Jing Feng¹, Long He³, Xuwei Fan¹, Qin Chen¹, Xin Chen¹, Zhiqiang Liu³, Jiachen Si¹, Xiangning Fan¹, Lianming Li¹</i>
¹ Southeast University, China  ; ² SAMOVAR (UMR 5157), France  ; ³ Purple Mountain Laboratories, China  |
| PAGE 323
Tu4D-4
16:40 |  | C Fine Pitch D-Band Transmit Modules with Flip-Chip Aperture Coupled Antennas
<i>Alex Ayling, Ali Hajimiri, Caltech, USA</i>  |
| PAGE 327
Tu4D-5
17:00 |  | C A K/Ka-Band Satellite Terminal Beamforming Front-End-Module Utilizing Dual-Band Self-Diplexing Antennas
<i>Jill Mayeda, Dongwon You, Xi Fu, Xiaolin Wang, Hans Heridian, Michihiro Ide, Takashi Tomura, Hero Sakai, Kazuaki Kunihiro, Kenichi Okada, Atsushi Shirane, Tokyo Tech, Japan</i>  |

Tu4E: Advances in Low Noise Amplifiers

Chair: Jesse Moody, Sandia National Laboratories, USA — Co-Chair: Luciano Boglione, U.S. Naval Research Laboratory, USA






Room 146C, 15:40-17:20, Tuesday 18 June 2024

- N/A
Tu4E-1
15:40  **C** **Radiometry and the Ever Shrinking Spectra and Ever Expanding Needs**
Sidharth Misra, Jet Propulsion Laboratory, USA **A**
- PAGE 333
Tu4E-2
16:00  **C** **A Power-Efficient, F-Band, 6.5-dB NF, Staggered-Tuned, Inverter-Based CMOS LNA for 6G Receivers**
Youssef O. Hassan, Mohammad Oveisi, Huan Wang, Payam Heydari, University of California, Irvine, USA **A**
- PAGE 337
Tu4E-3
16:20  **C** **W-Band Low-Noise-Amplifier MMICs in InGaAs HEMT Technologies on Gallium-Arsenide and Silicon Substrates**
Felix Heinz, Arnulf Leuther, Fabian Thome, Fraunhofer IAF, Germany **A**
- PAGE 341
Tu4E-4
16:40  **C** **A Ku-Band +2 dBm IIP3 Transformer-Based LNA with Loop-Gain-Enhanced Capacitive Negative Feedback**
Teng-Shen Yang, Po-Yao Hsu, Liang-Hung Lu, National Taiwan University, Taiwan **A**
- PAGE 345
Tu4E-5
17:00  **C** **A 6.8–9.4GHz LNA Achieving 36.5dB Peak Gain, Consuming 4.28mW with an Adjustable Threshold Limiter for IR-UWB Applications**
Stefan Lepkowski, Travis Forbes, Jesse Moody, Sandia National Labs, USA **A**

Tu4F: RFID-Based Technologies for Advanced Sensing Applications
















Chair: Paolo Mezzanotte, Università di Perugia, Italy — Co-Chair: Smail Tedjini, Université Grenoble Alpes, France

Room 147AB, 15:40-17:20, Tuesday 18 June 2024

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Tu4F-1
15:40  **C** **Hand Motion-Modulated Chipless RFID for Gesture Recognition**
Ashkan Azarfar, Nicolas Barbot, Etienne Perret, LCIS (EA 3747), France **A**
- PAGE 353
Tu4F-2
16:00  **C** **Passive Coupled Microwave Resonators for VOC Monitoring Using Flexible PDMS Beam**
Hamed Mirzaei, Mohammad Arjmand, Mohammad H. Zarifi, University of British Columbia, Canada **A**
- PAGE 357
Tu4F-3
16:20  **C** **Enhancing Battery-Free Sensor Nodes: Integrating Passive Beamforming with Frequency Division Duplexing**
Yasser Qaragoz, Sofie Pollin, Dominique Schreurs, KU Leuven, Belgium **A**
- PAGE 361
Tu4F-4
16:40  **C** **Determining Media Absorption Loss Using Embedded Harmonic Transponders**
Rye Fought, Elsie Anthonio, Tara Harte, Pawan Bastola, Ruth Petzoldt, Harrison Jaffe, Mandar Dewoolkar, Jeff Frolik, University of Vermont, USA **A**
- PAGE 365
Tu4F-5
16:50  **C** **Comparative Study: Evaluating Chipless RFID Tag Authenticity with a Portable MIMO Reader-Based Approach**
Shahed Khan, Likitha Lasantha, Nemai Karmakar, Monash University, Australia **A**













We1C: High-Efficiency and High-Linearity Power Amplifiers for Communication and Satellite Systems

Chair: Vittorio Camarchia, Politecnico di Torino, Italy — Co-Chair: Varish Diddi, Qualcomm, USA
Room 146A, 08:00-09:40, Wednesday 19 June 2024

- N/A
We1C-1
8:00  **C** **GaAs & GaN MMIC Power Amplifier and Front-End Module Design for K-Ka Band Commercial Communication Systems**
Michael Roberg, mmTron, USA 
- (MWTL)
We1C-2
8:20  **C** **High-Gain and High-Linearity MMIC GaN Doherty Power Amplifier with 3-GHz Bandwidth for Ka-Band Satellite Communications**
Anna Piacibello¹, Roberto Quaglia², Rocco Giofrè³, Ricardo Figueiredo⁴, Paolo Colantonio³, Nuno Borges Carvalho⁴, Vaclav Valenta⁵, Vittorio Camarchia¹
¹Politecnico di Torino, Italy ; ²Cardiff University, UK ; ³Università di Roma "Tor Vergata", Italy ; ⁴Instituto de Telecomunicações, Portugal ; ⁵ESA-ESTEC, The Netherlands 
- PAGE 370
We1C-3
8:40  **C** **A High Efficiency and High Linearity GaAs HBT Doherty Power Amplifier for 5G NR 3.4V Application**
Shihai He, Jingxian Liang, Linjian Xu, Hao Meng, Yongxue Qian, OnMicro, China 
- PAGE 374
We1C-4
9:00  **C** **A Highly Linear and Efficient Differential Power Amplifier with 35-dBm Saturated Output Power, 65% Peak PAE by Reducing Base Voltage Peaking in InGaP/GaAs HBT Process for Handset Applications**
Sooji Bae¹, Jooyoung Jeon², Sungwoon Hwang¹, Byeongcheol Yoon¹, Junghyun Kim¹
¹Hanyang University, Korea ; ²Gangneung-Wonju National University, Korea 
- PAGE 378
We1C-5
9:20  **C** **Integrated 5-W GaN Doherty Power Amplifier for 5G FR1 Bands with 19dB Gain Over a 41% Bandwidth**
Giulia Bartolotti, Anna Piacibello, Vittorio Camarchia, Politecnico di Torino, Italy 

We1D: Advances in High-Precision Radar Sensing












Chair: Suresh Venkatesh, North Carolina State University, USA — Co-Chair: Nils Pohl, Ruhr-Universität Bochum, Germany
Room 146B, 08:00-09:40, Wednesday 19 June 2024

- PAGE 382
We1D-1
8:00  **C** **Considerations on Near-Field Correction: μm Accuracy with mmWave Radar**
Lukas Piotrowsky, Nils Pohl, Ruhr-Universität Bochum, Germany 
- PAGE 386
We1D-2
8:20  **C** **Micro Vibration Reconstruction Under In-Range Large-Scale Dynamic Clutters Using a Bi-Exponential Radar Signal Model**
Xujun Ma¹, Pei Wang¹, Jie Liu², Daqing Zhang¹
¹SAMOVAR (UMR 5157), France ; ²Nanjing Forestry University, China 
- PAGE 390
We1D-3
8:40  **C** **Uncorrelated Phase Noise Cancellation in Intermediate Frequency with a Low-IF Dual-PLL Radar System**
Mandong Zhang¹, Xiaohu Wu¹, Dengfeng Pang¹, Lang Qin¹, Jinfeng Li¹, Yuheng Cao¹, Xiaonan Jiang², Xiaoguang Liu¹
¹SUSTech, China ; ²Qualcomm, USA 
- PAGE 394
We1D-4
9:00  **C** **Improved Performance in PMCW Radar Systems Through Equalization Using Predistortion and Postprocessing**
Sebastian Peters, Samira Faghih-Naini, Robert Weigel, Torsten Reissland, FAU Erlangen-Nürnberg, Germany 
- PAGE 398
We1D-5
9:20  **C** **A Fully Integrated Radar-Based True-Speed-Over-Ground Sensor for Highly Dynamic Road Vehicles**
Nils C. Albrecht, Dominik Langer, Alexander Koelpin, Technische Universität Hamburg, Germany 

We1E: Novel Microwave Packaging Structures and Applications up to Sub-THz Frequencies

Chair: Kamal Samanta, AMWT, UK — Co-Chair: Nicholas Koliias, Raytheon, USA











Room 146C, 08:00–09:40, Wednesday 19 June 2024

- PAGE 402
We1E-1
8:00  **C** **A Low Loss Die-Embedded Glass Substrate for 140GHz InP Power Amplifier Integration**
Xiaofan Jia¹, Xingchen Li¹, Joon Woo Kim¹, Kyoung-sik Moon¹, Mark J.W. Rodwell², Madhavan Swaminathan¹
¹Georgia Tech, USA  ; ²University of California, Santa Barbara, USA 
- PAGE 406
We1E-2
8:20  **C** **Integration Approach for Radar Transceiver MMICs with Integrated Antennas Enabling Adaptability to Customized Passive Frontend Design**
Dominik Langer, Nils C. Albrecht, Frederike Bartels, Bartosz Tegowski, Alexander Koelpin, Technische Universität Hamburg, Germany 
- PAGE 410
We1E-3
8:40  **C** **Flip Chip-Enhanced QFN Package Millimeter-Wave Slot Bowtie Antenna Performance Using Two Feeding Methodologies**
Oscar F. Medina¹, Aditya N. Jogalekar¹, Kannan Nambiar¹, Devan Iyer², Andrew Blanchard¹, Hongbing Lu¹, Rashaunda Henderson¹
¹University of Texas at Dallas, USA  ; ²Amkor Technologies, USA 
- PAGE 414
We1E-4
9:00  **C** **Embedded Printed Split Ring Resonators in Polymer Composites for Temperature Sensing**
Miren Hayet-Otero¹, Leire Bilbao-Alba², Oihane Echeverria-Altuna², Izaskun Bustero-Martinez de Zuazo², Jose Manuel Gonzalez¹
¹UPV/EHU, Spain  ; ²Tecnalia, Spain 

