

# **2012 7th European Microwave Integrated Circuit Conference**

## **(EuMIC 2012)**

**Amsterdam, Netherlands**  
**29 - 30 October 2012**

**Pages 1-468**



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## EuMIC01 : CMOS Millimeterwave Circuits

Chair: Herbert Zirath, Chalmers University — Co-Chair: Almudena Suarez, University of Cantabria

Venue Emerald, Time 08:30 - 10:10, Monday 29 October 2012

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- 1      **K-Band Wide-Locking-Range Divide-by-5 Injection-Locked Frequency Divider in a 0.18- $\mu$ m CMOS Technology**  
*Po-Chi Wang, Jhin-Ying Lyu, Ming-Wei Li, Tzuen-Hsi Huang, Huey-Ru Chuang, National Cheng Kung University, Taiwan*
- 5      **A Direct Conversion IQ Modulator in CMOS 65nm SOI for Multi-Gigabit 60GHz Systems**  
*Christophe Loyez<sup>1</sup>, Alexandre Siligaris<sup>2</sup>, Pierre Vincent<sup>2</sup>, Andreia Cathelin<sup>3</sup>, Nathalie Rolland<sup>1</sup>*  
*<sup>1</sup>IEMN, France; <sup>2</sup>CEA-LETI, France; <sup>3</sup>STMicroelectronics, France*
- 8      **A Wide Modulation Bandwidth Bidirectional CMOS IQ Modulator/Demodulator for Microwave and Millimeter-Wave Gigabit Applications**  
*Shou-Hsien Weng, Che-Hao Shen, Hong-Yeh Chang, National Central University, Taiwan*
- 12     **A 57-66GHz 12.9-dBm Miniature Power Amplifier with 23.4% PAE in 65-nm CMOS**  
*Wei-Heng Lin<sup>1</sup>, Tian-Wei Huang<sup>1</sup>, Huei Wang<sup>1</sup>, James Wang<sup>2</sup>*  
*<sup>1</sup>National Taiwan University, Taiwan; <sup>2</sup>MediaTek, Taiwan*
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*Duncan Platt, Lars Pettersson, Michael Salter, Acreo AB, Sweden*

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Chair: Hans Hartnagel, TU Darmstadt — Co-Chair: Fabio Coccetti, CNRS LAAS

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*Andrei Vorobiev, Spartak Gevorgian, Chalmers University of Technology, Sweden*
- 24     **Large Signal Modeling of Switchable Ferroelectric FBARs**  
*Seungku Lee, Victor Lee, Seyit Ahmet Sis, Amir Mortazawi, University of Michigan at Ann Arbor, USA*
- 28     **A Novel Latching RF MEMS SPST Switch**  
*Maher Bakri-Kassem<sup>1</sup>, Raafat R. Mansour<sup>2</sup>*  
*<sup>1</sup>American University of Sharjah, UAE; <sup>2</sup>University of Waterloo, Canada*
- 32     **High-Power High-Contrast RF MEMS Capacitive Switch**  
*Francesco Solazzi<sup>1</sup>, Cristiano Palego<sup>2</sup>, David Molinero<sup>2</sup>, Paola Farinelli<sup>3</sup>, Sabrina Colpo<sup>1</sup>, James C.M. Hwang<sup>2</sup>, Benno Margesin<sup>1</sup>, Roberto Sorrentino<sup>4</sup>*  
*<sup>1</sup>FBK, Italy; <sup>2</sup>Lehigh University, USA; <sup>3</sup>RF Microtech, Italy; <sup>4</sup>Università di Perugia, Italy*
- 36     **Electrical Characteristics of Floating Electrode MEMS Capacitive Switches**  
*L. Michalas<sup>1</sup>, M. Koutsourelis<sup>1</sup>, E. Papandreou<sup>1</sup>, G.J. Papaioannou<sup>1</sup>, Flavio Giacomozzi<sup>2</sup>, Sabrina Colpo<sup>2</sup>, Benno Margesin<sup>2</sup>*  
*<sup>1</sup>University of Athens, Greece; <sup>2</sup>FBK, Italy*

## EuMIC03 : Linear and Nonlinear CAD Techniques

Chair: Thomas Brazil, University College Dublin — Co-Chair: Teresa Martin-Guerrero, Universidad de Malaga

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- 40     **Systematic Network Model Generation for Linear Reciprocal Microwave Multiports**  
*Johannes A. Russer<sup>1</sup>, Farooq Mukhtar<sup>1</sup>, Biljana Stošić<sup>2</sup>, Tatjana Asenov<sup>2</sup>,  
Aleksandar Atanasković<sup>2</sup>, Nebojša Dončov<sup>2</sup>, Bratislav Milovanović<sup>2</sup>, Peter Russer<sup>1</sup>*  
*<sup>1</sup>Technische Universität München, Germany; <sup>2</sup>University of Niš, Serbia*
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*Lorenzo Codecasa, Marco Politi, Politecnico di Milano, Italy*
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*Marek Schmidt-Szałowski, NXP Semiconductors, The Netherlands*
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*Janne P. Aikio<sup>1</sup>, Timo Rahkonen<sup>1</sup>, Juha-Pekka Hamina<sup>1</sup>, Jarmo Virtanen<sup>2</sup>*  
*<sup>1</sup>University of Oulu, Finland; <sup>2</sup>AWR-APLAC Corporation, Finland*
- 56     **An Innovative Algorithm for Circumventing Numerical Stiffness in Time-Domain  
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*Jorge F. Oliveira<sup>1</sup>, José C. Pedro<sup>2</sup>*  
*<sup>1</sup>Instituto Politécnico de Leiria, Portugal; <sup>2</sup>Universidade de Aveiro, Portugal*

## EuMIC04: GaN Device Modelling

Chair: Ruediger Quay, Fraunhofer IAF — Co-Chair: Alberto Santarelli, Universita di Bologna

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- 60     **On the Large-Signal Modeling of AlGaIn/GaN Devices Using Genetic Neural Networks**  
*Anwar Jarndal<sup>1</sup>, Swaroop Pillai<sup>1</sup>, Hussein Abdulqader<sup>1</sup>, Günter Kompa<sup>2</sup>*  
*<sup>1</sup>University of Nizwa, Oman; <sup>2</sup>Universität Kassel, Germany*
- 64     **A Distributed Electro-Thermal Model of AlGaIn/GaN HEMT Power-Bar Derived from the Elementary Cell Model**  
*A. Xiong<sup>1</sup>, E. Gatard<sup>1</sup>, C. Charbonniaud<sup>1</sup>, M. Faqir<sup>2</sup>, M. Kuball<sup>2</sup>, M. Buchta<sup>3</sup>, S. Rochette<sup>4</sup>, Laurent Favède<sup>5</sup>, Z. Ouarch<sup>5</sup>, D. Floriot<sup>5</sup>*  
*<sup>1</sup>AMCAD Engineering, France; <sup>2</sup>University of Bristol, UK; <sup>3</sup>United Monolithic Semiconductors, Germany; <sup>4</sup>Thales Alenia Space, France; <sup>5</sup>United Monolithic Semiconductors, France*
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*Justin B. King, Thomas J. Brazil, University College Dublin, Ireland*
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*J.-B. Fonder<sup>1</sup>, C. Duperrier<sup>1</sup>, M. Stanislawiak<sup>2</sup>, H. Maanane<sup>2</sup>, P. Eudeline<sup>2</sup>, O. Latry<sup>3</sup>, F. Temcamani<sup>4</sup>*  
*<sup>1</sup>ETIS, France; <sup>2</sup>Thales Air Systems, France; <sup>3</sup>GPM, France; <sup>4</sup>LaMIPS, France*
- 76     **Sensitivity Analysis of GaN Power Amplifier Model Parameters for Switching-Mode Operation**  
*M. Paynter<sup>1</sup>, Souheil Bensmida<sup>1</sup>, Kevin A. Morris<sup>1</sup>, Joe P. McGeehan<sup>1</sup>, Mark A. Beach<sup>1</sup>, M. Akmal<sup>2</sup>, Jonathan Lees<sup>2</sup>, Johannes Benedikt<sup>2</sup>, Paul J. Tasker<sup>2</sup>*  
*<sup>1</sup>University of Bristol, UK; <sup>2</sup>Cardiff University, UK*

## EuMIC05 : mm-Wave to THz Device Technologies

Chair: Arttu Luukanen, VTT — Co-Chair: Antti Raisanen, Aalto University

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- 80 **Optimal Structure for Resonant THz Detection of Plasmons-Polaritons in the 2D Quantum Wells**  
*L. Cao<sup>1</sup>, A.-S. Grimault-Jacquin<sup>1</sup>, Frederic Aniel<sup>1</sup>, M.-A. Di Forte Poisson<sup>2</sup>, S.L. Delage<sup>2</sup>, I. Sagnes<sup>3</sup>, L. Le Gratiet<sup>3</sup>*  
<sup>1</sup>IEF (UMR 8622), France; <sup>2</sup>III-V Lab, France; <sup>3</sup>LPN (UPR 20), France
- 84 **Schottky Frequency Doubler for 140-220GHz Using MMIC Foundry Process**  
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<sup>1</sup>VTT Technical Research Centre of Finland, Finland; <sup>2</sup>Aalto University, Finland; <sup>3</sup>ESA, The Netherlands
- 88 **A Terahertz Micromachined On-Wafer Probe for WR-1.2 Waveguide**  
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*Aidin Taeb<sup>1</sup>, Suren Gigoyan<sup>1</sup>, Gholamreza Rafi<sup>1</sup>, Safieddin Safavi-Naeini<sup>1</sup>, Mohammed Basha<sup>2</sup>*  
<sup>1</sup>University of Waterloo, Canada; <sup>2</sup>University of Tabuk, Saudi Arabia
- 95 **TUMESA — MEMS Tuneable Metamaterials for Smart Wireless Applications**  
*J. Ala-Laurinaho<sup>1</sup>, Dmitry Chicherin<sup>1</sup>, Zhou Du<sup>1</sup>, C. Simovski<sup>1</sup>, T. Zvolensky<sup>1</sup>, Antti V. Räsänen<sup>1</sup>, Mikael Sterner<sup>2</sup>, Z. Baghchehsaraei<sup>2</sup>, U. Shah<sup>2</sup>, S. Dudorov<sup>2</sup>, Joachim Oberhammer<sup>2</sup>, A.V. Boriskin<sup>3</sup>, L. Le Coq<sup>3</sup>, E. Fourn<sup>3</sup>, S.A. Muhammad<sup>3</sup>, Ronan Sauleau<sup>3</sup>, A. Vorobyov<sup>3</sup>, F. Bodereau<sup>4</sup>, G. El Haj Shhade<sup>4</sup>, T. Labia<sup>4</sup>, P. Mallejac<sup>4</sup>, Jan Åberg<sup>5</sup>, M. Gustafsson<sup>5</sup>, T. Schier<sup>5</sup>*  
<sup>1</sup>Aalto University, Finland; <sup>2</sup>KTH, Sweden; <sup>3</sup>IETR, France; <sup>4</sup>TRW Autocruise, France; <sup>5</sup>MicroComp Nordic AB, Sweden