We1F: Airborne and Space Systems

Chair: Dennis Lewis, Boeing, USA — Co-Chair: Glenn Hopkins, Georgia Tech, USA












Room 147AB, 08:00–09:40, Wednesday 19 June 2024

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We1F-1
8:00  **C** **Direct-Detect 250/310 GHz Pseudo-Correlation Radiometer and Double-Sideband 380 GHz Sounder for Ice Cloud Sensing**
Akim A. Babenko¹, Pekka Kangaslahti¹, Isaac Ramos¹, Mehmet Ogut¹, Caitlyn M. Cooke², William Deal²
¹Jet Propulsion Laboratory, USA  ; ²Northrop Grumman, USA 
- PAGE 422
We1F-2
8:20  **C** **A Hybrid CMOS-InP W-Band Imaging Radiometer with Compact MetaSurface Antenna for UAV-Based Wildfire Imaging**
Adrian Tang, Nacer Chahat, Gaurangi Gupta, Jet Propulsion Laboratory, USA 
- PAGE 425
We1F-3
8:40  **C** **UAV-Based Relays Using Active Phased Arrays for Non-Line-of-Sight Millimeter-Wave Communications: Real-Time Field Testing**
Xiaofei Zhang, Nita Esfarayeni, Ahmed Ben Ayed, Mohammad Abdollah Chalaki, Pouya Namaki, Huixin Jin, Slim Boumaiza, University of Waterloo, Canada 
- PAGE 429
We1F-4
9:00  **C** **Prototype Design of Airborne Antenna System for HAPS Backhaul Networks Using 100GHz Band Frequency**
Toshiyuki Nishibori¹, Nozomi Okada¹, Kimihiro Kimura¹, Toshio Sato², Kazuhiko Tamesue², Kunihisa Jitsuno², Takuro Sato², Tetsuya Kawanishi²
¹JAXA, Japan  ; ²Waseda University, Japan 

We1G: Advanced Integrated Passive Development with GaN and CMOS Technology

Chair: Ki Shin, Qorvo, USA — Co-Chair: Pei-Ling Chi, NYCU, Taiwan

Room 150AB, 08:00–09:40, Wednesday 19 June 2024

- N/A
We1G-1
8:00  **C** **Advancements in Integrated Passive Circuits and Filters: A Decade of Technological Evolution**
Ali Darwish, U.S. Army Research Laboratory, USA 
- PAGE 434
We1G-2
8:20  **C** **Record Fast Recovery Performance from Microwave High-Power Limiters with All-GaN SBD-MMIC Technology: 39ns@100W**
R. Zhao¹, X. Kang¹, Y. Zheng¹, H. Wu¹, Q. Li¹, Y. Huang¹, J. Gao², Ke Wei¹, X. Liu¹
¹CAS, China  ; *²East China Normal University, China* 
- PAGE 438
We1G-3
8:40  **C** **Broadband G-Band GaN Digital Step Attenuators**
Philipp Neiningner, Fabian Thome, Denis Gebauer, Peter Brückner, Rüdiger Quay, Fraunhofer IAF, Germany 
- PAGE 442
We1G-4
9:00  **C** **A 0.013-mm² 40–67-GHz Voltage-Controlled Distributed Attenuator with 1.9-dB Insertion Loss and Sub-6.1° Insertion Phase Imbalance**
Xuhao Jiang, Qin Chen, Yuchen Liang, Lianming Li, Xiaohu You, Southeast University, China 
- PAGE 446
We1G-5
9:20  **C** **An Ultra-Compact Wideband Tunable Autotransformer-Based Electrical-Balanced Duplexer Achieving 30dB Isolation Across the 46–70GHz Frequency Range**
Yanir Schwartz, Emanuel Cohen, Technion, Israel 

We1H: mm-Wave Variable Gain Amplifiers and Phase Shifters

Chair: Damla Dimlioglu, Cornell University, USA — Co-Chair: Mohammad Ghadiri-Sadrabadi, Kyocera, USA

Room 151AB, 08:00–09:40, Wednesday 19 June 2024















- (MWTL)
We1H-1
8:00  **C** **A 22-to-37.8-GHz Low-Gain-Phase-Error Variable-Gain Amplifier with Impedance-Compensation Technique in 65-nm CMOS Process**
Yiming Yu, Mengqian Geng, Sirui Peng, Junfeng Li, Chenxi Zhao, Huihua Liu, Yunqiu Wu, Kai Kang, UESTC, China 
- PAGE 450
We1H-2
8:20  **C** **Design of Ku-Band Bi-Directional Active Phase Shifter Enabling a Low RMS Error Utilizing Switch-Less Staggered Core with the Identical In-Out Matching**
Uichan Park, Suk Hwangbo, Jinhyun Kim, Taeyeong Yoon, Jungsuek Oh, Seoul National University, Korea 
- PAGE 454
We1H-3
8:40  **C** **A 57–71-GHz Accurate dB-Linear Variable Gain Power Amplifier with Ultralow Gain Error Using Particle Swarm Optimization Algorithm**
Xuwei Li¹, Depeng Cheng², Xuhao Jiang¹, Dongming Wang¹, Lianming Li¹
¹Southeast University, China  ; *²Purple Mountain Laboratories, China* 
- PAGE 458
We1H-4
9:00  **C** **A 29–48GHz Variable Gain Low Noise Amplifier Using Active Load in 90-nm CMOS Process**
Chih-Hsueh Lai¹, Yunshan Wang¹, Yuen-Sum Ng¹, Chau-Ching Chiong², Huei Wang¹
¹National Taiwan University, Taiwan  ; *²Academia Sinica, Taiwan* 

We1I: Advances in Computational Techniques

Chair: Zhizhang David Chen, Dalhousie University, Canada

Co-Chair: Vladimir Okhmatovski, University of Manitoba, Canada












Room 152AB, 08:00-09:40, Wednesday 19 June 2024

- PAGE 462  **C** **Parallel Fast Direct Error-Controlled Scattering Solutions via an H-Matrix-Accelerated Locally Corrected Nyström Method for the Combined Field Integral Equation**
Omid Babazadeh¹, Jin Hu², Emrah Sever³, Ian Jeffrey¹, Constantine Sideris², Vladimir Okhmatovski¹
¹University of Manitoba, Canada  ; ²University of Southern California, USA  ; ³Aselsan, Türkiye 
- PAGE 466  **C** **Coupled Electromagnetic-Thermal Analysis for Temperature-Dependent Materials with Physics-Informed Neural Networks**
Shutong Qi, Costas D. Sarris, University of Toronto, Canada 
- (MWTL)  **C** **Numerical Demonstration of THz Traveling Wave Amplifications in 2-D Electron Gas (2DEG) Under Scattering-Free and Low-Charge Density Regime**
Shubhendu Bhardwaj, Md. Faiyaz Bin Hassan, University of Nebraska-Lincoln, USA 
- PAGE 470  **C** **A Novel Causal Method to Blend the DC and AC Solution Over the Entire Frequency Band**
Peng Liu¹, Werner Thiel², Xin Xu², Kevin Zhu², Eric Bracken²
¹Ansys, Canada  ; ²Anslys, USA 
- PAGE 473  **C** **Order Reduction Using Laguerre-FDTD with Embedded Neural Network**
Yifan Wang¹, Yiliang Guo¹, Rahul Kumar², Madhavan Swaminathan¹
¹Georgia Tech, USA  ; ²Pennsylvania State University, USA 

We2C: Novel Techniques for Power Amplifiers

Chair: Wing Shing Chan, CityU, Hong Kong — Co-Chair: Anna Piacibello, Politecnico di Torino, Italy



Room 146A, 10:10-11:50, Wednesday 19 June 2024

- PAGE 477  **C** **A GaN-Based MMIC Doherty Power Amplifier With Class F Peaking Branch**
Francesco Manni¹, Rocco Giofrè¹, Vittorio Camarchia², Anna Piacibello², Franco Giannini¹, Paolo Colantonio¹
¹Università di Roma "Tor Vergata", Italy  ; ²Politecnico di Torino, Italy 
- (MWTL)  **C** **Compact Dual-Core Drive Stage Using Three-Winding Transformer for CMOS Broadband Power Amplifier**
Joon-Hyung Kim¹, Jeong-Taek Son¹, Jae-Hyeok Song¹, Jae-Eun Lee¹, Min-Seok Baek¹, Jeong-Taek Lim¹, Han-Woong Choi¹, Seong-Mo Moon², Dongpil Chang², Choul-Young Kim¹
¹Chungnam National University, Korea  ; ²ETRI, Korea 
- PAGE 481  **C** **A 1.2 to 5.7GHz Multi-Mode Dual-Input Power Amplifier Using a Novel Sigmoid-Function-Based Power Splitter**
Takuma Torii, Ao Yamashita, Yuji Komatsuzaki, Shintaro Shinjo, Mitsubishi Electric, Japan 
- PAGE 485  **C** **High-Power BAW-Based FDD Front-End using Indirect-Duplexing Load Modulated Balanced Amplifier for Massive MIMO Array**
Yuchen Cao¹, Shakthi Priya Gowri², Nitesh Bharadwaj Vangipurapu², Kenle Chen²
¹Qorvo, USA  ; ²University of Central Florida, USA 

We2D: Advances in Multichannel and Distributed Radar Systems

Chair: Christian Waldschmidt, Universität Ulm, Germany — Co-Chair: Walter Wall, HRL Laboratories, USA

Room 146B, 10:10-11:50, Wednesday 19 June 2024

- PAGE 489  **C** **A 140GHz FMCW Ultra Wideband High Dynamic Range RADAR Utilizing 8×8 Phased Arrays**
Amr Ahmed, Linjie Li, Minjae Jung, Gabriel M. Rebeiz, University of California, San Diego, USA 
- PAGE 493  **C** **All-Digital Carrier Frequency Synchronization for Distributed Radar Sensor Networks**
Russell H. Kenney, Jay W. McDaniel, University of Oklahoma, USA 
- (MWTL)  **C** **Fully Wireless Coherent Distributed Phased Array System for Networked Radar Applications**
Jason M. Merlo¹, Samuel Wagner², John Lancaster², Jeffrey A. Nanzer¹
¹Michigan State University, USA  ; ²LLNL, USA 
- PAGE 497  **C** **Specularity Resistant Millimeter-Wave Imaging with Distributed Repeater Apertures**
Tasin Nusrat, Stavros Vakalis, University of South Florida, USA 

We2E: Additive Manufacturing Technologies and Applications

Chair: Dominique Baillargeat, Université de Limoges, France — Co-Chair: Debabani Choudhury, Intel, USA

Room 146C, 10:10-11:50, Wednesday 19 June 2024

- (MWTL)  **C** **Beyond Planar: An Additively Manufactured, Origami-Inspired Shape-Changing, and RFIC-Based Phased Array for Near-Limitless Radiation Pattern Reconfigurability in 5G/mm-Wave Applications**
Hani Al Jamal¹, Chenhao Hu¹, Nathan Wille¹, Kai Zeng², Manos M. Tentzeris¹
¹Georgia Tech, USA  ; ²George Mason University, USA 
- PAGE 501  **C** **Additively Manufactured Al₂O₃ W-Band RFID Tag Based on a Reflective 1D Photonic Crystal**
Jesus Sánchez-Pastor¹, Kai-Daniel Jenkel², Marc Späth¹, Masoud Sakaki², Rolf Jakoby¹, Niels Benson², Alejandro Jiménez-Sáez¹
¹Technische Universität Darmstadt, Germany  ; ²Universität Duisburg-Essen, Germany 
- PAGE 505  **C** **Electro-Thermal Modeling of AM-SLM Based Cavity Resonators**
Qazi Mashaal Khan, Dan Kuylenstierna, Chalmers University of Technology, Sweden 
- (MWTL)  **C** **3-D Screen Printing: Efficient Additive Manufacturing of Groove Gap Waveguide Filters in D-Band**
Kay Reuter¹, Patrick Boe², Daniel Miek², Michael Höft², Thomas Studnitzky¹, Chongliang Zhong¹, Thomas Weißgärber¹, Isabel Olaya Leon³
¹Fraunhofer IFAM, Germany  ; ²CAU, Germany  ; ³ESA-ESTEC, The Netherlands 
- PAGE 509  **C** **Additive Manufacturing of a Copper Elliptical Corrugated Horn Antenna in the Sub-Terahertz Regime**
Kennet Braasch¹, Alexander Teplyuk¹, Daniel Miek¹, Jakob Scheibler², Thomas Weißgärber², Chongliang Zhong², Michael Höft¹
¹CAU, Germany  ; ²Fraunhofer IFAM, Germany 

We2F: Mixed-Signal Circuits and Systems for Space and Communication Applications

Chair: Hermann Boss, Rohde & Schwarz, Germany

Co-Chair: Christian Carlowitz, FAU Erlangen-Nürnberg, Germany, Germany











Room 147AB, 10:10-11:50, Wednesday 19 June 2024

- N/A
We2F-1
10:10  **C** Recent Advances in Signal Processing Technologies for Wireless and Optical Communications
Young-Kai Chen, Coherent, USA 
- PAGE 514
We2F-2
10:30  **C** A 10-Bit DAC 3GS/s Interpolating DDFS for Distortion-Limited Long Acquisition Time FMCW Ground Penetrating Radars
Arhison Bharathan¹, Adrian Tang², Mau-Chung Frank Chang¹
¹University of California, Los Angeles, USA  ; ²Jet Propulsion Laboratory, USA 
- PAGE 517
We2F-3
10:50  **C** S-Band Phase-Locked Loop Frequency Synthesizer for Satellite Communication and Space Applications
Xinlin Xia, Yanjie Wang, SCUT, China 
- PAGE 521
We2F-4
11:10  **C** Microwave Frequency Comb Generator for Radio Astronomy Applications
Michael Toennies, Rabi Wang, William Diener, Andrey Matsko, Jet Propulsion Laboratory, USA 
- PAGE 525
We2F-5
11:30  **C** Update Time of a Closed-Loop Digital Pre-Distortion on an RF System-on-Chip for Reconfigurable Transmitters
Francesco Raimondo, Jiteng Ma, Mark A. Beach, Tommaso Cappello, University of Bristol, UK 

We2G: Emerging Design Methodologies for Next-Generation Low-Loss Couplers Enabling Highly Integrated Chipsets

Chair: Abhishek Sahu, Qorvo, USA — Co-Chair: James Hwang, Cornell University, USA













Room 150AB, 10:10-11:50, Wednesday 19 June 2024

- N/A
We2G-1
10:10  **C** The Role of AI in Device Modeling and Characterization
Faramarz Kharabi, Qorvo, USA 
- (MWTL)
We2G-2
10:30  **C** A Low-Loss Millimeter-Wave Fully Differential Coupler Using Dual Patch on SISL Platform
Faxian Zhang, Yongqiang Wang, Kaixue Ma, Tianjin University, China 
- PAGE 530
We2G-3
10:50  **C** A Low-Loss 3-dB Coupler Using Metal-Integrated Suspended Line
Jixuan Ye, Yongqiang Wang, Kaixue Ma, Tianjin University, China 
- PAGE 534
We2G-4
11:10  **C** Transformer-Based Multisection Quadrature Coupler with 1.5 Octave Bandwidth Using GaAs-Based Integrated Passive Device Technology
Zhen-Ting Zhao, Hao-Shun Yang, Taipei Tech, Taiwan 
- PAGE 538
We2G-5
11:30  **C** On-Chip Hybrid Couplers Enabling Highly Integrated MMIC Components at Millimeter and Submillimeter Wave Frequencies
Caitlyn M. Cooke, Maxwell Duffy, Mason Fordham, Michael Eller, Alfonso Escorcia, William Deal, Northrop Grumman, USA 

We2H: Power Amplifier Performance Improvement Techniques

Chair: José Carlos Pedro, Universidade de Aveiro, Portugal — Co-Chair: Paul J. Draxler, MaXentric Technologies, USA


Room 151AB, 10:10-11:50, Wednesday 19 June 2024

- N/A
We2H-1
10:10  **C** **Unlocking the Next Generation of Cellular Connectivity: Advances in RF PA and Transmitter Architectures**
Rui Ma, pSemi, USA 
- (MWTL)
We2H-2
10:30  **C** **A Baseband Impedance Cancellation Technique for Wideband Multitransistor Amplifiers**
Indy van den Heuvel¹, Ehsan M. Azad², Mark Omisakin-Edwards², Steve Cripps¹, Paul J. Tasker¹, Roberto Quaglia¹
¹Cardiff University, UK  ; ²CSA Catapult, UK 
- PAGE 543
We2H-3
10:50  **C** **A Robust Search Algorithm of Optimal Driving Signals for Dual-Input High Power Amplifiers**
Filipe M. Barradas¹, Luís C. Nunes¹, José C. Pedro¹, Christophe Erdmann²
¹Universidade de Aveiro, Portugal  ; ²AMD, Ireland 
- PAGE 547
We2H-4
11:10  **C** **A Tri-Branch Analog Pre-Distortion Linearizer for the Compensation of Gain Inflection in Doherty Power Amplifiers**
Alex Pitt, Mark A. Beach, Tommaso Cappello, University of Bristol, UK 
- PAGE 551
We2H-5
11:30  **C** **A Method for Designing a Linear, Efficient 2-Stage GaN PA for Supply Modulation**
Morten Olavsbråten, Anders I. Hagen, NTNU, Norway 

We2I: Design and Characterization of Novel Microwave/mm-Wave Structures

Chair: Costas D. Sarris, University of Toronto, Canada — Co-Chair: Werner Thiel, ANSYS, USA













Room 152AB, 10:10-11:50, Wednesday 19 June 2024

- PAGE 555
We2I-1
10:10  **C** **Electronic Control of Structural Asymmetry for Tunable Nonreciprocal Phase Shift in CRLH Transmission Lines**
Hidefumi Yasuda, Tetsuya Ueda, Kyoto Institute of Technology, Japan 
- PAGE 559
We2I-2
10:30  **C** **A 3D-Printed Millimeter-Wave Free-Form Metasurface Based on Automatic Differentiable Inverse Design**
Yi Huang, Hong Tang, Huan Zhao, Yunxi Dong, Bowen Zheng, Hualiang Zhang, UMass Lowell, USA 
- PAGE 563
We2I-3
10:50  **C** **A Modified Gradient Model to Determine Surface Impedance from Measured Roughness Profiles with Printed Circuit Board Emphasis**
Felix Sepaintner¹, Andreas Scharl², Johannes Jakob¹, Franz Roehrl², Werner Bogner¹, Stefan Zorn²
¹Technische Hochschule Deggendorf, Germany  ; ²Rohde & Schwarz, Germany 
- PAGE 567
We2I-4
11:10  **C** **Plasma Based Absorptive and Adaptive High-Power Waveguide Protector**
Krushna Kanth V., Md. Tanvir Ahmed, Abbas Semnani, University of Toledo, USA 
- PAGE 571
We2I-5
11:30  **C** **Electromagnetic Stability Characterization of Millimeter-Wave Dielectric Fibers at Extremely High-Temperatures: Enabling Harsh Environment Communication and Sensing**
Abhishek Sharma, Yanghyo Rod Kim, Stevens Institute of Technology, USA 
- PAGE 575
We2I-6
11:40  **C** **Twisting Effects on X-Shaped Millimeter-Wave Plastic Waveguides**
Samir Lagoug, Anthony Ghiotto, Éric Kerhervé, IMS (UMR 5218), France 

We3C: Load Modulated GaN Power Amplifier Design Techniques

Chair: Yulong Zhao, Skyworks, Canada — Co-Chair: Chenyu Liang, Qorvo, USA













Room 146A, 13:30-15:10, Wednesday 19 June 2024

- N/A
We3C-1
13:30  **C** **Stability Analysis Methods for Microwave Power Amplifiers: A Modern Perspective**
Thomas A. Winslow, MACOM, USA 
- PAGE 580
We3C-2
13:50  **C** **Design and Characterization of an MMIC Current Mode Outphasing Power Amplifier**
Aleksander Bogusz¹, Wantao Li², Jonathan Lees¹, Roberto Quaglia¹, Gabriel Montoro², Pere L. Gilabert², Steve Cripps¹
¹Cardiff University, UK  ; ²UPC, Spain 
- (MWTL)
We3C-3
14:10  **C** **Decade-Bandwidth RF-Input Pseudo-Doherty Load-Modulated Balanced Amplifier Using Signal-Flow-Based Phase Alignment Design**
Pingzhu Gong, Jiachen Guo, Niteesh Bharadwaj Vangipurapu, Kenle Chen, University of Central Florida, USA 
- PAGE 584
We3C-4
14:30  **C** **Mode Extension of Load-Modulated Balanced Amplifier with Enhanced Efficiency**
Jieen Xie¹, Kwok-Keung Michael Cheng¹, Pengyu Yu¹, Xiaohu Fang²
¹CUHK, China  ; ²SUSTech, China 
- PAGE 588
We3C-5
14:50  **C** **A 3.2-4.2GHz Wideband 47dBm GaN HEMT Sequential-LMBA with Harmonic Tuned Using CRLH Transmission Line Stub**
Hiroataka Asami, Takashi Sumiyoshi, Hiroshi Yamamoto, Takashi Maehata, Sumitomo Electric Industries, Japan 

We3D: Radar-Based Structures for Advanced Sensing Applications

Chair: Changzhan Gu, SJTU, China — Co-Chair: Kazuya Yamamoto, Mitsubishi Electric, Japan

