## EuMIC07: Microwave and Millimeterwave Building Blocks

Chair: Richard Ranson, Radio System Design Ltd — Co-Chair: Frank van Vliet, TNO

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*Rasmus Michaelsen<sup>1</sup>, Tom Keinicke Johansen<sup>1</sup>, Kjeld Tamborg<sup>2</sup>*  
*<sup>1</sup>Technical University of Denmark, Denmark; <sup>2</sup>Weibel Scientific A/S, Denmark*
- 103     **A SiGe Switched LNA for X-Band Phased-Arrays**  
*Ilker Kalyoncu<sup>1</sup>, Tolga Dinc<sup>1</sup>, Mehmet Kaynak<sup>2</sup>, Yasar Gurbuz<sup>1</sup>*  
*<sup>1</sup>Sabanci University, Turkey; <sup>2</sup>IHP GmbH, Germany*
- 107     **A 5–45GHz Linear Voltage Controlled Attenuator MMIC in 3×3-mm Plastic Package**  
*A. Bessemoulin, P. Evans, T. Fattorini, M/A-COM Technology Solutions, Taiwan*
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*Estelle Byk<sup>1</sup>, Anne-Marie Couturier<sup>1</sup>, Marc Camiade<sup>1</sup>, Charles Teyssandier<sup>1</sup>, Michael Hosch<sup>2</sup>, Hermann Stieglauer<sup>2</sup>, Philippe Fellon<sup>1</sup>*  
*<sup>1</sup>United Monolithic Semiconductors, France; <sup>2</sup>United Monolithic Semiconductors, Germany*
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*Stephan Maroldt<sup>1</sup>, Peter Brückner<sup>1</sup>, Ruediger Quay<sup>1</sup>, Oliver Ambacher<sup>1</sup>, Simone Maier<sup>2</sup>, Dirk Wiegner<sup>2</sup>, Andreas Pascht<sup>2</sup>*  
*<sup>1</sup>Fraunhofer IAF, Germany; <sup>2</sup>Alcatel-Lucent Bell Labs Germany, Germany*

## EuMIC08: Focused Session: GaN Technology for Space

Chair: Marc van Heijningen, TNO — Co-Chair: Andrew Barnes, ESA-ESTEC

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- 119 **Optimization of AlGaIn/GaN HEMT Schottky Contact for Microwave Applications**  
*S. Bouzid-Driad<sup>1</sup>, H. Maher<sup>1</sup>, M. Renvoise<sup>1</sup>, P. Frijlink<sup>1</sup>, M. Rocchi<sup>1</sup>, N. DeFrance<sup>2</sup>,  
V. Hoel<sup>2</sup>, J.-C. De Jaeger<sup>2</sup>*  
<sup>1</sup>OMMIC, France; <sup>2</sup>IEMN, France
- 123 **High Efficiency X-Band AlGaIn/GaN MMICs for Space Applications with Lifetimes Above 10<sup>5</sup> Hours**  
*P. Waltereit<sup>1</sup>, J. Kühn<sup>1</sup>, Ruediger Quay<sup>1</sup>, F. van Raay<sup>1</sup>, M. Dammann<sup>1</sup>, M. Cäsar<sup>1</sup>,  
S. Müller<sup>1</sup>, M. Mikulla<sup>1</sup>, Oliver Ambacher<sup>1</sup>, J. Lätti<sup>2</sup>, M. Rostewitz<sup>2</sup>, K. Hirche<sup>2</sup>,  
J. Däubler<sup>2</sup>*  
<sup>1</sup>Fraunhofer IAF, Germany; <sup>2</sup>Tesat-Spacecom GmbH & Co. KG, Germany
- 127 **A High Efficiency 140W Power Amplifier Based on a Single GaN HEMT Device for Space Applications in L-Band**  
*S. Rochette<sup>1</sup>, O. Vendier<sup>1</sup>, D. Langrez<sup>1</sup>, J.-L. Cazaux<sup>1</sup>, M. Buchta<sup>2</sup>, M. Kuball<sup>3</sup>, A. Xiong<sup>4</sup>*  
<sup>1</sup>Thales Alenia Space, France; <sup>2</sup>United Monolithic Semiconductors, Germany; <sup>3</sup>University of Bristol, UK; <sup>4</sup>AMCAD Engineering, France
- 131 **An Efficient AlGaIn/GaN HEMT Power Amplifier MMIC at K-Band**  
*C. Friesicke<sup>1</sup>, J. Kühn<sup>2</sup>, Peter Brückner<sup>2</sup>, Ruediger Quay<sup>2</sup>, Arne F. Jacob<sup>1</sup>*  
<sup>1</sup>Technische Universität Hamburg-Harburg, Germany; <sup>2</sup>Fraunhofer IAF, Germany
- 135 **W-Band Power Amplifier MMIC with 400mW Output Power in 0.1 $\mu$ m AlGaIn/GaN Technology**  
*M. van Heijningen<sup>1</sup>, M. Rodenburg<sup>1</sup>, Frank E. van Vliet<sup>1</sup>, Hermann Massler<sup>2</sup>,  
Axel Tessmann<sup>2</sup>, Peter Brückner<sup>2</sup>, S. Müller<sup>2</sup>, D. Schwantuschke<sup>2</sup>, Ruediger Quay<sup>2</sup>,  
Tapani Närhi<sup>3</sup>*  
<sup>1</sup>TNO, The Netherlands; <sup>2</sup>Fraunhofer IAF, Germany; <sup>3</sup>ESA, The Netherlands



## EuMIC09: Modeling of Passive Circuits

Chair: Philippe Ferrari, University of Grenoble — Co-Chair: Carlos Camacho-Peñalosa, Universidad de Malaga

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*Sidina Wane<sup>1</sup>, Olivier Tesson<sup>1</sup>, Serge Bardy<sup>1</sup>, Rob van Heijster<sup>2</sup>, Raymond van Dijk<sup>2</sup>, Giampiero Gerini<sup>2</sup>*  
*<sup>1</sup>NXP Semiconductors, France; <sup>2</sup>TNO, The Netherlands*
- 143     **An Accurate and Versatile Equivalent Circuit Model for RF-MEMS Circuit Optimization in BiCMOS Technology**  
*N. Torres Matabosch<sup>1</sup>, F. Coccetti<sup>1</sup>, Mehmet Kaynak<sup>2</sup>, W. Zhang<sup>2</sup>, B. Tillack<sup>2</sup>, R. Plana<sup>1</sup>, J.-L. Cazaux<sup>3</sup>*  
*<sup>1</sup>LAAS, France; <sup>2</sup>IHP GmbH, Germany; <sup>3</sup>Thales Alenia Space, France*
- 147     **A Low-Loss, Impedance Matched  $\lambda/4$  Compact T-Junction Power Combiner**  
*Chongzhe Li, David S. Ricketts, Carnegie Mellon University, USA*
- 151     **Analysis of Vertical Via Current Increase Due to Via Cylinder-to-Ground Capacitance**  
*Andreas R. Diewald<sup>1</sup>, Rolf H. Jansen<sup>2</sup>*  
*<sup>1</sup>IEE S.A., Luxembourg; <sup>2</sup>RWTH Aachen University, Germany*
- 155     **Validation and Application of Nonlinear Elastic Model to Design Triple-Beat-Free SAW Duplexers**  
*S. Inoue<sup>1</sup>, S. Mitobe<sup>2</sup>, M. Iwaki<sup>1</sup>, J. Tsutsumi<sup>1</sup>, H. Nakamura<sup>1</sup>, M. Ueda<sup>1</sup>, Y. Satoh<sup>1</sup>*  
*<sup>1</sup>Taiyo Yuden Co. Ltd., Japan; <sup>2</sup>Taiyo Yuden Mobile Technology Co. Ltd., Japan*

## EuMIC10: Noise Modelling and Characterization

Chair: Fabio Filicori, Università di Bologna — Co-Chair: Shmuel Auster, Elta Systems Ltd.

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- 159     **Noise Modeling of GaN HEMT Devices**  
*Matthias Rudolph<sup>1</sup>, Ralf Doerner<sup>2</sup>, Eric Ngnintendem<sup>1</sup>, Wolfgang Heinrich<sup>2</sup>*  
*<sup>1</sup>Brandenburgische Technische Universität Cottbus, Germany; <sup>2</sup>FBH, Germany*
- 163     **Automated Determination of Device Noise Parameters Using Multi-Frequency, Source-Pull Data**  
*S. Colangeli, Walter Ciccognani, M. Palomba, Ernesto Limiti, Università di Roma "Tor Vergata", Italy*
- 167     **An Accurate Scalable Nonlinear Model for GaAs E-pHEMT and Low Noise Amplifiers**  
*Xiangkun Zhang, Barry Lin, Frank Chau, Jingshi Yao, Xiaopeng Sun, Wenlong Ma, Peter Hu, TriQuint Semiconductor, USA*
- 171     **0.1 $\mu$ m GaAs pHEMT Technology and Associated Modelling for Millimeter Wave Low Noise Amplifiers**  
*Charles Teyssandier<sup>1</sup>, Hermann Stieglauer<sup>2</sup>, Estelle Byk<sup>1</sup>, Anne-Marie Couturier<sup>1</sup>, Philippe Fellon<sup>1</sup>, Marc Camiade<sup>1</sup>, Hervé Blanck<sup>2</sup>, D. Floriot<sup>1</sup>*  
*<sup>1</sup>United Monolithic Semiconductors, France; <sup>2</sup>United Monolithic Semiconductors, Germany*
- 175     **Intrinsic Transit Times and Noise Transport Time Study of Si/SiGe:C Heterojunction Bipolar Transistors**  
*Eloy Ramirez-Garcia<sup>1</sup>, Frederic Aniel<sup>2</sup>, Mauro A. Enciso-Aguilar<sup>1</sup>, Nicolas Zerounian<sup>2</sup>*  
*<sup>1</sup>Instituto Politécnico Nacional, Mexico; <sup>2</sup>IEF (UMR 8622), France*

## EuMIC11 : Advanced Circuit Technologies towards THz Applications

Chair: Ulrich Pfeiffer, University of Wuppertal — Co-Chair: Gilles Dambrine, University of Lille - CNRS