Room 146B, 13:30-15:10, Wednesday 19 June 2024

- (MWTL)
We3D-1
13:30  **C** **Radar-Based Heart Rate Sensing on the Smart Glasses**
Irene Wei Huang, Paurakh Rajbhandary, Sam Shiu, John S. Ho, Jiang Zhu, Ben Wilson, Geng Ye, Meta, USA 
- PAGE 592
We3D-2
13:50  **C** **A Cost-Effective Single-Channel Displacement Measurement Technique Without Down-Conversion Using Low-IF Doppler Radar**
Zhiwei Zhang, Tong Fei, Jiayu Zhang, Changzhan Gu, SJTU, China 
- PAGE 596
We3D-3
14:10  **C** **Measurement of the Radial and Angular Velocity of Tagged Objects Using Interferometric Harmonic Micro-Doppler Radar**
Cory Hilton, Jeffrey A. Nanzer, Michigan State University, USA 
- PAGE 600
We3D-4
14:30  **C** **Accurate Representation of the Rolling Motion for the Self-Rolled-Up Inductor with Radar Interferometry**
Keke Zheng¹, Yue Wu², Wei Xu¹, Changzhan Gu¹, Junfa Mao¹
¹SJTU, China  ; ²Fudan University, China 
- PAGE 604
We3D-5
14:50  **C** **Interferometric Approaches for Accurate Location and Displacement Measurement Using Passive Frequency-Doubling Reflectennas**
Ismail H. Uluer¹, Jeff Frolik², Thomas M. Weller¹
¹Oregon State University, USA  ; ²University of Vermont, USA 

We3F: Emerging Planar Filter Architectures and Design Methods

Chair: Xun Luo, UESTC, China — Co-Chair: Li Yang, Universidad de Alcalá, Spain












Room 147AB, 13:30-15:10, Wednesday 19 June 2024

- PAGE 608
We3F-1
13:30  **C** **Balanced Flat-Group-Delay RF Low-Pass Filter with Differential-Mode Input-Quasi-Reflectionless Behavior for Digital-Communication Systems**
Zekai Luo¹, Li Yang², Tao Su¹, Roberto Gómez-García²
¹Sun Yat-sen University, China  ; ²Universidad de Alcalá, Spain 
- (MWTL)
We3F-2
13:50  **C** **RF Balanced-to-Single-Ended Out-of-Phase/3-dB Filtering Power Divider with Differential-Mode Input-Quasi-Reflectionless Behavior**
Xi-Bei Zhao¹, Feng Wei², Li Yang³, Roberto Gómez-García³
¹Harbin Engineering University, China  ; ²Xidian University, China  ; ³Universidad de Alcalá, Spain 
- PAGE 612
We3F-3
14:10  **C** **FDTD Modeling of Time-Modulated Resonators-Based Bandpass Filters Using Modified Telegrapher's Equations**
Anand Kumar¹, Zixiao Zhang¹, Debdeep Sarkar², Symeon Nikolaou³, Photos Vryonides³, Dimitra Psychogiou¹
¹Tyndall National Institute, Ireland  ; ²Indian Institute of Science, India  ; ³Frederick University, Cyprus 
- PAGE 616
We3F-4
14:30  **C** **Compact, Multilayer 5G Filter Based on Extracted-Pole Shielded Lumped Resonators**
Yan Zheng, Yuandan Dong, UESTC, China 
- PAGE 620
We3F-5
14:50  **C** **Design of Multifunctional Bandpass Filter With Tunable Attenuation and Reflectionless Behavior**
Adnan Nadeem¹, Symeon Nikolaou¹, Dimitra Psychogiou², Photos Vryonides¹
¹Frederick University, Cyprus  ; ²Tyndall National Institute, Ireland 

We3G: Integrated Passives for Innovative Front-Ends

Chair: Anthony Ghiotto, Université de Bordeaux, France — Co-Chair: Jason Soric, Raytheon, USA

Room 150AB, 13:30-15:10, Wednesday 19 June 2024

- PAGE 624
We3G-1
13:30  **C** **A Novel RF Hilbert Transformer Single Sideband Mixer**
Hao Yan, Hanxiang Zhang, Powei Liu, Saeed Zolfaghary Pour, Jonathan Casamayor, Mitch Plaisir, Bayaner Arigong, FAMU-FSU, USA 
- PAGE 628
We3G-2
13:50  **C** **A Wideband 4-Port Gyrator-Based Circulator in 0.15 μ m GaN MMIC**
Armagan Dascurcu, Nusrat Jahan, Harish Krishnaswamy, Columbia University, USA 
- PAGE 632
We3G-3
14:10  **C** **Dual-Channel Half-Mode Substrate-Integrated Waveguide Link Utilizing Mode Division Multiplexing**
Mohamed Elsawaf, Constantine Sideris, University of Southern California, USA 
- PAGE 636
We3G-4
14:30  **C** **A Novel Microwave Modulator Based on Complex Impedance Loads**
Alejandro Venere¹, Ramón López La Valle², Martín Hurtado²
¹CNEA, Argentina  ; ²UNLP, Argentina 
- PAGE 640
We3G-5
14:50  **C** **A 94-GHz Absorptive SP4T Switch with Pad Parasitic Cancellation**
Yun-Chien Tseng, Chien-Nan Kuo, NYCU, Taiwan 

We3H: Digital Linearization Techniques for Wireless Transmitter Applications

Chair: *Anding Zhu, University College Dublin, Ireland*

Co-Chair: *Pere L. Gilabert, Universitat Politècnica de Catalunya, Spain*














Room 151AB, 13:30-15:10, Wednesday 19 June 2024

- N/A
We3H-1
13:30  **C** **Role of AI/ML in PA Linearization for Next G Wireless**
Kevin Chuang, Analog Devices, USA 
- PAGE 645
We3H-2
13:50  **C** **Adaptive Kernel Function Sharing for Digital Predistortion of RF Power Amplifiers With Dynamic Resource Block Allocation**
Hang Yin, Anding Zhu, University College Dublin, Ireland 
- PAGE 649
We3H-3
14:10  **C** **A Low-Complexity DPD Coefficient Update Method for Varying Transmission Configurations**
Tianyang Zhong, Jun Peng, Songbai He, Yuchen Bian, Xinyu Wang, Yijie Tang, Bo Pang, UESTC, China 
- PAGE 653
We3H-4
14:30  **C** **Behavioral Modeling of Millimeter Wave GaN Power Amplifiers for 6G Integrated Sensing and Communications Application**
Yucheng Yu, Luqi Yu, Peng Chen, Chao Yu, Southeast University, China 
- PAGE 657
We3H-5
14:50  **C** **On the Parameter Identification of Cascaded Behavioral Models for Wideband Digital Predistortion Linearization**
Raúl Criado¹, Wantao Li¹, William Thompson², Gabriel Montoro¹, Kevin Chuang², Pere L. Gilabert¹
¹*UPC, Spain*  ; ²*Analog Devices, USA* 

We3I: Modeling Techniques for Advanced Applications

Chair: *Da Huang, MathWorks, USA* — Co-Chair: *David R. Jackson, University of Houston, USA*

Room 152AB, 13:30-15:10, Wednesday 19 June 2024

- N/A
We3I-1
13:30  **C** **Spectrum of Insights with Advanced Engineering Simulation**
Larry Williams, Ansys, USA 
- PAGE 662
We3I-2
13:50  **C** **Analytic Differential Admittance Operator Solution of a Dielectric Sphere Under Radial Dipole Illumination**
M. Huynen¹, D. De Zutter¹, D. Vande Ginste¹, Vladimir Okhmatovski²
¹*IDLab, Belgium*  ; ²*University of Manitoba, Canada* 
- PAGE 666
We3I-3
14:10  **C** **A Rigorous 3D Near to Far Field Transformation When Only an Electric or Magnetic Field is Available**
Jose M. Tamayo¹, Andrew Mathis², Werner Thiel²
¹*Ansys, Spain*  ; ²*Ansys, USA* 
- PAGE 670
We3I-4
14:30  **C** **Integrated Distributed Equivalent Circuit Model of PCIe 5.0 Connector with AIC and Baseboard Loading Resonances for Fast SI Diagnosis**
Yulin He, Kewei Song, Milton Feng, University of Illinois Urbana-Champaign, USA 
- PAGE 674
We3I-5
14:50  **C** **Optically-Transparent FSS for Outdoor-to-Indoor Transmission Improvement Featuring Electromagnetic-Thermal Co-Analysis**
Youngno Youn¹, Cheonga Lee¹, Daehyeon Kim¹, Donggeun An¹, Ahmed Abdelmottaleb Omar², Wonbin Hong¹
¹*POSTECH, Korea*  ; ²*KFUPM, Saudi Arabia* 

IF1 : Interactive Forum

Chair: Matthew Morgan, NRAO, USA















Room Exhibit Hall, 15:10–17:20, Wednesday 19 June 2024

- PAGE 678
IF1-1
15:10  **C** **57-GHz Low-Power Subharmonic Parametric Downconverter Exploiting Capacitance Nonlinearity in SiGe BiCMOS**
Paula Palacios¹, Mohamed Saeed², Renato Negra¹
¹RWTH Aachen University, Germany  ; ²InCiT, Germany 
- PAGE 682
IF1-2
15:30  **C** **An X-Band Phase Noise Canceling Feedforward Amplifier in InP 250nm HBT Process**
Pedram Shirmohammadi, Samin Hanifi, Steven M. Bowers, University of Virginia, USA

- PAGE 686
IF1-3
15:50  **C** **A D-Band Traveling-Wave Amplifier by Embedding GaN HEMT's as Current Probes in a SiC SIW**
Lei Li¹, Tianze Li¹, Patrick Fay², James C.M. Hwang¹
¹Cornell University, USA  ; ²University of Notre Dame, USA 
- PAGE 690
IF1-4
16:10  **C** **Scalable GaN-Based 64-Element Circularly-Polarized Transceiver with 65-dBm Saturated EIRP for Millimeter-Wave CubeSat Applications**
Yi-Fan Tsao, Arpan Desai, Heng-Tung Hsu, NYCU, Taiwan 
- PAGE 694
IF1-5
16:30  **C** **Experimental Study on Transition Loss of On-Chip SIW Interconnects and Transmission Lines Using Two De-Embedding Reference Planes in 200GHz Band Frequency**
Samundra K. Thapa¹, Ramesh K. Pokharel¹, Adel Barakat¹, Shuhei Amakawa², Mohamed H. Mubarak³, Shinsuke Hara³, Issei Watanabe³, Akifumi Kasamatsu³
¹Kyushu University, Japan  ; ²Hiroshima University, Japan  ; ³NICT, Japan 

IF1 continues next page ...

IF1 continued ...