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- 179     **Miniaturized Ultra-Broadband G-Band Frequency Doubler MMIC**  
*U.J. Lewark<sup>1</sup>, Hermann Massler<sup>2</sup>, Axel Tessmann<sup>2</sup>, Arnulf Leuther<sup>2</sup>, Ingmar Kallfass<sup>1</sup>*  
*<sup>1</sup>KIT, Germany; <sup>2</sup>Fraunhofer IAF, Germany*
- 183     **245GHz Subharmonic Receiver in SiGe**  
*Yanfei Mao<sup>1</sup>, Klaus Schmalz<sup>1</sup>, Johannes Borngräber<sup>1</sup>, J. Christoph Scheytt<sup>2</sup>*  
*<sup>1</sup>IHP GmbH, Germany; <sup>2</sup>Universität Paderborn, Germany*
- 187     **An H-Band Low-Noise Amplifier MMIC in 35nm Metamorphic HEMT Technology**  
*Rainer Weber<sup>1</sup>, Volker Hurm<sup>1</sup>, Hermann Massler<sup>1</sup>, Ernst Weissbrodt<sup>1</sup>, Axel Tessmann<sup>1</sup>,  
Arnulf Leuther<sup>1</sup>, Tapani Närhi<sup>2</sup>, Ingmar Kallfass<sup>1</sup>*  
*<sup>1</sup>Fraunhofer IAF, Germany; <sup>2</sup>ESA, The Netherlands*
- 191     **120GHz Radar Mixed-Signal Transceiver**  
*Wojciech Debski<sup>1</sup>, Wolfgang Winkler<sup>1</sup>, Yaoming Sun<sup>2</sup>, Miroslav Marinkovic<sup>2</sup>,  
Johannes Borngräber<sup>2</sup>, J. Christoph Scheytt<sup>2</sup>*  
*<sup>1</sup>Silicon Radar GmbH, Germany; <sup>2</sup>IHP GmbH, Germany*
- 195     **W-Band MMIC Radar Modules for Remote Detection of Vital Signs**  
*S. Diebold<sup>1</sup>, D. Goetzl<sup>1</sup>, Serdal Ayhan<sup>1</sup>, Steffen Scherr<sup>1</sup>, P. Pahl<sup>1</sup>, Hermann Massler<sup>2</sup>,  
Axel Tessmann<sup>2</sup>, Arnulf Leuther<sup>2</sup>, Oliver Ambacher<sup>2</sup>, Thomas Zwick<sup>1</sup>, Ingmar Kallfass<sup>1</sup>*  
*<sup>1</sup>KIT, Germany; <sup>2</sup>Fraunhofer IAF, Germany*

## EuMIC12: T/R Components

Chair: Manfred Berroth, University of Stuttgart — Co-Chair: Michael Schlechtweg, Fraunhofer IAF

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- 199     **70–105GHz Wideband GaN Power Amplifiers**  
*A. Margomenos, A. Kurdoghlian, M. Micovic, K. Shinohara, D.F. Brown, R. Bowen, I. Milosavljevic, R. Grabar, C. Butler, A. Schmitz, P.J. Willadsen, M. Madhav, D.H. Chow, HRL Laboratories LLC, USA*
- 203     **Highly Integrated Switching Calibration Front-End MMIC with Active Loads for W-Band Radiometers**  
*Ernst Weissbrodt, Arnulf Leuther, Michael Schlechtweg, Ingmar Kallfass, Oliver Ambacher, Fraunhofer IAF, Germany*
- 207     **An E-Band Transmitter Module Constructed with Four WLCSP MMICs Solder-Reflowed on PCB**  
*K. Tsukashima<sup>1</sup>, M. Kubota<sup>1</sup>, A. Yonamine<sup>1</sup>, T. Tokumitsu<sup>1</sup>, Y. Hasegawa<sup>2</sup>*  
*<sup>1</sup>Sumitomo Electric Industries Ltd., Japan; <sup>2</sup>Sumitomo Electric Device Innovations Inc., Japan*
- 211     **A Novel Tunable Active Duplexer MMIC**  
*Sureshbabu Sundaram<sup>1</sup>, Balamurugan Sundaram<sup>1</sup>, Prasad N. Shastry<sup>2</sup>*  
*<sup>1</sup>Validus Technologies, USA; <sup>2</sup>Bradley University, USA*
- 215     **High-Power Broadband GaN HEMT SPST/SPDT Switches Based on Resonance Inductors and Shunt-Stacked Transistors**  
*K. Hettak<sup>1</sup>, T. Ross<sup>2</sup>, N. Irfan<sup>3</sup>, D. Gratton<sup>4</sup>, M.C.E. Yagoub<sup>3</sup>, J. Wight<sup>2</sup>*  
*<sup>1</sup>Communications Research Centre Canada, Canada; <sup>2</sup>Carleton University, Canada; <sup>3</sup>University of Ottawa, Canada; <sup>4</sup>Canadian Space Agency, Canada*

## EuMIC13 : Focused Session: (Sub-)mm-Wave Beamforming Technologies

Chair: *Andrea Neto, Delft University of Technology* — Co-Chair: *Frank van Vliet, TNO*

Venue *Europe Foyer 2, Time 16:00 – 17:40, Monday 29 October 2012*

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- 219     **Millimeter-Wave Reflectarray for Beam-Steering Applications**  
*A. Tamminen<sup>1</sup>, J. Ala-Laurinaho<sup>1</sup>, S. Mäkelä<sup>1</sup>, Antti V. Räisänen<sup>1</sup>, D. Gomes Martins<sup>2</sup>,  
J. Häkli<sup>2</sup>, P. Koivisto<sup>2</sup>, P. Rantakari<sup>2</sup>, J. Säily<sup>2</sup>, R. Tuovinen<sup>2</sup>, A. Luukanen<sup>2</sup>*  
*<sup>1</sup>Aalto University, Finland; <sup>2</sup>VTT Technical Research Centre of Finland, Finland*
- 223     **Sub-mm Wave Adaptive Beam Forming Using a Photo-Injected Semiconductor Substrate**  
*Tom F. Gallacher<sup>1</sup>, R. Sondenå<sup>2</sup>, D.A. Robertson<sup>1</sup>, G.M. Smith<sup>1</sup>*  
*<sup>1</sup>University of St Andrews, UK; <sup>2</sup>Institute for Energy Technology, Norway*
- 227     **Range Refocusing in a Terahertz Imaging Radar**  
*Nuria Llombart<sup>1</sup>, Beatriz Blázquez<sup>1</sup>, Ken B. Cooper<sup>2</sup>, Robert J. Dengler<sup>2</sup>*  
*<sup>1</sup>Universidad Complutense de Madrid, Spain; <sup>2</sup>Jet Propulsion Laboratory, USA*
- 230     **Wafer-Level Technology for Sub-mm Wave Focal Plane Arrays**  
*Imran Mehdi<sup>1</sup>, Goutam Chattopadhyay<sup>1</sup>, Choonsup Lee<sup>1</sup>, Theodore Reck<sup>1</sup>, Cecile Jung<sup>1</sup>,  
Jose Siles<sup>1</sup>, Ken B. Cooper<sup>1</sup>, Nuria Llombart<sup>2</sup>*  
*<sup>1</sup>Jet Propulsion Laboratory, USA; <sup>2</sup>Universidad Complutense de Madrid, Spain*
- 234     **Silicon Integrated Waveguide Technology for mm-Wave Frequency Scanning Array**  
*G. Gentile<sup>1</sup>, M. Spirito<sup>1</sup>, L.C.N. de Vreede<sup>1</sup>, B. Rejaei<sup>1</sup>, R. Dekker<sup>2</sup>, P. de Graaf<sup>2</sup>*  
*<sup>1</sup>Technische Universiteit Delft, The Netherlands; <sup>2</sup>Philips Research Laboratories, The Netherlands*

## EuMIC14: Optimization Methods in High-Frequency Design

Chair: Giovanni Ghione, Politecnico di Torino — Co-Chair: Magdalena Salazar-Palma, University Carlos III, Madrid

Venue G103, Time 16:00 - 17:40, Monday 29 October 2012

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- 238     **Robust Microwave Design Optimization Using Manifold Mapping with Adjoint Sensitivity**  
*Slawomir Koziel, Stanislav Ogurtsov, Reykjavik University, Iceland*
- 242     **Variable-Fidelity Optimization of Microwave Filters Using Co-Kriging and Trust Regions**  
*Slawomir Koziel<sup>1</sup>, Ivo Couckuyt<sup>2</sup>, Tom Dhaene<sup>2</sup>*  
*<sup>1</sup>Reykjavik University, Iceland; <sup>2</sup>Ghent University, Belgium*
- 246     **Gradient Based Reverse ANN Modeling Approach for RF/Microwave Computer Aided Design**  
*L. Mareddy<sup>1</sup>, M. Almalkawi<sup>1</sup>, V. Devabhaktuni<sup>1</sup>, S. Vemuru<sup>2</sup>, L. Zhang<sup>3</sup>, P.H. Aaen<sup>3</sup>*  
*<sup>1</sup>University of Toledo, USA; <sup>2</sup>Ohio Northern University, USA; <sup>3</sup>Freescale Semiconductor, USA*
- 250     **An Efficient Computer-Aided Design Procedure for Interpolating Filter Dimensions Using Least Squares Methods**  
*E. Menargues<sup>1</sup>, S. Cogollos<sup>1</sup>, Vicente E. Boria<sup>1</sup>, B. Gimeno<sup>2</sup>, Marco Guglielmi<sup>3</sup>*  
*<sup>1</sup>Universitat Politècnica de València, Spain; <sup>2</sup>Universitat de València, Spain; <sup>3</sup>ESA, The Netherlands*
- 254     **Efficient Design Optimization of Microwave Circuits Using Parallel Computational Methods**  
*Venu-Madhav-Reddy Gongal-Reddy, Shunlu Zhang, Yazi Cao, Qi-Jun Zhang, Carleton University, Canada*

## EuMIC15 : Design Tools for Microwave Devices and Circuits

Chair: Franco Giannini, Universita di Roma Tor Vergata — Co-Chair: Christophe Gaquiere, IEMN

Venue G104, Time 16:00 - 17:40, Monday 29 October 2012

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- 258 **Influence of the Gate Current Dynamic Behaviour on GaAs HEMT Reliability Issues**  
*Valeria Vadalà<sup>1</sup>, Gianni Bosi<sup>1</sup>, Antonio Raffo<sup>1</sup>, Giorgio Vannini<sup>1</sup>, Gustavo Avolio<sup>2</sup>,  
Dominique Schreurs<sup>2</sup>*  
*<sup>1</sup>Università di Ferrara, Italy; <sup>2</sup>Katholieke Universiteit Leuven, Belgium*
- 262 **Cross-Memory Polynomial Modeling for RF Circuits**  
*Saeed Farsi<sup>1</sup>, John Dooley<sup>2</sup>, Keith Finnerty<sup>2</sup>, Dominique Schreurs<sup>1</sup>, Bart Nauwelaers<sup>1</sup>,  
Ronan Farrell<sup>2</sup>*  
*<sup>1</sup>Katholieke Universiteit Leuven, Belgium; <sup>2</sup>National University of Ireland Maynooth,  
Ireland*
- 266 **Device Modeling with Small-Signal X-Parameters Measured with a Special PNA-X  
Configuration for the Study of Non-Linear Interactions**  
*A.M. Pelaez-Perez<sup>1</sup>, José I. Alonso<sup>1</sup>, M. Fernandez-Barciela<sup>2</sup>, Paul J. Tasker<sup>3</sup>*  
*<sup>1</sup>Universidad Politécnica de Madrid, Spain; <sup>2</sup>Universidad de Vigo, Spain; <sup>3</sup>Cardiff  
University, UK*
- 270 **Controlling the Energy Band Gap of Aligned Semiconducting Single-Walled Carbon  
Nanotubes for THz Modulator**  
*Asmaa Elkadi, Emmanuel Decrossas, Shui-Qing Yu, Hameed A. Naseem,  
Samir M. El-Ghazaly, University of Arkansas, USA*
- 274 **Stability Analysis of Oscillators Driven with Multi-Harmonic Sources**  
*Elena Fernández, Franco Ramírez, Almudena Suárez, Sergio Sancho, Universidad de  
Cantabria, Spain*

## EuMIC16: Mixers and Oscillators

Chair: *Andreas Thiede, University of Paderborn* — Co-Chair: *Viktor Krozer, University of Frankfurt*

Venue *Emerald, Time 08:30 - 10:10, Tuesday 30 October 2012*

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- 278     **A High Linearity I/Q Mixer for High Data Rate E-Band Wireless Communication Links**  
*J. Antes<sup>1</sup>, D. Lopez-Diaz<sup>2</sup>, U.J. Lewark<sup>1</sup>, S. Wagner<sup>2</sup>, Axel Tessmann<sup>2</sup>, Arnulf Leuther<sup>2</sup>,  
Ingmar Kallfass<sup>1</sup>*  
*<sup>1</sup>KIT, Germany; <sup>2</sup>Fraunhofer IAF, Germany*
- 282     **A Sub-Harmonic E-Band IRM/SSB Realized on a Low Cost PHEMT Process**  
*Andy Dearn<sup>1</sup>, Liam Devlin<sup>1</sup>, James Nelson<sup>2</sup>*  
*<sup>1</sup>Plextek Ltd., UK; <sup>2</sup>TriQuint Semiconductor, USA*
- 285     **A 24GHz Down-Conversion Mixer with Low Noise and High Gain**  
*Yu-Hsin Chang, Chia-Yang Huang, Yen-Chung Chiang, National Chung Hsing University,  
Taiwan*
- A Novel Temperature-Insensitive Gyrator-Based LC Tank with a Complementary  
Technique and Its Applications**  
*Chun-Yi Lin, Wei-Tsung Li, Pei-Zong Rao, Shyh-Jong Chung, National Chiao Tung  
University, Taiwan*
- 293     **Wideband Injection-Locked Divide-by-3 Frequency Divider Design with Regenerative  
Second-Harmonic Feedback Technique**  
*Pei-Kang Tsai, Chin-Chih Liu, Tzuen-Hsi Huang, National Cheng Kung University, Taiwan*



## EuMIC17: RF and Microwave ICs

Chair: Frank van den Bogaart, TNO — Co-Chair: Klaus Beilenhoff, UMS GmbH

Venue G103, Time 08:30 - 10:10, Tuesday 30 October 2012

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- 297 **A 2-Bit, 3.1GS/s, Band-Pass DSM Receiver with 53.7dB SNDR in 35MHz Bandwidth: A Single-Chip RF-Digitizing Receiver for Cellular Active Antenna Systems**  
*Udo Karthaus, Stephan Ahles, Ahmed Elmaghraby, Horst Wagner, Ubidyne GmbH, Germany*
- 301 **5-6GHz 9.4mW CMOS Direct-Conversion Passive-Mixer Receiver with Low-Flicker-Noise Corner**  
*Yu-Chih Hsiao<sup>1</sup>, Chinchun Meng<sup>1</sup>, Jin-Siang Syu<sup>1</sup>, Chung-Yo Lin<sup>1</sup>, Shyh-Chyi Wong<sup>2</sup>, Guo-Wei Huang<sup>3</sup>*  
*<sup>1</sup>National Chiao Tung University, Taiwan; <sup>2</sup>Richwave Technology Corporation, Taiwan; <sup>3</sup>National Nano Device Laboratories, Taiwan*
- 305 **An 8 Bit Programmable 18GHz Frequency Divider for mm-Wave Frequency Synthesis**  
*Gregor Hasenäcker<sup>1</sup>, Nils Pohl<sup>1</sup>, Herbert Knapp<sup>2</sup>, Thomas Musch<sup>1</sup>*  
*<sup>1</sup>Ruhr-Universität Bochum, Germany; <sup>2</sup>Infineon Technologies, Germany*
- 309 **A 24GHz Wideband Single-Channel SiGe Bipolar Transceiver Chip for Monostatic FMCW Radar Systems**  
*Christian Bredendiek<sup>1</sup>, Nils Pohl<sup>1</sup>, Timo Jaeschke<sup>1</sup>, Sven Thomas<sup>1</sup>, Klaus Aufinger<sup>2</sup>, Attila Bilgic<sup>3</sup>*  
*<sup>1</sup>Ruhr-Universität Bochum, Germany; <sup>2</sup>Infineon Technologies, Germany; <sup>3</sup>KROHNE Messtechnik GmbH, Germany*
- 313 **120-GHz-Band 20-Gbit/s Transmitter and Receiver MMICs Using Quadrature Phase Shift Keying**  
*Hiroyuki Takahashi, Akihiko Hirata, Jun Takeuchi, Naoya Kukutsu, Toshihiko Kosugi, Koichi Murata, NTT Corporation, Japan*

## EuMIC18: GaN Circuits and Devices

Chair: Ali Rezazadeh, University of Manchester — Co-Chair: John Long, Delft University of Technology

Venue G104, Time 08:30 - 10:10, Tuesday 30 October 2012

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- 317 **New Qualified Industrial AlGaIn/GaN HEMT Process: Power Performances & Reliability Figures of Merit**  
*D. Floriot<sup>1</sup>, Hervé Blanck<sup>2</sup>, Diane Bouw<sup>1</sup>, F. Bourgeois<sup>2</sup>, Marc Camiade<sup>1</sup>, Laurent Favède<sup>1</sup>, Michael Hosch<sup>2</sup>, H. Jung<sup>2</sup>, B. Lambert<sup>1</sup>, A. Nguyen<sup>1</sup>, K. Riepe<sup>2</sup>, J. Splettstöße<sup>2</sup>, Hermann Stieglauer<sup>2</sup>, James Thorpe<sup>2</sup>, U. Meiners<sup>2</sup>*  
<sup>1</sup>United Monolithic Semiconductors, France; <sup>2</sup>United Monolithic Semiconductors, Germany
- 321 **Towards Highly Scaled AlN/GaN-on-Silicon Devices for Millimeter Wave Applications**  
*F. Medjdoub, M. Zegaoui, B. Grimbert, D. Ducatteau, Nathalie Rolland, P.A. Rolland, IEMN, France*
- 325 **GaN-on-Si HEMTs for 50V RF Applications**  
*D. Marcon, J. Viaene, F. Vanaverbeke, X. Kang, S. Lenci, S. Stoffels, R. Venegas, P. Srivastava, S. Decoutere, IMEC, Belgium*
- 329 **First 0.25 $\mu$ m GaN MMICs Dedicated to Compact, Wideband and High SFDR Receiver**  
*Benoît Mallet-Guy, Laurence Darcel, Jean-Philippe Plaze, Yves Mancuso, Thales Systèmes Aéroportés, France*
- 333 **100W GaN PA in Low Cost 3 $\times$ 6mm Plastic DFN Package Providing the Smallest “True SMT” Footprint for Pulse RADAR Applications**  
*YuanFei Cen, Damian McCann, M/A-COM Technology Solutions, USA*

## EuMIC19: Advanced PA Design Techniques

Chair: Jean-Michel Nebus, XLIM University of Limoges — Co-Chair: Angel Mediavilla, University of Cantabria

Venue G106, Time 08:30 - 10:10, Tuesday 30 October 2012

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- 337 **Low Idle Current LTE Power Amplifier with 2<sup>nd</sup> Harmonic Control**  
*Yunsung Cho<sup>1</sup>, Daehyun Kang<sup>2</sup>, Dongsu Kim<sup>1</sup>, Jooseung Kim<sup>1</sup>, Byungjoon Park<sup>1</sup>, Bumman Kim<sup>1</sup>*  
<sup>1</sup>POSTECH, Korea; <sup>2</sup>Broadcom Corporation, USA
- 341 **A 31.5%, 26dBm LTE CMOS Power Amplifier with Harmonic Control**  
*Byungjoon Park<sup>1</sup>, Daehyun Kang<sup>2</sup>, Dongsu Kim<sup>1</sup>, Yunsung Cho<sup>1</sup>, Chenxi Zhao<sup>1</sup>, Jooseung Kim<sup>1</sup>, Yoosam Na<sup>3</sup>, Bumman Kim<sup>1</sup>*  
<sup>1</sup>POSTECH, Korea; <sup>2</sup>Broadcom Corporation, USA; <sup>3</sup>Samsung Electro-Mechanics Co. Ltd., Korea
- 345 **The Effect of 2nd Harmonic Control on Power Amplifiers Performances**  
*Elisa Cipriani, Paolo Colantonio, Franco Giannini, Università di Roma "Tor Vergata", Italy*
- 349 **0.7–1.8GHz Digital Polar Transmitter Using a Watt-Class CMOS Power Amplifier and Digital Pulse Width Modulation with Spurious Signal Reduction**  
*Toshifumi Nakatani<sup>1</sup>, Donald F. Kimball<sup>1</sup>, Lawrence E. Larson<sup>2</sup>, Peter M. Asbeck<sup>1</sup>*  
<sup>1</sup>University of California at San Diego, USA; <sup>2</sup>Brown University, USA
- 353 **1GHz GaAs Buck Converter for High Power Amplifier Modulation Applications**  
*Erik Busking, Peter de Hek, Frank E. van Vliet, TNO, The Netherlands*

## EuMIC20: Advances on High Frequency Semiconductor Circuits

Chair: John Long, Delft University of Technology — Co-Chair: Angus McLachlan, SELEX Galileo