- PAGE 698
IF1-6
16:50  **C** **A 5.2-GHz Area-Efficient RF Front-End with 2.79× PAE Enhancement at 7.7-dB Power Back-Off**
Teng-Shen Yang, Wei-Wen Wang, Po-Yao Hsu, Liang-Hung Lu, National Taiwan University, Taiwan 
- PAGE 702
IF1-7
17:10  **C** **Consistent Q(v)-I(v) AlGaIn/GaN HEMT Nonlinear Equivalent-Circuit Modeling**
José C. Pedro, Luís C. Nunes, Universidade de Aveiro, Portugal 
- PAGE 706
IF1-8
17:30  **C** **Practical Considerations for RF Measurements of Cryogenic CMOS Circuits for Quantum Computing**
Daniil Frolov, Sudipto Chakraborty, Devin Underwood, Joseph Glick, John Timmerwilke, Ray Robertazzi, Ken Inoue, Mark Yeck, Pat Rosno, Bryce Snell, Daniel Moertl, Scott Lekuch, Christopher DeSantis, Kevin Tien, Jean-Olivier Plouchart, David Frank, Dorothy Wisnieff, John Bulzacchelli, Chris Baks, Daniel Friedman, Brian Gaucher, IBM, USA 
- PAGE 710
IF1-9
17:50  **C** **Rapid Calibration of Variable Gain Phase Shifters: A Novel Characterization Approach with Sparse Measurements**
Yuxuan Chen, Slim Boumaiza, University of Waterloo, Canada 
- PAGE 714
IF1-10
18:10  **C** **A 0.9 to 4.0GHz High Efficiency Reactively-Matched GaN Power Amplifier MMIC**
J. Kamioka, H. Sato, S. Miwa, Y. Kamo, Shintaro Shinjo, Mitsubishi Electric, Japan 
- PAGE 717
IF1-12
18:30  **C** **Rigorous Approach to the Coupling Matrix Synthesis Problem Based on Geometric Interpretation**
Seungjun Lee, Jongheun Lee, Juseop Lee, Korea University, Korea 
- PAGE 721
IF1-13
18:50  **C** **A Novel Wideband Power Amplifier Enhanced Through Controlled Prescribed Transmission Zeros by Coupling Block**
Sergio López de Pablo, Jordi Verdú, Pedro de Paco, UAB, Spain 







IF1 continues next page ...

IF1 continued ...

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IF1-14
19:10  **C** **A Low-Complexity Harmonic Technique for RF Power Amplifiers**
Xinyu Wang, Jun Peng, Songbai He, Bo Pang, Tianyang Zhong, Yijie Tang, Haiqian Tang, UESTC, China **A**
- PAGE 729
IF1-15
19:30  **C** **Machine-Learning Assisted Digital Predistortion Using Feedback via Dual-Polarized Antenna Arrays**
Yuuichi Aoki, Yonghoon Kim, Heedo Kang, Wonki Kim, Kihong Min, Sung-Gi Yang, Samsung, Korea **A**
- PAGE 733
IF1-16
19:50  **C** **A Fully Additively Manufactured Reconfigurable Millimeter-Wave Bandpass Filter Based on VO₂ Dielectric Layer**
Hong Tang¹, Powei Liu², Shiqi Li³, Bowen Zheng¹, Huan Zhao¹, Yunxi Dong¹, Yi Huang¹, Jie Li⁴, Bayaner Arigong², Hualiang Zhang¹
*¹UMass Lowell, USA **A** ; ²FAMU-FSU, USA **A** ; ³Yunnan Precious Metal Laboratory, China **A** ; ⁴Argonne National Laboratory, USA **A***
- N/A
IF1-17
20:10  **C** **Measurement of Multiband Complex Permittivity by Perturbation Insertion Method**
Qin Shi, Qing-Xin Chu, Fu-Chang Chen, SCUT, China **A**
- PAGE 741
IF1-18
20:30  **C** **Enhanced In-Band Self-Interference Suppression by Combining Bandpass Filter-Based RF Cancellers and Dual-Polarized Antennas**
Kevin Martin, Dimitra Psychogiou, University College Cork, Ireland **A**
- PAGE 745
IF1-19
20:50  **C** **A Millimeter-Wave “Quasi-Reflectionless” Filter Prototype Implemented with Micromachined Silicon**
Noah D. Sauber¹, Matthew F. Bauwens², Michael E. Cyberey¹, Arthur W. Lichtenberger¹, N. Scott Barker¹, Robert M. Weikle II¹
*¹University of Virginia, USA **A** ; ²Dominion Microprobes, USA **A***
















IF1 continues next page ...

IF1 continued ...

- PAGE 749
IF1-20
21:10  **C** **A Quantum Model for a Graphene Josephson Junction Parametric Amplifier for Quantum-Noise-Limited Microwave Amplification**
Yongjie Yuan, Özüm Emre Aşırım, Michael Haider, Christian Jirauschek, Technische Universität München, Germany **A**
- PAGE 753
IF1-21
21:30  **C** **A Millimeter-Wave Low-Loss On-Chip Filter Design Using a Wideband Synthesis Method in 90-nm SiGe BiCMOS Process**
Xiaolong Huang, Zheng Liu, Emir Ali Karahan, Kaushik Sengupta, Princeton University, USA **A**
- PAGE 757
IF1-22
21:50  **C** **Design and Analysis of SPDT Switch and Array Antenna for 28GHz 5G New Radio**
Chung-Ta Huang, Yo-Sheng Lin, Chin-Yi Huang, Kai-Siang Lan, National Chi Nan University, Taiwan **A**
- (MWTL)
IF1-23
22:10  **C** **Wi-Fi SIMO Radar for Deep Learning-Based Sign Language Recognition**
Yi-Chen Lai, Pin-Yu Huang, Tzyy-Sheng Horng, National Sun Yat-sen University, Taiwan **A**
- PAGE 760
IF1-24
22:30  **C** **Compact, Low Loss 4-Bit Ku-Band Hybrid Passive Phase Shifter Realized in 0.13- μ m SiGe HBT BiCMOS for LEO SATCOM**
Sunghyuk Kim¹, Ki Woong Choi², Byeongcheol Yoon¹, Junghyun Kim¹, Inchan Ju²
*¹Hanyang University, Korea **A** ; ²Ajou University, Korea **A***
- PAGE 764
IF1-25
22:50  **C** **Topology Optimization of Microwave Filters Based on Direct Computation of Poles and Zeros**
Matteo Oldoni, Youssef E. Elhouchy, Giuseppe Macchiarella, Gian Guido Gentili, Politecnico di Milano, Italy **A**

IF1 continues next page ...

IF1 continued ...

- PAGE 768
IF1-26
23:10  **C** **A Monolithic X-Band 32dBm GaAs HBT Power Amplifier with Efficient Operation Over a Wide Range of Power Supply Voltages**
Peter Asbeck¹, Sravya Alluri¹, Jyun-Hao Li², Jung-Tao Chung²
¹University of California, San Diego, USA  ; ²WIN Semiconductors, Taiwan 
- PAGE 772
IF1-27
23:30  **C** **A Ku-Band Internally Matched 50W GaN HEMT Power Amplifier Using Advanced Cu-Mo-Cu Heat Sink**
Yunsik Park¹, Jin Young Jeong², Wonshil Kang², Minsoo Park¹, Dongsu Kim¹
¹KETI, Korea  ; ²RFMTL, Korea 
- PAGE 776
IF1-28
23:50  **C** **938Gb/s, 145-GHz-Bandwidth Wireless Transmission Over the Air Using Combined Electronic and Photonic-Assisted Signal Generation**
Zichuan Zhou, Amany Kassem, James Seddon, Eric Sillekens, Izzat Darwazeh, Polina Bayvel, Zhixin Liu, University College London, UK 
- (MWTL)
IF1-29
0:10  **C** **Recursive Neural Network with Phase-Normalization for Modeling and Linearization of RF Power Amplifiers**
Arne Fischer-Bühner¹, Lauri Anttila², Manil Dev Gomony¹, Mikko Valkama²
¹Nokia Bell Labs, Belgium  ; ²Tampere University, Finland 
- PAGE 780
IF1-30
0:30  **C** **Improve RF Dual Probe Calibration Accuracy with Peer-Terminated Standards**
Hung Che Fu, Koocho Jung, MPI, Taiwan 
- PAGE 784
IF1-31
0:50  **C** **Various RF Substrate Solutions for 22nm FD-SOI Technology Targeting Cryogenic Applications**
Martin Vanbrabant, Martin Rack, Dimitri Lederer, Valeriya Kilchytska, Jean-Pierre Raskin, UCLouvain, Belgium 

















IF1 continues next page ...

IF1 continued ...

- PAGE 788
IF1-32
1:10  **C** **Innovative Development Approach for a High-Power 8-Way Coaxial Radial Combiner**
Mohamed Mamdouh M. Ali¹, Syed M. Sifat¹, Mahmoud Elsaadany², Shoukry I. Shams², Ke Wu³
¹Scientific Microwave, Canada  ; ²Concordia University, Canada  ; ³Polytechnique Montréal, Canada 
- PAGE 792
IF1-33
1:30  **C** **Additively Manufactured High-Power Light Weight Millimeter-Wave Band Pass Filter Optimized with AI Tuning Algorithm for 5G Space Applications**
Laila Salman¹, Diamond Liu², Sunil Acharya¹, Loren Vancleef³, Koen Huybrechts³, Gada Saad⁴, Mohamed Mamdouh M. Ali⁴
¹Ansys, USA  ; ²SynMatrix Technologies, Canada  ; ³3D Systems, Belgium  ; ⁴Scientific Microwave, Canada 
- PAGE 796
IF1-34
1:50  **C** **A ROM-Less DDS with High-Speed Selectors for Reduction in DAC Settling Time Requirements**
Haruki Shibue, Hideyuki Nosaka, Ritsumeikan University, Japan 
- PAGE 800
IF1-35
2:10  **C** **Wearable Human Body Communication Channel Measurements in the Body Resonance Regime**
Samyadip Sarkar, Qi Huang, Mayukh Nath, Shreyas Sen, Purdue University, USA 
- PAGE 804
IF1-36
2:30  **C** **6.5GHz Longitudinal Leaky SAW Filter Using LiNbO₃-on-SiC Structure for Wi-Fi 7**
Mijing Sun¹, Shibin Zhang², Pengcheng Zheng², Xiaoli Fang², Xin Ou²
¹USTC, China  ; ²CAS, China 

IF1 continues next page ...

IF1 continued ...

- PAGE 808
IF1-37
2:50  **C** **System and Characterization Method for Controlled Microwave Heating in Medical Applications**
Shreeniket Pawar, Benjamin Westhafer, Anilchandra Attaluri, Mohammad-Reza Tofighi, Pennsylvania State University, USA 
- PAGE 812
IF1-38
3:10  **C** **A 256–287GHz Full 360° Hybrid-Type Phase Shifter with Active SPDT Switches**
Eunjung Kim, Sanggeun Jeon, Korea University, Korea 
- PAGE 816
IF1-39
3:30  **C** **A Low-Loss DC-to-300 GHz InP/Si Interconnection Based on Wafer Level Packaging Using Chip-First/Facedown Process**
Yusuke Araki, Yuta Shiratori, Hiroshi Hamada, Miwa Muto, Ibrahim Abdo, Teruo Jyo, Fumito Nakajima, NTT, Japan 
- PAGE 820
IF1-40
3:50  **C** **Noise-Adaptive Auto-Encoder for Modulation Recognition of RF Signal**
Jongseok Woo, Kuchul Jung, Saibal Mukhopadhyay, Georgia Tech, USA 
- PAGE 824
IF1-41
4:10  **C** **Reconstruction of Arbitrarily Shaped Sources with Electromagnetic Time-Reversal and Kurtosis**
Juan Li¹, Zhizhang David Chen¹, Xiaoyao Feng², Jun Cai¹, Zhimeng Xu¹
¹Fuzhou University, China  *;* *²Dalhousie University, Canada* 
- PAGE 827
IF1-42
4:30  **C** **28GHz GaAs pHEMT High-Efficiency Power Amplifier Using Multi-Section Transmission-Line Power Combining/Matching Technique**
Yu-Shiuan Lai¹, Zi-Hao Fu¹, Jia-Wei Ye¹, Chan-Shin Wu², Kun-You Lin¹
¹National Taiwan University, Taiwan  *;* *²Yuan Ze University, Taiwan* 
- PAGE 831
IF1-43
4:50  **C** **A 5.6dB Noise-Figure X-Band to W-Band CMOS Frequency-Extender Receiver Frontend**
Tal Elazar, Eran Socher, Tel-Aviv University, Israel 

Th1B: Advances in CAD Techniques for RF and Microwave Circuits and Systems

Chair: José E. Rayas-Sánchez, ITESO, Mexico — Co-Chair: Marco Pirola, Politecnico di Torino, Italy





Room 145AB, 08:00–09:40, Thursday 20 June 2024

- PAGE 835
Th1B-1
8:00  **C** **A Novel Transfer Learning Approach for Efficient RF Device Behavior Model Parameter Extraction**
Ruijin Wang, Jiangtao Su, Weiyu Xie, Mengmeng Xu, Kuiwen Xu, Lingling Sun, Hangzhou DianZi University, China 
- PAGE 838
Th1B-2
8:20  **C** **Transfer Learning Framework for 3D Electromagnetic Structures**
Oluwaseyi Akinwande¹, Sri Laxmi Ganna², Rahul Kumar², Madhavan Swaminathan¹
¹Georgia Tech, USA  *;* *²Pennsylvania State University, USA* 
- (MWTL)
Th1B-3
8:40  **C** **Analysis of Two Wirelessly Locked Oscillators Based on Realistic Nonlinear Oscillator Models**
Camilo Moncada, Franco Ramírez, Almudena Suarez, Universidad de Cantabria, Spain 
- PAGE 842
Th1B-4
9:00  **C** **Automated mmWave Power Amplifier Design Flow and a 28-GHz Design Example in 45-nm CMOS SOI**
Yaolong Hu¹, Xiaohan Zhang¹, Qiang Zhou¹, Fan Cai², Cindy Cui², Taiyun Chi¹
¹Rice University, USA  *;* *²Keysight Technologies, USA* 
- PAGE 846
Th1B-5
9:20  **C** **Analysis and Modeling of Super-Regenerative Oscillators with FMCW Signals**
Sergio Sancho, Mabel Ponton, Almudena Suarez, Universidad de Cantabria, Spain 

Th1C: Advanced mm-Wave Power Amplifiers for Ka- to E-Band Applications

Chair: Michael Roberg, mmTron, USA — Co-Chair: Munkyo Seo, Sungkyunkwan University, Korea

Room 146A, 08:00-09:40, Thursday 20 June 2024



- PAGE 850
Th1C-1
8:00  **C** **A 52-to-86GHz V-/E-Band GaN Distributed Combined Power Amplifier with Output Power Beyond 1W and 34GHz Bandwidth**
Bharath Cimbili¹, Mingquan Bao², Christian Friesicke³, Sandrine Wagner³, Rüdiger Quay¹
¹Albert-Ludwigs-Universität Freiburg, Germany **A** ; ²Ericsson, Sweden **A** ; ³Fraunhofer IAF, Germany **A**
- PAGE 854
Th1C-2
8:20  **C** **V-Band GaN Power Amplifier MMICs with High Power-Bandwidth and Low Gain Compression for RF Inter-Satellite Links**
Christian Friesicke¹, Friedbert van Raay¹, Sebastian Krause¹, Bharath Cimbili¹, Peter Brückner¹, Rüdiger Quay¹, Alberto Colzani², Antonio Traversa², Alessandro Fonte²
¹Fraunhofer IAF, Germany **A** ; ²SIAE MICROELETTRONICA, Italy **A**
- PAGE 858
Th1C-3
8:40  **C** **Compact K/Ka-Band Frontend PA and LNA in 16nm FinFET for Next Generation Digitally Intensive Arrays**
Edward Liu¹, Boce Lin¹, Cho-Ying Lu², Hua Wang¹
¹ETH Zürich, Switzerland **A** ; ²TSMC, Taiwan **A**
- PAGE 862
Th1C-4
9:00  **C** **A 31-41GHz SiGe Power Amplifier with Sandwiched-Coupler-Balun and Folded-T-Line Power Combiner Achieving 23.5-dBm/22.2-dBm Psat/OP1dB and Supporting 64-QAM Modulation**
*Kenan Xie, Rundi Wu, Keping Wang, Tianjin University, China **A***

Th1D: Low-Noise Cryogenic Integrated Circuits for Quantum Computing

Chair: Kavita Goverdhanam, US Army CCD-C5ISR Center, USA

Co-Chair: Sorin P. Voinigescu, University of Toronto, Canada

Room 146B, 08:00-09:40, Thursday 20 June 2024


- PAGE 866
Th1D-1
8:00  **C** **A G_m -Boosting Inductorless Noise-Canceling Low Noise Amplifier in 40-nm CMOS for Quantum Applications**
Mahesh Kumar Chaubey¹, Yeke Liu¹, Yin-Cheng Chang², Po-Chang Wu², Hann-Huei Tsai², Shawn S.H. Hsu¹
¹National Tsing Hua University, Taiwan **A** ; ²NARLabs-TSRI, Taiwan **A**
- PAGE 870
Th1D-2
8:20  **C** **Sub-10-GHz Cryo-CMOS LNAs Achieving Up to 0.07-dB Average NF Thanks to Back Biasing for Qubit Readout in 28-nm FD-SOI**
V. Puyal¹, Q. Berlingard¹, J. Lugo-Alvarez¹, B. Blampey¹, M. Cassé¹, D. Belot²
¹CEA-Leti, France **A** ; ²STMicroelectronics, France **A**
- (MWTL)
Th1D-3
8:40  **C** **A 1.6-mW Cryogenic SiGe LNA IC for Quantum Readout Applications Achieving 2.6-K Average Noise Temperature from 3 to 6GHz**
*Zhenjie Zou, Sanjay Raman, J.C. Bardin, UMass Amherst, USA **A***
- PAGE 874
Th1D-4
9:00  **C** **A 6mW Cryogenic SiGe Receiver IC For High-Fidelity Qubit Readout**
*Randy C. Kwende, D. Rosenstock, C. Wang, J.C. Bardin, UMass Amherst, USA **A***

Th1E: Material Sensing at Microwave and mm-Wave Frequencies

Chair: Zoya Popović, University of Colorado Boulder, USA

Co-Chair: Pawel Kopyt, Warsaw University of Technology, Poland

Room 146C, 08:00–09:40, Thursday 20 June 2024




- N/A
Th1E-1
8:00  **C** **Accurate Materials' Testing as an Enabler for Microwave and Millimeter-Wave Industries**
Malgorzata Celuch, QWED, Poland **A**
- (MWTL)
Th1E-2
8:20  **C** **A Novel Q-Choked Resonator for Microwave Material Measurements Alleviating Sample Thickness Limitations of Existing Techniques**
Malgorzata Celuch, Marzena Olszewska-Placha, Lukasz Nowicki, Wojciech Gwarek, QWED, Poland **A**
- PAGE 879
Th1E-3
8:40  **C** **Characterizing the Broadband RF Permittivity of 3D-Integrated Layers in a Glass Wafer Stack from 100MHz to 30GHz**
Jacob T. Pawlik, Tomasz Karpisz, Nicholas Derimow, Sarah R. Evans, James C. Booth, Nathan D. Orloff, Christian J. Long, Angela C. Stelson, NIST, USA **A**
- PAGE 883
Th1E-4
9:00  **C** **A Dielectric Permittivity Sensor Based on Inverted Microstrip/3D-Printing Hybrid Technology**
Sofia Rustioni, Lorenzo Silvestri, Stefania Marconi, Gianluca Alaimo, Ferdinando Auricchio, Maurizio Bozzi, Università di Pavia, Italy **A**
- PAGE 887
Th1E-5
9:20  **C** **Radar-Based Smoke Detection at Millimeter Wave Frequencies: An Experimental Study**
Francesca Schenkel¹, Thorsten Schultze², Christoph Baer¹, Ilona Rolfes¹, Christian Schulz¹
¹Ruhr-Universität Bochum, Germany **A** ; ²Universität Duisburg-Essen, Germany **A**

Th1F: Insights on Vital-Sign Radars

Chair: Alexander Koelpin, Technische Universität Hamburg, Germany, Germany

Co-Chair: Davi V.Q. Rodrigues, University of Texas at El Paso, USA

Room 147AB, 08:00–09:40, Thursday 20 June 2024













- PAGE 891
Th1F-1
8:00  **C** **Displacement Monitoring Using a Four-Channel Phase- and Quadrature Self-Injection-Locked (PQSIL) Radar with Channel Compression Demodulation (CCD) for Sensitivity Improvement**
Ji-Xun Zhong, Ju-Yin Shih, Fu-Kang Wang, National Sun Yat-sen University, Taiwan **A**
- PAGE 895
Th1F-2
8:20  **C** **Wavelet- and Cosine-Transform-Based Super-Resolution Algorithm (WCT-SRA) for Radar-Based Multi-Person Vital Sign Monitoring**
Ju-Yin Shih, Ji-Xun Zhong, Yu-Jen Chu, Fu-Kang Wang, National Sun Yat-sen University, Taiwan **A**
- PAGE 899
Th1F-3
8:40  **C** **A Low-Power Low-Latency 84.5-GHz GaAs pHEMT Self-Injection-Locked Radar with Integrated Frequency Differentiator for Vital Sign Detection**
Donglin Gao¹, Shuping Li¹, Minning Zhu¹, Austin Ying-Kuang Chen², Chung-Tse Michael Wu¹
¹Rutgers University, USA **A** ; ²CSUN, USA **A**
- (MWTL)
Th1F-4
9:00  **C** **Spectrum-Efficient Multitarget Vital Sign Monitoring Using Metamaterial-Integrated Space-Time-Coding Transmitting Array**
Shuping Li, Donglin Gao, Shaghayegh Vosoughitabar, Chung-Tse Michael Wu, Rutgers University, USA **A**