Venue Emerald, Time 13:50 - 15:30, Tuesday 30 October 2012

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- 357     **122GHz Radar Sensor Based on a Monostatic SiGe-BiCMOS IC with an On-Chip Antenna**  
*Mekdes Gebresilassie Girma<sup>1</sup>, Juergen Hasch<sup>1</sup>, Ioannis Sarkas<sup>2</sup>, Sorin P. Voinigescu<sup>2</sup>, Thomas Zwick<sup>3</sup>*  
*<sup>1</sup>Robert Bosch GmbH, Germany; <sup>2</sup>University of Toronto, Canada; <sup>3</sup>KIT, Germany*
- 361     **A 140-GHz Single-Chip Transceiver in a SiGe Technology**  
*M. Jahn<sup>1</sup>, Klaus Aufinger<sup>2</sup>, Andreas Stelzer<sup>1</sup>*  
*<sup>1</sup>Johannes Kepler Universität Linz, Austria; <sup>2</sup>Infineon Technologies, Germany*
- 365     **A 60-GHz Sub-Harmonic IQ Modulator and Demodulator Using Drain-Body Feedback Technique**  
*Yu-Hsuan Lin, Jing-Lin Kuo, Huei Wang, National Taiwan University, Taiwan*
- 369     **Development of GaN Based MMIC for Next Generation X-Band Space SAR T/R Module**  
*Alessandro Barigelli<sup>1</sup>, Walter Ciccognani<sup>2</sup>, S. Colangeli<sup>2</sup>, Paolo Colantonio<sup>2</sup>, Marziale Feudale<sup>1</sup>, Franco Giannini<sup>2</sup>, R. Giofrè<sup>2</sup>, Claudio Lanzieri<sup>3</sup>, Ernesto Limiti<sup>2</sup>, Antonio Nanni<sup>3</sup>, Alessio Pantellini<sup>3</sup>, Paolo Romanini<sup>3</sup>*  
*<sup>1</sup>Thales Alenia Space, Italy; <sup>2</sup>Università di Roma "Tor Vergata", Italy; <sup>3</sup>SELEX Sistemi Integrati S.p.A., Italy*
- 373     **Cryogenic Operation of InAs/AlSb HEMT Hybrid LNAs**  
*Giuseppe Moschetti<sup>1</sup>, Niklas Wadefalk<sup>1</sup>, Per-Åke Nilsson<sup>1</sup>, Morteza Abbasi<sup>1</sup>, Ludovic Desplanque<sup>2</sup>, Xavier Wallart<sup>2</sup>, Jan Grahn<sup>1</sup>*  
*<sup>1</sup>Chalmers University of Technology, Sweden; <sup>2</sup>IEMN, France*

## EuMIC Poster01 : EuMIC Poster Session

Chair: Arttu Luukanen, VTT — Co-Chair: Jan Geralt bij de Vaate, ASTRON

Venue Exhibition Hall, Time 12:20 - 17:40, Monday 29 October 2012

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- 377 **Differential Variable-Gain LNA for UWB System**  
*Woojin Chang, Sangheung Lee, Jaekyoung Mun, Eunsoo Nam, ETRI, Korea*
- 381 **A New Genetic-Algorithm-Based Technique for Low Noise Amplifier Synthesis**  
*L.I. Babak, A.A. Kokolov, A.A. Kalentyev, D.V. Garays, TUSUR, Russia*
- 385 **A High-Dynamic Range SiGe Low-Noise Amplifier for X-Band Radar Applications**  
*Ilker Kalyoncu, Tolga Dinc, Yasar Gurbuz, Sabanci University, Turkey*
- 389 **Study of Dependence of HEMT Noise Parameters on Gate Periphery in Microwave LNA Design**  
*Mousumi Roy<sup>1</sup>, Danielle George<sup>1</sup>, Saswata Bhaumik<sup>2</sup>*  
*<sup>1</sup>University of Manchester, UK; <sup>2</sup>ASTRON, The Netherlands*
- 393 **LNA Noise Behaviour Below 10K Physical Temperature**  
*Simon J. Melhuish, Edward J. Blackhurst, Lorenzo Martinis, Mark McCulloch, Richard J. Davis, Lucio Piccirillo, Danielle George, University of Manchester, UK*
- 397 **Fully Integrated Switched Dual-Band CMOS LNA for 802.11b/g WLAN and WiMAX Applications**  
*Vitor Canosa, Marco Pereira, Paulo Gomes, J. Caldinhas Vaz, J. Costa Freire, Universidade Técnica de Lisboa, Portugal*
- 401 **Physics-Based Simulation of Field-Plate Effects on Breakdown Characteristics in AlGaIn/GaN HEMTs**  
*Hiraku Onodera, Kazushige Horio, Shibaura Institute of Technology, Japan*

- 405     **The Application of GaN HEMTs to Pulsed PAs and Radar Transmitters**  
*Francesco Fornetti<sup>1</sup>, Mark A. Beach<sup>1</sup>, James G. Rathmell<sup>2</sup>*  
*<sup>1</sup>University of Bristol, UK; <sup>2</sup>University of Sydney, Australia*
- 409     **Comparative Analysis of Electrical Characteristic AlGaIn/GaN HEMT on Si(111) and 4H-SiC for X-Band High Power Application**  
*Sung-Jin Cho, Cong Wang, Nam-Young Kim, Kwangwoon University, Korea*
- 413     **High Transconductance on AlGaIn/GaN HEMT on (110) Silicon Substrate**  
*J.-C. Gerbedoen<sup>1</sup>, A. Soltani<sup>1</sup>, J.-C. De Jaeger<sup>1</sup>, Cordier Yvon<sup>2</sup>*  
*<sup>1</sup>IEMN, France; <sup>2</sup>CRHEA, France*
- 417     **Wideband GaN FET Based Limiter MMICs**  
*Charles F. Campbell, John C. Hitt, Kenneth Wills, TriQuint Semiconductor, USA*
- 421     **Hybrid and Monolithic GaN Power Transistors for High Power S-Band Radar Applications**  
*Simon M. Wood, Ulf Andre, Bradley J. Millon, Jim Milligan, Cree Inc., USA*
- 425     **1–7GHz Single-Ended Power Amplifier Based on GaN HEMT Grown on Si-Substrate**  
*R. Giofrè<sup>1</sup>, Paolo Colantonio<sup>1</sup>, Franco Giannini<sup>1</sup>, Alessio Pantellini<sup>2</sup>, Antonio Nanni<sup>2</sup>, Claudio Lanzieri<sup>2</sup>, D. Pistoia<sup>3</sup>*  
*<sup>1</sup>Università di Roma “Tor Vergata”, Italy; <sup>2</sup>SELEX Sistemi Integrati S.p.A., Italy; <sup>3</sup>Electronica S.p.A., Italy*
- 429     **Harmonically-Tuned Octave Bandwidth 200W GaN Power Amplifier**  
*Mhd. Tareq Arnous, Khaled Bathich, Sebastian Preis, Georg Boeck, Technische Universität Berlin, Germany*

- 433 **Performance Optimization of Multi-Stage MEMS W-Band Dielectric-Block Phase-Shifters**  
*N. Somjit, G. Stemme, Joachim Oberhammer, KTH, Sweden*
- 437 **Pull-In and Release Transients of MEMS Capacitive Switches Under High RF Power**  
*Cristiano Palego<sup>1</sup>, David Molinero<sup>1</sup>, Yaqing Ning<sup>1</sup>, Xi Luo<sup>1</sup>, James C.M. Hwang<sup>1</sup>, Charles L. Goldsmith<sup>2</sup>*  
*<sup>1</sup>Lehigh University, USA; <sup>2</sup>MEMtronics Corporation, USA*
- 441 **A RF-MEMS Switchable CPW Air-Bridge**  
*Adrián Contreras<sup>1</sup>, Jasmina Casals-Terré<sup>1</sup>, Lluís Pradell<sup>1</sup>, Flavio Giacomozzi<sup>2</sup>, Sabrina Colpo<sup>2</sup>, Jacopo Iannacci<sup>2</sup>, Miquel Ribó<sup>3</sup>*  
*<sup>1</sup>Universitat Politècnica de Catalunya, Spain; <sup>2</sup>FBK, Italy; <sup>3</sup>Universitat Ramon Llull, Spain*
- 445 **Dielectric Less and Dimple Less MEMS Capacitive Switches: The Actuation Mechanism**  
*L. Michalas<sup>1</sup>, M. Koutsourelis<sup>1</sup>, G.J. Papaioannou<sup>1</sup>, G. Stavriniadis<sup>2</sup>, G. Konstantinidis<sup>2</sup>*  
*<sup>1</sup>University of Athens, Greece; <sup>2</sup>FORTH, Greece*
- 449 **High Power Handling Low-Voltage RF MEMS Switched Capacitors**  
*Romain Stefanini<sup>1</sup>, Cyril Guines<sup>2</sup>, Fabien Barrière<sup>2</sup>, Emilien Lemoine<sup>2</sup>, P. Blondy<sup>2</sup>*  
*<sup>1</sup>AirMeMs, France; <sup>2</sup>XLIM, France*
- 453 **Micromechanical Silicon RF Switch with Electroplated Solid Contacts for High Reliability**  
*Andreas Menz, Ralf Höper, Protron Mikrotechnik GmbH, Germany*
- 457 **38GHz Driver and Power Amplifier MMICs in Surface Mount Packages**  
*A. Bessemoulin, P. Evans, T. Fattorini, M/A-COM Technology Solutions, Taiwan*

- 461 **High Power Solid-State DRO with Power Booster**  
*Tiefeng Shi<sup>1</sup>, Kaldi Li<sup>2</sup>*  
*<sup>1</sup>Freescale Semiconductor, USA; <sup>2</sup>Freescale Semiconductor, China*
- 465 **Power Amplifier Design Accounting for Input Large-Signal Matching**  
*Sergio Di Falco<sup>1</sup>, Antonio Raffo<sup>2</sup>, Valeria Vadalà<sup>2</sup>, Giorgio Vannini<sup>2</sup>*  
*<sup>1</sup>MEC s.r.l, Italy; <sup>2</sup>Università di Ferrara, Italy*
- 469 **A 20 Watt, Two-Stage, Broadband LDMOS Power Amplifier IC in PQFN8×8 Package at 2GHz for Wireless Applications**  
*Lei Zhao, Lu Wang, Margaret Szymanowski, Freescale Semiconductor, USA*
- 472 **An X-Band, High Performance, SiGe-HBT Power Amplifier for Phased Arrays**  
*Tolga Dinc<sup>1</sup>, Ilker Kalyoncu<sup>1</sup>, Mehmet Kaynak<sup>2</sup>, Yasar Gurbuz<sup>1</sup>*  
*<sup>1</sup>Sabanci University, Turkey; <sup>2</sup>IHP GmbH, Germany*
- 476 **Design and Modeling of InP DHBT Power Amplifiers at Millimeter-Wave Frequencies**  
*Lei Yan, Tom Keinicke Johansen, Technical University of Denmark, Denmark*
- 480 **Nonlinear Envelope Tracking for Efficiency Optimization of Power Amplifiers**  
*Souheil Bensmida<sup>1</sup>, Kevin A. Morris<sup>1</sup>, Konstantinos Mimis<sup>1</sup>, Mark A. Beach<sup>1</sup>,  
Joe P. McGeehan<sup>1</sup>, Jonathan Lees<sup>2</sup>, Heungjae Choi<sup>2</sup>, M. Akmal<sup>2</sup>, Johannes Benedikt<sup>2</sup>,  
Paul J. Tasker<sup>2</sup>*  
*<sup>1</sup>University of Bristol, UK; <sup>2</sup>Cardiff University, UK*
- 484 **Complex Time-Domain Representation of Bandpass Frequency-Domain S-Parameters**  
*Yudie Wang, Bei Peng, Thomas J. Brazil, University College Dublin, Ireland*
- 488 **Parameters Extraction of Submicron Thin Film Microstrip Lines at Broadband mm-Wave Frequencies**  
*Chuan-Lun Hsu, Gustavo Ardila, Philippe Benech, IMEP-LAHC, France*



- 492     **A Compact P<sup>+</sup> Contact Resistance Model for Characterization of Substrate Coupling in Modern Lightly Doped CMOS Processes**  
*Ming Shen, Jan H. Mikkelsen, Ole K. Jensen, Torben Larsen, Aalborg University, Denmark*
- 496     **Design and Analysis of Integrated Built-in-Sensors for Wireless Reconfigurable Applications**  
*Bilal Elkassir, Sidina Wane, NXP Semiconductors, France*
- 500     **Modeling of Extraordinary High-Q Resonances in the Scattering by Periodically Structured Dielectric Slab**  
*Volodymyr O. Byelobrov<sup>1</sup>, Trevor M. Benson<sup>2</sup>, Alexander I. Nosich<sup>1</sup>*  
*<sup>1</sup>National Academy of Sciences of Ukraine, Ukraine; <sup>2</sup>University of Nottingham, UK*
- 504     **A Low Power 8-Bit Digitally Controlled CMOS Ring Oscillator**  
*P. Nugroho, R.K. Pokharel, A. Anand, R. Hashimura, G. Zhang, R. Dong, H. Kanaya, K. Yoshida, Kyushu University, Japan*
- 508     **A 10GHz Low-Power Multi-Modulus Frequency Divider Using Extended True Single-Phase Clock (E-TSPC) Logic**  
*M. Jung, J. Fuhrmann, A. Ferizi, G. Fischer, Robert Weigel, T. Ussmueller, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany*
- 512     **71–76GHz Grounded-Coplanar-Waveguide-to-Rectangular-Waveguide Transition with Integrated Planar Bias Tee for Quasi-Hermetic Radio-Over-Fiber Wireless Transmitter**  
*Ivan Flammia, Tobias Kleinfeld, Max Frei, Alex Utreras-Rivera, Andreas Stöhr, Universität Duisburg-Essen, Germany*
- 516     **Integrated III-V Heterostructure Barrier Varactor Frequency Tripler on a Silicon Substrate**  
*Aleksandra Malko, Tomas Bryllert, Josip Vukusic, Jan Stake, Chalmers University of Technology, Sweden*

- 520 **Low Cost Approach to High Performance Amplifiers That Cover 4 to 20GHz**  
*Henrik Morkner, Bill Chen, Wayne Kennan, John Ian Dalton, Thomas Galluccio, M/A-COM Technology Solutions, USA*
- 524 **Fabrication of Suspended Bridge Type Resonator Using Laser Interference Lithography**  
*Boyeon Hwang<sup>1</sup>, Insang Song<sup>2</sup>, Jung Ho Park<sup>1</sup>, Jea-Shik Shin<sup>2</sup>, Jae-Sung Rieh<sup>1</sup>, Sung-Woo Hwang<sup>2</sup>, Byeong-kwon Ju<sup>1</sup>*  
*<sup>1</sup>Korea University, Korea; <sup>2</sup>SAIT, Korea*
- 528 **A Compact V-Band Active SiGe Power Detector**  
*Jian Zhang, Vincent Fusco, Yunhua Zhang, Queen's University Belfast, UK*
- 532 **Low-Power Oscillator with Memory Reduction Tail Transistors for 2.4GHz ISM Band Applications**  
*Chieh-Lun Chiang, Chin-Lung Yang, Shao-Ping Yu, National Cheng Kung University, Taiwan*
- 536 **Highly Integrated 60GHz SSB MMIC Mixer with No DC Power Consumption Based on Subharmonic LO and CPW Circuits in GaAs pHEMT Technology**  
*K. Hettak<sup>1</sup>, T. Ross<sup>2</sup>, N. Irfan<sup>3</sup>, G. Morin<sup>4</sup>, M.C.E. Yagoub<sup>3</sup>, J. Wight<sup>2</sup>*  
*<sup>1</sup>Communications Research Centre Canada, Canada; <sup>2</sup>Carleton University, Canada; <sup>3</sup>University of Ottawa, Canada; <sup>4</sup>Defence Research & Development Canada, Canada*
- 540 **New Concepts for a Photonic Vector Network Analyzer Based on THz Heterodyne Phase-Coherent Techniques**  
*A.R. Criado<sup>1</sup>, C. de Dios<sup>1</sup>, P. Acedo<sup>1</sup>, H.L. Hartnagel<sup>2</sup>*  
*<sup>1</sup>Universidad Carlos III de Madrid, Spain; <sup>2</sup>Technische Universität Darmstadt, Germany*
- 544 **A Monolithic Variable Load for Application in Source-Pull Noise Measurements**  
*S. Colangeli, Walter Ciccognani, A. Bentini, L. Scucchia, Ernesto Limiti, Università di Roma "Tor Vergata", Italy*

- 548 **Evaluation of De-Embedding Technique Accuracy Depending on De-Embedding Patterns for CMOS Circuits up to 110GHz**  
*Naoko Ono<sup>1</sup>, Kyoya Takano<sup>2</sup>, Mizuki Motoyoshi<sup>2</sup>, Kosuke Katayama<sup>2</sup>, Minoru Fujishima<sup>2</sup>*  
*<sup>1</sup>Toshiba Corporation, Japan; <sup>2</sup>Hiroshima University, Japan*
- 552 **Radar Transceiver Module for QUASAR UAV Based Polarimetric SAR System**  
*J. del Castillo Mena, J.R. Larrañaga Sudupe, INTA, Spain*
- 556 **10Gbps 16QAM Transmission Over a 70/80GHz (E-Band) Radio Test-Bed**  
*Jingjing Chen<sup>1</sup>, Zhongxia He<sup>2</sup>, Lei Bao<sup>1</sup>, Christer Svensson<sup>3</sup>, Yinggang Li<sup>1</sup>, Sten Gunnarsson<sup>4</sup>, Christer Stoj<sup>4</sup>, Herbert Zirath<sup>1</sup>*  
*<sup>1</sup>Ericsson AB, Sweden; <sup>2</sup>Chalmers University of Technology, Sweden; <sup>3</sup>Linköping University, Sweden; <sup>4</sup>SiversIMA AB, Sweden*
- 560 **A 0.6–3.6GHz CMOS Wideband Demodulator for 4G Mobile Handsets**  
*Antoine Khy, Bernard Huyart, Télécom ParisTech, France*
- 564 **Novel Methodology for Duplex Receiver Dimensioning**  
*Mazen Abi Hussein, Corinne Berland, LaMIPS, France*
- 568 **A True Differential Characterization of a 80GHz Low Power Wideband Receiver Chip for Microwave Imaging Application**  
*Anna Zielska<sup>1</sup>, Ralf Juenemann<sup>1</sup>, Andreas Schiessl<sup>1</sup>, Marc Tiebout<sup>2</sup>*  
*<sup>1</sup>Rohde & Schwarz, Germany; <sup>2</sup>Infineon Technologies, Austria*
- 572 **Millimeter Wave Dielectric Spectroscopy and Breast Cancer Imaging**  
*Liu Chao, Mohammed N. Afsar, Konstantin A. Korolev, Tufts University, USA*

## EuMIC/EuMC01: Active Components and Systems for Phased Arrays

*Chair: Maurizio Bozzi, University of Pavia — Co-Chair: Peter Hoogeboom, Delft University of Technology*

*Venue G102, Time 13:50 - 15:30, Monday 29 October 2012*

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- 576     **A Si-CMOS 5-Bit Baseband Phase Shifter Using Fixed Gain Amplifier Matrix**  
*Tuan Thanh Ta, Shoichi Tanifuji, Suguru Kameda, Noriharu Suematsu, Tadashi Takagi, Kazuo Tsubouchi, Tohoku University, Japan*
- 580     **PLL with Secondary Loop Control for Self Tracking Antennas**  
*N.B. Buchanan, Vincent Fusco, Queen's University Belfast, UK*
- 583     **Network Analysis of the Influence of Hardware Imperfections on DoA Estimation**  
*Markus Stefer, Sven Kablitz, Martin Schneider, Universität Bremen, Germany*
- 587     **Spatially Modulated Communication Method Using Dual Scatterers for Wireless Power Transmission**  
*Kohei Hasegawa, Ryo Ishikawa, Akira Saitou, Kazuhiko Honjo, University of Electro-Communications, Japan*
- 591     **Sensing of Stochastic Waves with Circular Antenna Arrays**  
*Johannes A. Russer, Giuseppe Scarpa, Paolo Lugli, Peter Russer, Technische Universität München, Germany*

## EuMIC/EuMC02: Microwave Photonics

Chair: Asher Madjar, M2Microwaves — Co-Chair: Andreas Stöhr, Universität Duisburg-Essen