Th1G: Who Needs Contact? Developments in OTA Measurements

Chair: Marcus Da Silva, National Instruments, USA

Co-Chair: Marco Spirito, Technische Universiteit Delft, The Netherlands












Room 150AB, 08:00-09:40, Thursday 20 June 2024

- N/A
Th1G-1
8:00  **C** **Electro-Optic Mapping Techniques for Characterization of Microwave Circuits, Devices and Antenna Systems**
Kazem Sabet, EMAG Technologies, USA 
- PAGE 904
Th1G-2
8:20  **C** **A Near-Field Quasi-Optical Measurement Technique for Probe-Fed High-Gain Backside-Radiating Antennas**
Nick van Rooijen, M. Spirito, A. Bechrakis Triantafyllos, N. Llombart, M. Alonso-delPino, Technische Universiteit Delft, The Netherlands 
- PAGE 908
Th1G-3
8:40  **C** **Load-Impedance-Aware EIRP Calibration in FR2 Phased Arrays**
Viduneth Ariyaratna, Wan Jong Kim, Pranav Dayal, Venumadhav Bhagavatula, Ivan Lu, Chinh Doan, Samsung, USA 
- PAGE 912
Th1G-4
9:00  **C** **Toward Free Space Local Characterization Method in Microwave**
Mathis Granger, Ali Ghaddar, Bernard Bayard, Bruno Sauviac, Laboratoire Hubert Curien (UMR 5516), France 
- PAGE 916
Th1G-5
9:20  **C** **Simplifying Polarization Alignment in Modulated Antenna Measurements**
Gerardo Orozco¹, Thomas Deckert², Nan Yang³
¹National Instruments, USA  ; ²National Instruments, Germany  ; ³National Instruments, China 

Th1H: Advances in Reconfigurable Intelligent Surfaces, Antennas, and Beamformers

Chair: Nizar Messaoudi, Keysight Technologies, Canada — Co-Chair: Najme Ebrahimi, Northeastern University, USA











Room 151AB, 08:00-09:40, Thursday 20 June 2024

- PAGE 919
Th1H-1
8:00  **C** **Scalable 32×32 1-Bit Reconfigurable Intelligent Surfaces for Upper-Mid Band 6G Communications**
Sungeun Kim, Hong-seok Choi, Byung-Wook Min, Yonsei University, Korea 
- PAGE 923
Th1H-2
8:20  **C** **A Scalable, Binary Phase, Millimeter-Wave Reconfigurable Intelligent Surface**
Aditya S. Shekhawat, Bharath G. Kashyap, Russell W. Raldiris Torres, Georgios C. Trichopoulos, Arizona State University, USA 
- PAGE 927
Th1H-3
8:40  **C** **A Wideband Configurable Multi-Port Wire Antenna**
Sina Rezaeeahvanouee, Yahya Tousi, University of Minnesota, USA 
- PAGE 931
Th1H-4
9:00  **C** **Spatial-Spectral Mapping BeamSpace MIMO Receiver Enabled by a Programmable Space-Time-Modulated Metamaterial Antenna**
Shaghayegh Vosoughitabar¹, Alireza Nooraiepour², Waheed Bajwa¹, Narayan Mandayam¹, Chung-Tse Michael Wu¹
¹Rutgers University, USA  ; ²Qualcomm, USA 
- PAGE 935
Th1H-5
9:20  **C** **A Fully-Passive 4-Channel RF Beamformer with Ultra-Low Insertion Loss at 12GHz X/Ku-Band for Low-Power Applications in 28nm CMOS**
Matthew Giorgis Anderson, Sashank Krishnamurthy, Ali Niknejad, Jan Rabaey, University of California, Berkeley, USA 

Th1I: Device and Integration Technology for RF through mm-Wave

Chair: Shahed Reza, Sandia National Laboratories, USA — Co-Chair: Ko-Tao Lee, Qorvo, USA

Room 152AB, 08:00–09:40, Thursday 20 June 2024

- N/A
Th1I-1
8:00  **C** **Ultra-Wide Bandgap MMW/Sub-MMW Devices**
Tom Oder, DEVCOM ARL, USA 
- PAGE 940
Th1I-2
8:20  **C** **An Adaptable In(Ga)P/Ga(Sb)As/Ga(In)As HBT Technology on 300mm Si for RF Applications**
Annie Kumar, Sachin Yadav, Abhitosh Vais, Guillaume Boccardi, Yves Mols, Reynald Alcotte, Bertrand Parvais, Bernardette Kunert, Nadine Collaert, imec, Belgium 
- PAGE 944
Th1I-3
8:40  **C** **Local Interface RF Passivation Layer Based on Helium Ion-Implantation in High-Resistivity Silicon Substrates**
*M. Perrosé¹, P. Acosta Alba¹, S. Reboh¹, J. Lugo¹, C. Plantier¹, P. Cardinael², Martin Rack², F. Allibert³, F. Milesi¹, X. Garros¹, Jean-Pierre Raskin²
¹CEA-Leti, France  ; ²UCLouvain, Belgium  ; ³Soitec, France *
- PAGE 948
Th1I-4
9:00  **C** **Large-Signal Characterisation and Analysis of AlN/GaN MISHEMTs on Si with a PAE > 62% at 28GHz**
Rana ElKashlan, Sachin Yadav, Ahmad Khaled, Dongping Xiao, Babak Kazemi, Hao Yu, AliReza Alian, Uthayasankaran Peralagu, Nadine Collaert, Bertrand Parvais, imec, Belgium 

Th2B: HF Through UHF Techniques and Applications

Chair: Frederick H. Raab, Green Mountain Radio Research, USA — Co-Chair: Marc Franco, MACOM, USA













Room 145AB, 10:10–11:50, Thursday 20 June 2024

- N/A
Th2B-1
10:10  **C** **A Modern HF/VHF/UHF Transceiver for All Applications — What Would it Look Like Today?**
Ulrich L. Rohde, Universität der Bundeswehr München, Germany 
- PAGE 953
Th2B-2
10:30  **C** **A 0.1–3.2GHz Reconfigurable LPF With Peaking Reducing and Selectivity Enhancement Using Adaptive Impedance Transformation**
*Xu Cheng¹, Yunbo Rao¹, Xianhu Luo¹, Liang Zhang¹, Jiang Han¹, Rui Wu², Haibo Tang², Xingdong Liang², Xianjin Deng¹, Hao Gao³
¹CAEP, China  ; ²CAS, China  ; ³Technische Universiteit Eindhoven, The Netherlands *
- PAGE 957
Th2B-3
10:50  **C** **High Isolation CMOS TDD RF Front-End Using Sandwich-Type Concentric Vortical Transformer and Leakage Elimination Technique**
Shih-Hsuan Tsai, Shou-Jen Yang, Zhen-Ting Zhao, Hao-Shun Yang, Taipei Tech, Taiwan 
- PAGE 961
Th2B-4
11:10  **C** **A Monolithic GaN Based Supply Modulator with Dual-Antibootstrap Level Shifter for Envelope Tracking Application**
Chenhao Li, Qingyang Dong, Xin Jiang, Xinyu Liu, Ke Wei, Weijun Luo, CAS, China 
- N/A
Th2B-5
11:30  **C** **Understanding Linearization and its Recent Developments**
Allen Katz, TCNJ, USA 

Th2C: Sub-Thz Power Amplifiers for D-Band and Beyond

Chair: David Brown, BAE Systems, USA — Co-Chair: Sensen Li, University of Texas at Austin, USA

Room 146A, 10:10-11:50, Thursday 20 June 2024

- PAGE 966
Th2C-1
10:10  **C** **220-GHz High-Efficiency Power Amplifiers in 250-nm and 130-nm InP HBT Technologies Having 14.4–25.0% PAE and 40–60mW P_{out}**
Zach Griffith, Miguel Urteaga, Petra Rowell, Teledyne Scientific & Imaging, USA 
- (MWTL)
Th2C-2
10:30  **C** **Low-Noise Power-Amplifier MMICs for the WR4.3 and WR3.4 Bands in a 35-nm Gate-Length InGaAs mHEMT Technology**
Fabian Thome, Arnulf Leuther, Fraunhofer IAF, Germany 
- PAGE 970
Th2C-3
10:50  **C** **Highly-Compact 20-mW, 270–320-GHz InGaAs mHEMT Power Amplifier MMIC**
Laurenz John, Axel Tessmann, Sandrine Wagner, Arnulf Leuther, Fraunhofer IAF, Germany 
- PAGE 974
Th2C-4
11:10  **C** **Analysis and Design of Differential Complex Neutralization Power Amplifiers for Efficient-Yet-Linear High mm-Wave Applications**
Mohamed Eleraky¹, Tzu-Yuan Huang², Yuqi Liu¹, Hua Wang¹
¹ETH Zürich, Switzerland  ; ²Georgia Tech, USA 
- (MWTL)
Th2C-5
11:30  **C** **A 10–230-GHz InP Distributed Amplifier Using Darlington Quadruple-Stacked HBTs**
Phat T. Nguyen¹, Natalie Wagner², Alexander Stameroff², Anh-Vu Pham¹
¹University of California, Davis, USA  ; ²Keysight Technologies, USA 

Th2D: Advances in Quantum Technologies

Chair: Yanghyo Rod Kim, Stevens Institute of Technology, USA

Co-Chair: Dimitris Pavlidis, Florida International University, USA












Room 146B, 10:10-11:50, Thursday 20 June 2024

- (MWTL)
Th2D-1
10:10  **C** **Demonstration of Microwave Harvesting Through Pyroelectricity in Cryogenic Conditions: A Quantum-to-Experimental Approach**
M. Aldrigo¹, M. Dragoman¹, A. Dinescu¹, D. Vasilache¹, S. Iordanescu¹, L.A. Dinu¹, D. Dragoman², E. Laudadio³, E. Pavoni³, L. Pierantoni³, D. Mencarelli³
¹IMT Bucharest, Romania  ; ²University of Bucharest, Romania  ; ³Università Politecnica delle Marche, Italy 
- PAGE 978
Th2D-2
10:30  **C** **A 4 to 10GHz 11-mW Cryogenic Driver Module Design for Quantum Computer Application**
Che-Hao Li¹, Chien-Nan Kuo², Chang-Sheng Chen¹, Chii-Dong Chen³, Po-Yuan Hsu¹, Li-Chieh Hsiao³, Li-Wei Chang³
¹ITRI, Taiwan  ; ²NYCU, Taiwan  ; ³Academia Sinica, Taiwan 
- PAGE 982
Th2D-3
10:50  **C** **A Sub mW Low Flicker Noise Cryo-CMOS QVCO for Quantum Computing Application**
Chenglong Liang, Ya Zhao, Zhuoqi Guo, Zixun Gao, Bingjun Tang, Chao Fan, Youze Xin, Li Geng, XJTU, China 
- PAGE 986
Th2D-4
11:10  **C** **Characterizing a Frequency Converter Based on a Superconducting Coplanar Waveguide**
Grant Giesbrecht¹, Nathan E. Flowers-Jacobs¹, Adam Sirois¹, Manuel Castellanos-Beltran¹, Michael Vissers¹, Jiansong Gao¹, Paul Dresselhaus¹, Taylor Barton²
¹NIST, USA  ; ²University of Colorado Boulder, USA 

Th2E: Near-Field Wave-Matter Interaction

Chair: Kamel Haddadi, Université de Lille, France — Co-Chair: Malgorzata Celuch, QWED, Poland













Room 146C, 10:10-11:50, Thursday 20 June 2024

- PAGE 990  **C** **Scanning Microwave Microscopy Subsurface Detection of Magneto-Impedance Effect in Thin Film Permalloy**
Gianluca Fabi¹, Maxwell Sparey¹, Michael Leitner¹, Antonia Silvestri¹, Ivan Alic¹, Verena Ney¹, Andreas Ney¹, Marco Farina², Georg Gramse¹
¹Johannes Kepler Universität Linz, Austria  ; ²Università Politecnica delle Marche, Italy 
- PAGE 994  **C** **Advanced Microwave Impedance Microscopy for Emerging Materials and Devices**
Junyi Shan, Nathaniel Morrison, Eric Y. Ma, University of California, Berkeley, USA 
- PAGE 998  **C** **Near-Field Nonlinear Microwave Microscope for Fundamental Superconducting Studies**
Chung-Yang Wang, Steven M. Anlage, University of Maryland, College Park, USA 
- PAGE 1002  **C** **A 3-D Split Ring Resonator for Power-Efficient Microwave Plasma Jets**
Mohammadali Parsaei, Muhammad Rizwan Akram, Abbas Semnani, University of Toledo, USA 
- PAGE 1005  **C** **A Highly-Efficient 2.45 GHz Plasma Jet Based on A Dielectric Microwave Anapole Structure**
Muhammad Rizwan Akram, Abbas Semnani, University of Toledo, USA 

Th2F: Advances in Microwave Biomedical Applications

Chair: Christian Damm, Universität Ulm, Germany — Co-Chair: Chung-Tse Michael Wu, Rutgers University, USA















Room 147AB, 10:10-11:50, Thursday 20 June 2024

- PAGE 1008  **C** **Towards Ultra-Low RF Power Simultaneous Transmit and Receive (STAR) MRI with a Wearable RF Transceiver Head Coil**
Zachary A. Colwell¹, Sri Kirthi Kandala¹, Lance DelaBarre², Djaudat Idiyatullin², Gregor Adriany², Michael Garwood², John Thomas Vaughan³, Sung-Min Sohn¹
¹Arizona State University, USA  ; ²University of Minnesota, USA  ; ³Columbia University, USA 
- PAGE 1012  **C** **Combined Gradient and RF Injection Tests for MR Safety**
Farshad Ebrahimi, Qingyan Wang, Jianfeng Zheng, Ji Chen, University of Houston, USA 
- (MWTL)  **C** **Extension to in situ Single-Cell Electroporation of a Microwave Biosensor**
Anne Calvel¹, Olivia Peytral-Rieu¹, Marie-Pierre Rols², David Dubuc¹, Katia Grenier¹
¹LAAS-CNRS, France  ; ²IPBS (UMR 5089), France 
- PAGE 1015  **C** **RF Interference Cancellation for Microwave Thermometry**
Joseph Dunbar¹, Gabriel Santamaria-Botello², Zoya Popović¹
¹University of Colorado Boulder, USA  ; ²Colorado School of Mines, USA 

Th2G: Advancing Characterization at mm-Wave Frequencies

Chair: Shuhei Amakawa, Hiroshima University, Japan — Co-Chair: Ricardo Figueiredo, Universidade de Aveiro, Portugal

Room 150AB, 10:10-11:50, Thursday 20 June 2024













- N/A
Th2G-1
10:10  **C** **Current Limitations and Novel Approaches to THz On-Wafer Electronic Characterization**
Jerome Cheron, NIST, USA 
- PAGE 1020
Th2G-2
10:30  **C** **On-Wafer Calibration Comparisons of Multiline TRL with Platinum and Gold Conductors**
Tomasz Karpisz¹, Jacob T. Pawlik¹, Johannes Hoffmann², Sarah R. Evans¹, Christian J. Long¹, Nathan D. Orloff¹, James C. Booth¹, Angela C. Stelson¹
¹NIST, USA  ; ²METAS, Switzerland 
- PAGE 1024
Th2G-3
10:50  **C** **Enhanced Accuracy in On-Wafer Noise Figure Measurements at Sub-Terahertz Frequencies**
Nizar Messaoudi¹, Shengjie Gao², Muhammad Waleed Mansha³, Yves Baeyens³, Mustafa Sayginer³, Slim Boumaiza⁴, Bryan Hosein², Shahriar Shahramian³
¹Keysight Technologies, Canada  ; ²Focus Microwaves, Canada  ; ³Nokia Bell Labs, USA  ; ⁴University of Waterloo, Canada 
- PAGE 1028
Th2G-4
11:10  **C** **Measurement of Residual Phase Noise of Amplifiers at 80GHz Using Interferometric Measurement Technique**
Wolfgang Wandler, Alexander Roth, Rohde & Schwarz, Germany 
- (MWTL)
Th2G-5
11:30  **C** **Millimeter-Wave Device Characterization Under Wideband Modulated Signals Using Vector Network Analyzer Frequency Extenders**
Ahmed Ben Ayed, Patrick Mitran, Slim Boumaiza, University of Waterloo, Canada 

Th2H: Advanced Circuits and Techniques for Next-Generation Wireless Systems

Chair: Kenneth E. Kolodziej, MIT Lincoln Laboratory, USA

Co-Chair: Marcus Pan, Semiconductor Research Corporation, USA










Room 151AB, 10:10-11:50, Thursday 20 June 2024

- (MWTL)
Th2H-1
10:10  **C** **Active Calibration Approach Addressing Antenna Mutual Coupling and Power Amplifier Output Mismatch in Fully Digital MIMO Transmitters**
Hoda Barkhordar-pour, Jin Gyu Lim, Ahmed Ben Ayed, Patrick Mitran, Slim Boumaiza, University of Waterloo, Canada 
- PAGE 1032
Th2H-2
10:30  **C** **Indirectly-Non-Reciprocal Load Modulated Balanced Amplifier with Equivalent Operation at Antenna Interface**
Niteesh Bharadwaj Vangipurapu, Pingzhu Gong, Jiachen Guo, Kenle Chen, University of Central Florida, USA 
- PAGE 1036
Th2H-3
10:50  **C** **An Efficient Analog Self-Interference Canceller Using a Balanced Topology for Mitigating Inherent Multi-Tap Loss**
Kamal D. Bhakta¹, Jean Paul Santos¹, Mohammadali Panahi², Maziar Hedayati², Lap K. Yeung², Yuanxun Ethan Wang²
¹Naval Air Warfare Center Weapons Division, USA  ; ²University of California, Los Angeles, USA 
- PAGE 1040
Th2H-4
11:10  **C** **Integrated 75-100 GHz In-Band Full-Duplex Front End GaN MMIC**
Seth Johannes, Anthony Romano, Zoya Popović, University of Colorado Boulder, USA 
- (MWTL)
Th2H-5
11:30  **C** **A Compact 130-GHz CMOS OOK-Doubler with Embedded 10-Gb/s Modulator and Integrated Glass Antenna for Scalable Array Systems and Efficient Short-Range Communication**
Shah Zaib Aslam¹, Hao Yan¹, Meysam Asghari¹, Haoling Li², Najme Ebrahimi²
¹University of Florida, USA  ; ²Northeastern University, USA 

Th2I: GaN Devices and Technology for Wireless Applications

Chair: Wolfram Stiebler, Raytheon, USA — Co-Chair: Peter Magnee, NXP Semiconductors, The Netherlands

Room 152AB, 10:10-11:50, Thursday 20 June 2024

- N/A
Th2I-1
10:10  **C** **Overview of RF Power Amplifier Technology for Wireless Infrastructure and Future Trends**
Fred van Rijs, Ampleon, The Netherlands 
- PAGE 1045
Th2I-2
10:30  **C** **A Heterogeneously-Integrated Ka-Band, N-Polar Gallium Nitride HEMT Amplifier**
Justin J. Kim, Michael D. Hodge, Mark R. Soler, Florian Herrault, Daniel S. Green, James F. Buckwalter, PseudolithIC, USA 
- PAGE 1049
Th2I-3
10:50  **C** **Ka Band GaN MIS-HEMT with ALD-SiN Gate Dielectric and Lp-SiN Passivation Layer**
Ke Wei, Yichuan Zhang, Sheng Zhang, Xiaoqiang He, Jiaqi Guo, Kaiyu Wang, RuiZhe Zhang, Xinhua Wang, Sen Huang, Haibo Ying, Yankui Li, Weijun Luo, Jiebin Niu, Xinyu Liu, CAS, China 
- PAGE 1053
Th2I-4
11:10  **C** **Characterization and Modeling of Dynamic Thermal Coupling in GaN MMIC Power Amplifiers**
Tobias Kristensen¹, Torbjörn M.J. Nilsson², Andreas Divinyi², Johan Bremer¹, Mattias Thorsell¹
¹Chalmers University of Technology, Sweden  ; ²Saab, Sweden 

ADDITIONAL PAPERS

- A Fast and Efficient FMCW Radar Phase Extraction Technique at Ultra-Narrow Range for Vital Sign Detection 1057
Yuchen Li, Keke Zheng, Changzhan Gu
- A Near-Zero Power Reconfigurable and Robust Multiband RF Wake-Up Receiver Achieving -108dBm Sensitivity Operating from -40° C to 70° C 1061
Jesse Moody, Benjamin Magstadt, Robert Costanzo, Keith Tracey, Travis Forbes
- A 180-GHz High-Sensitivity Dielectric Resonator Antenna-Coupled Detector in 16nm FinFET 1065
Boxun Yan, Runzhou Chen, Christopher Chen, Mau-Chung Frank Chang
- A DC-To-8 GHz 60-DB Isolation SPDT Switch with Auxiliary Path Cancellation in 65-Nm Bulk CMOS 1069
Zhuang Miao, Genyin Ma, Keping Wang, Fanyi Meng
- Analog Kramers-Kronig W-Band Direct Detection Receiver with 35mW DC Power in 65nm CMOS 1073
Shiyuan Yu, Xiepeng Chen, Balram Pillai, Yutian Zhao, Linsheng Wu, Junfa Mao, Suresh Venkatesh, Xuyang Lu
- A Broadband 22nm FDSOI D-Band Power Amplifier with Dynamic Back Gate Bias Gain-Linearization Achieving 9.6% PAE at 8.7 dBm OP1dB and 3.7% at 6 dB Back-Off 1077
Andre Engelmann, Kai Scheller, Florian Probst, Manuel Koch, Robert Weigel, Georg Fischer