Venue G102, Time 16:00 - 17:40, Monday 29 October 2012

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- 595 **Investigations on Noise Processes in Optical Resonator Based Microwave Oscillators**  
*Khaldoun Saleh<sup>1</sup>, Pierre-Henri Merrer<sup>1</sup>, Olivier Llopis<sup>1</sup>, Gilles Cibiel<sup>2</sup>*  
<sup>1</sup>LAAS, France; <sup>2</sup>CNES, France
- 599 **A Novel Configuration for Optical SSB Modulation**  
*M. Dispenza, A. Secchi, S. Casagrande, M. Ricci, A.M. Fiorello, SELEX Sistemi Integrati S.p.A., Italy*
- 603 **Integrated E-Band Photoreceiver Module for Wideband (71–76GHz) Wireless Transmission**  
*Vitaly Rymanov<sup>1</sup>, Sebastian Babel<sup>1</sup>, Andreas Stöhr<sup>1</sup>, Sascha Lutzmann<sup>2</sup>, Merih Palandöken<sup>2</sup>, Bouchaib Bouhlal<sup>2</sup>, Tolga Tekin<sup>2</sup>*  
<sup>1</sup>Universität Duisburg-Essen, Germany; <sup>2</sup>Technische Universität Berlin, Germany
- 607 **Live Electrooptic Imaging of K-Band Switching Actions and Parasitic Phenomena in MMIC Module**  
*M. Tsuchiya<sup>1</sup>, T. Shiozawa<sup>2</sup>*  
<sup>1</sup>NICT, Japan; <sup>2</sup>Kagawa National College of Technology, Japan
- 611 **Band-Pass Non-TEM Mode Traveling-Wave Electro-Optic Polymer Modulator**  
*Faezeh Fesharaki, Ke Wu, École Polytechnique de Montréal, Canada*

## EuMIC/EuMC03: Packaging and Interconnects

Chair: Walter De Raedt, IMEC — Co-Chair: Jean-Louis Cazaux, Thales Alenia Space

Venue G105, Time 16:00 - 17:40, Monday 29 October 2012

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- 615      **Novel Packaging, Cooling and Interconnection Method for GaN High Performance Power Amplifiers and GaN Based RF Front-Ends**  
*A. Margomenos, M. Micovic, A. Kurdoghlian, K. Shinohara, D.F. Brown, C. Butler, I. Milosavljevic, P.B. Hasimoto, R. Grabar, P.J. Willadsen, R. Bowen, P. Patterson, M. Wetzel, D.H. Chow, HRL Laboratories LLC, USA*
- 619      **Embedded IC Module Package Using Silicon Substrate**  
*Jong-Min Yook, Jun Chul Kim, Dongsu Kim, Jong-Chul Park, KETI, Korea*
- 623      **Mode Suppressing Packaging for 50GHz Cryogenic Low-Noise Amplifiers**  
*Doug Henke, Frank Jiang, Stéphane Claude, National Research Council Canada, Canada*
- 627      **Plastic-Based Substrate Integrated Waveguide (SIW) Components and Antennas**  
*Riccardo Moro<sup>1</sup>, Maurizio Bozzi<sup>1</sup>, Ana Collado<sup>2</sup>, Apostolos Georgiadis<sup>2</sup>, Selva Via<sup>2</sup>*  
*<sup>1</sup>Università di Pavia, Italy; <sup>2</sup>CTTC, Spain*
- 631      **A Physical Model for Skin Effect in Rough Surfaces**  
*G. Gold, K. Helmreich, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany*

## EuMIC/EuMC04: GaN and GaAs Power Amplifiers

Chair: Christophe Gaquiere, IEMN — Co-Chair: Johannes Benedikt, University of Cardiff

Venue G102, Time 13:50 - 15:30, Tuesday 30 October 2012

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- 635 **Dual-Band Class-ABJ AlGaIn/GaN High Power Amplifier**  
*V. Carrubba, Stephan Maroldt, M. Mußer, H. Walcher, Michael Schlechtweg, Ruediger Quay, Oliver Ambacher, Fraunhofer IAF, Germany*
- 639 **A 30W, 46% PAE S-Band GaN HEMT MMIC Power Amplifier for Radar Applications**  
*O. Jardel<sup>1</sup>, M. Olivier<sup>2</sup>, D. Lancereau<sup>1</sup>, R. Aubry<sup>1</sup>, E. Chartier<sup>1</sup>, N. Sarazin<sup>1</sup>, M.-A. Di Forte Poisson<sup>1</sup>, S. Piotrowicz<sup>1</sup>, M. Stanislawiak<sup>2</sup>, D. Rimbart<sup>2</sup>, S.L. Delage<sup>1</sup>, P. Eudeline<sup>2</sup>*  
*<sup>1</sup>III-V Lab, France; <sup>2</sup>Thales Air Systems, France*
- 643 **Highly Integrated S and C-Band Internally-Matched Quasi-MMIC Power GaN Devices**  
*Marc Camiade<sup>1</sup>, Diane Bouw<sup>1</sup>, Guillaume Mougnot<sup>1</sup>, Francis Auvray<sup>1</sup>, Pierre Franck Alleaume<sup>1</sup>, D. Floriot<sup>1</sup>, Laurent Favède<sup>1</sup>, James Thorpe<sup>2</sup>, Hermann Stieglauer<sup>2</sup>*  
*<sup>1</sup>United Monolithic Semiconductors, France; <sup>2</sup>United Monolithic Semiconductors, Germany*
- 647 **A 45dBm Balanced Power Amplifier Module Based on Four Fully Integrated Doherty PA MMICs: A Scalable Solution for Cellular Infrastructure Active Antenna Systems**  
*Udo Karthaus, Deepti Sukumaran, Lothar Schmidt, Stephan Ahles, Horst Wagner, Ubidyne GmbH, Germany*
- 651 **Multi-Band/Multi-Mode and Efficient Transmitter Based on a Doherty Power Amplifier**  
*Paul Saad<sup>1</sup>, Luca Piazzon<sup>2</sup>, Paolo Colantonio<sup>2</sup>, Junghwan Moon<sup>3</sup>, Franco Giannini<sup>2</sup>, Kristoffer Andersson<sup>1</sup>, Bumman Kim<sup>3</sup>, Christian Fager<sup>1</sup>*  
*<sup>1</sup>Chalmers University of Technology, Sweden; <sup>2</sup>Università di Roma "Tor Vergata", Italy; <sup>3</sup>POSTECH, Korea*

**EuMIC/EuMC05: Transmitter and Receiver Circuits for Communication Applications**

*Chair: Klaus Beilenhoff, UMS GmbH — Co-Chair: Frank van den Bogaart, TNO*

*Venue G103, Time 13:50 - 15:30, Tuesday 30 October 2012*

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- 655     **Efficient Amplification of Signals with High PAPR Using a Novel Multilevel LINC Transmitter Architecture**  
*Ahmed F. Aref, AbdElRahman Askar, Ahmed A. Nafe, Mohsin M. Tarar, Renato Negra, RWTH Aachen University, Germany*
- 659     **Performance Estimation of Fully Digital Polar Modulation Driving a 2GHz Switch-Mode Power Amplifier**  
*Philip Ostrovskyy<sup>1</sup>, J. Christoph Scheytt<sup>1</sup>, Arash Sadeghfam<sup>2</sup>, Holger Heuermann<sup>2</sup>*  
*<sup>1</sup>IHP GmbH, Germany; <sup>2</sup>FH Aachen, Germany*
- 663     **Small Size Receiver Band Self-Interference Cancellation Amplifier for 4G Transceivers**  
*Koukkari Eero<sup>1</sup>, Kurttio Pasi<sup>1</sup>, Heiskanen Antti<sup>1</sup>, Holappa Veli-Matti<sup>1</sup>, Peltokorpi Jani<sup>1</sup>, Tarvainen Timo<sup>1</sup>, Lanfranco Sandro<sup>2</sup>, Kolmonen Tapio<sup>2</sup>, Somerma Hans<sup>2</sup>*  
*<sup>1</sup>Esju Oy, Finland; <sup>2</sup>Nokia Siemens Networks, Finland*
- 667     **Evaluation of Second-Order Bandpass Sampling Receivers for Software Defined Radio**  
*Pedro Miguel Cruz<sup>1</sup>, Nuno Borges Carvalho<sup>1</sup>, Mikko E. Valkama<sup>2</sup>*  
*<sup>1</sup>Universidade de Aveiro, Portugal; <sup>2</sup>Tampere University of Technology, Finland*
- 671     **High ACLR 1-Bit Direct Radio Frequency Converter Using Symmetric Waveform**  
*Takashi Maehata<sup>1</sup>, Suguru Kameda<sup>2</sup>, Noriharu Suematsu<sup>2</sup>*  
*<sup>1</sup>Sumitomo Electric Industries Ltd., Japan; <sup>2</sup>Tohoku University, Japan*



## EuMIC/EuMC06: RF MEMS: Tunable and Switchable Circuits

Chair: Volker Ziegler, EADS Innovation Works — Co-Chair: Harrie Tilmans, IMEC

Venue G104, Time 13:50 - 15:30, Tuesday 30 October 2012

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- 675 **MEMS 30 $\mu$ m-Thick W-Band Waveguide Switch**  
*Z. Baghchehsaraei<sup>1</sup>, U. Shah<sup>1</sup>, S. Dudorov<sup>1</sup>, G. Stemme<sup>1</sup>, Joachim Oberhammer<sup>1</sup>, Jan Åberg<sup>2</sup>*  
<sup>1</sup>KTH, Sweden; <sup>2</sup>MicroComp Nordic AB, Sweden
- 679 **Design and Characterization of a Simplified Planar 16 $\times$ 8 RF MEMS Switch Matrix for a GEO-Stationary Data Relay**  
*Sascha A. Figur<sup>1</sup>, Erika Meniconi<sup>1</sup>, Ulrich Prechtel<sup>1</sup>, Volker Ziegler<sup>1</sup>, B. Schoenlinner<sup>1</sup>, Roberto Sorrentino<sup>2</sup>, Larissa Vietzorreck<sup>3</sup>*  
<sup>1</sup>EADS Innovation Works, Germany; <sup>2</sup>Università di Perugia, Italy; <sup>3</sup>Technische Universität München, Germany
- 683 **Original Tunable RF MEMS Passive Components Integrated into a Single Chip**  
*Pierre Nicole<sup>1</sup>, Julien Pagazani<sup>2</sup>, Lionel Rousseau<sup>2</sup>, Frédéric Marty<sup>2</sup>, Nicolas Pavy<sup>2</sup>, Gaëlle Lissorgues<sup>2</sup>*  
<sup>1</sup>Thales Airborne Systems, France; <sup>2</sup>ESYCOM, France
- 687 **Constant Absolute Bandwidth UHF Tunable Filter Using RF MEMS**  
*G. Nicolini<sup>1</sup>, Cyril Guines<sup>1</sup>, Damien Passerieux<sup>1</sup>, P. Blondy<sup>1</sup>, G. Neveu<sup>2</sup>, M.P. Dussauby<sup>2</sup>, W. Rebernak<sup>2</sup>, M. Giraud<sup>2</sup>*  
<sup>1</sup>XLIM, France; <sup>2</sup>Thales Communications, France
- 691 **Millimeter-Wave RF-MEMS SPDT Switch Networks in a SiGe BiCMOS Process Technology**  
*S. Reyaz<sup>1</sup>, C. Samuelsson<sup>2</sup>, Robert Malmqvist<sup>1</sup>, Mehmet Kaynak<sup>3</sup>, A. Rydberg<sup>1</sup>*  
<sup>1</sup>Uppsala University, Sweden; <sup>2</sup>FOI, Sweden; <sup>3</sup>IHP GmbH, Germany

**EuMIC/EuMC07: Advanced Technologies for Efficient High-Frequency Amplification**

*Chair: Bumman Kim, POSTECH — Co-Chair: Paolo Colanonio, University of Rome Tor Vergata*

*Venue G106, Time 13:50 - 15:30, Tuesday 30 October 2012*

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- 695     **X- and Ku-Band Internally Matched GaN Amplifiers with More Than 100W Output Power**  
*H. Noto, H. Maehara, H. Uchida, M. Koyanagi, H. Utsumi, J. Nishihara, H. Otsuka, K. Yamanaka, M. Nakayama, Y. Hirano, Mitsubishi Electric Corporation, Japan*
- 699     **A 20dBm E-Band Power Amplifier in SiGe BiCMOS Technology**  
*Roee Ben Yishay, Roi Carmon, Oded Katz, Benny Sheinman, Danny Elad, IBM Haifa Research Lab, Israel*
- 703     **A U-Band Broadband Power Amplifier MMIC in 100nm AlGaIn/GaN HEMT Technology**  
*D. Schwantuschke<sup>1</sup>, Peter Brückner<sup>1</sup>, Ruediger Quay<sup>1</sup>, M. Mikulla<sup>1</sup>, Oliver Ambacher<sup>1</sup>, Ingmar Kallfass<sup>2</sup>*  
*<sup>1</sup>Fraunhofer IAF, Germany; <sup>2</sup>KIT, Germany*
- 707     **Multifinger InP HBT's in Transferred-Substrate Technology for 100GHz Power Amplifiers**  
*T. Jensen, T. Kraemer, T. Al-Sawaf, Viktor Krozer, Wolfgang Heinrich, G. Tränkle, FBH, Germany*
- 711     **Design of an Integrated Cascode Cell for Compact Ku-Band Power Amplifiers**  
*Adeline Dechansiaud<sup>1</sup>, Raphael Sommet<sup>1</sup>, Tibault Reveyrand<sup>1</sup>, Raymond Quere<sup>1</sup>, Diane Bouw<sup>2</sup>, Christophe Chang<sup>2</sup>, Marc Camiade<sup>2</sup>, Francois Deborgies<sup>3</sup>*  
*<sup>1</sup>XLIM, France; <sup>2</sup>United Monolithic Semiconductors, France; <sup>3</sup>ESA, The Netherlands*

## EuMIC/EuMC Poster01 : Joint EuMIC/EuMC Poster Session

Chair: Ioan E. Lager, Delft University of Technology — Co-Chair: Arttu Luukanen, VTT

Venue Exhibition Hall, Time 10:10 - 17:40, Tuesday 30 October 2012

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- 715 **Design of 60-GHz Millimeter-Wave Integrated Chip Antenna and Bandpass Filter Using IPD Technology**  
*Ta-Yeh Lin<sup>1</sup>, Chun-Chi Lin<sup>2</sup>, Tsenchieh Chiu<sup>3</sup>, Chia-Chan Chang<sup>2</sup>, Hsu-Chen Cheng<sup>1</sup>, Da-Chiang Chang<sup>1</sup>*  
<sup>1</sup>National Chip Implementation Center, Taiwan; <sup>2</sup>National Chung Cheng University, Taiwan; <sup>3</sup>National Central University, Taiwan
- 719 **Quasi-Octave Bandwidth Phase Matched K/Ka Antenna Feed Subsystem for Dual RHCP/LHCP Polarization**  
*Angel Mediavilla, Juan L. Cano, Karen Cepero, Universidad de Cantabria, Spain*
- 723 **Compact Filters Using Metal-Dielectric Inserts**  
*O. Glubokov, D. Budimir, University of Westminster, UK*
- 727 **A Solution to Relax Breakdown Threshold in Waveguide Filters**  
*K. Frigui<sup>1</sup>, S. Bila<sup>1</sup>, D. Baillargeat<sup>1</sup>, A. Catherinot<sup>2</sup>, S. Verdeyme<sup>1</sup>, J. Puech<sup>3</sup>, L. Estagerie<sup>3</sup>, D. Pacaud<sup>4</sup>, H. Dillenbourg<sup>4</sup>*  
<sup>1</sup>XLIM, France; <sup>2</sup>SPCTS, France; <sup>3</sup>CNES, France; <sup>4</sup>Thales Alenia Space, France
- 731 **LTCC Filter Based on Via Resonators**  
*Vasily Kondratyev, Kari Kautio, Markku Lahti, VTT Technical Research Centre of Finland, Finland*
- 735 **Parallel-Coupled Stub-Loaded Resonator Filters with Wide Spurious Suppression**  
*M. Akra<sup>1</sup>, H. Issa<sup>1</sup>, E. Pistono<sup>1</sup>, A. Jrad<sup>2</sup>, N. Corrao<sup>1</sup>, P. Ferrari<sup>1</sup>*  
<sup>1</sup>IMEP-LAHC, France; <sup>2</sup>Lebanese University, Lebanon

- 739 **Novel Compact Dual-Mode Tri-Band Bandpass Filter for WiMAX & GSM Applications**  
*A.M. Elelimy, Ayman M. El-Tager, A.G. Sobih, M.H. Abdel-Azeem, MTC, Egypt*
- 743 **Design of Coplanar Bandstop Filter Based on Open-Loop-Ring Resonator and DGS for WLAN and UWB Applications**  
*A. Batmanov<sup>1</sup>, E. Burte<sup>1</sup>, R. Mikuta<sup>1</sup>, A. Boutejdar<sup>1</sup>, Abbas Omar<sup>1</sup>, A. Khaidurova<sup>2</sup>*  
*<sup>1</sup>OvG Universität Magdeburg, Germany; <sup>2</sup>Technical University of Irkutsk, Russia*
- 747 **An Unequal Wilkinson Power Divider with a High Dividing Ratio**  
*Myung-Seok Kang<sup>1</sup>, Young Kim<sup>1</sup>, Young-Chul Yoon<sup>2</sup>*  
*<sup>1</sup>Kumoh National Institute of Technology, Korea; <sup>2</sup>Kwandong University, Korea*
- 750 **Horst-Type Wilkinson Power Dividers for Dual-Band Operation**  
*Iwata Sakagami, Xiaolong Wang, Kensaku Takahashi, Shingo Okamura, Minoru Tahara,*  
*University of Toyama, Japan*
- 754 **An X-Band Full-360° Reflection Type Phase Shifter with Low Insertion Loss**  
*Wei-Tsung Li<sup>1</sup>, Yen-Hung Kuo<sup>1</sup>, Yi-Ming Wu<sup>1</sup>, Jen-Hao Cheng<sup>1</sup>, Tian-Wei Huang<sup>1</sup>,*  
*Jeng-Han Tsai<sup>2</sup>*  
*<sup>1</sup>National Taiwan University, Taiwan; <sup>2</sup>National Taiwan Normal University, Taiwan*
- 758 **Performance of Nonsynchronous Noncommensurate Impedance Transformers in Comparison to Tapered Line Transformers**  
*Kseniya Kim<sup>1</sup>, Vitaliy Zhurbenko<sup>1</sup>, Tom Keinicke Johansen<sup>1</sup>, Kumar Narendra<sup>2</sup>*  
*<sup>1</sup>Technical University of Denmark, Denmark; <sup>2</sup>Motorola Technology, Malaysia*
- 762 **Design of a Tunable Oscillator Using a Suspended-Stripline Resonator**  
*Il-Heung Kang, Young-Gon Kim, Dong-Sik Woo, Sung-Kyun Kim, Kang Wook Kim,*  
*Kyungpook National University, Korea*

- 766     **Single-Sleeve Waveguide-to-Microstrip Transition Probe for Full Waveguide Bandwidth**  
*Chi-Chang Lin, Yuh-Jing Hwang, Academic Sinica, Taiwan*
- 770     **Development of Packaged UWB Passive Devices Using LCP Multilayer Circuit Technology**  
*Francisco Cervera<sup>1</sup>, Jiasheng Hong<sup>1</sup>, Neil Thomson<sup>2</sup>*  
*<sup>1</sup>Heriot-Watt University, UK; <sup>2</sup>BSC Filter Ltd., UK*
- 774     **Combined Twist-Bend for Very Compact Interconnections in Integrated Waveguide Subsystems**  
*Uwe Rosenberg<sup>1</sup>, Ralf Beyer<sup>2</sup>*  
*<sup>1</sup>Mician Global Engineering GbR, Germany; <sup>2</sup>Mician GmbH, Germany*
- 778     **RF and IF Channelizers for Wide-Band Sensing in Cognitive/Software-Defined-Radio Receivers**  
*José Pedro Magalhães<sup>1</sup>, José Neto Vieira<sup>1</sup>, Roberto Gomez-Garcia<sup>2</sup>, Nuno Borges Carvalho<sup>1</sup>*  
*<sup>1</sup>Universidade de Aveiro, Portugal; <sup>2</sup>Universidad de Alcalá, Spain*
- 782     **Transmission Line with Integrated Symmetrical 1-kV HBM DC-100GHz ESD Protection in Advanced CMOS Technologies**  
*T. Lim<sup>1</sup>, J. Jimenez<sup>1</sup>, Philippe Benech<sup>2</sup>, J.-M. Fournier<sup>2</sup>, P. Galy<sup>1</sup>*  
*<sup>1</sup>STMicroelectronics, France; <sup>2</sup>IMEP-LAHC, France*
- 786     **Alternate Lamination of High-Permittivity Dielectric Materials for Super Thin Wave Absorber**  
*T. Fujita<sup>1</sup>, T. Yasuzumi<sup>1</sup>, Y. Tsuda<sup>1</sup>, R. Suga<sup>1</sup>, O. Hashimoto<sup>1</sup>, T. Wano<sup>2</sup>, Y. Fukuda<sup>2</sup>*  
*<sup>1</sup>Aoyama Gakuin University, Japan; <sup>2</sup>Nitto Denko Corporation, Japan*

- 790 **Full-Printed Inductors on Flexible Plastic Foils for Electromagnetic Energy Harvesting: Fabrication, Characterization, Modeling**  
*Evangéline Bènevent<sup>1</sup>, Emmanuel Bergeret<sup>1</sup>, Matthieu Egels<sup>1</sup>, Philippe Pannier<sup>1</sup>, Abdelkader Aliane<sup>2</sup>, Anis Daami<sup>2</sup>, Romain Coppard<sup>2</sup>*  
*<sup>1</sup>IM2NP, France; <sup>2</sup>CEA-LITEN, France*
- 794 **X-Parameter-Based Frequency Doubler Design**  
*Jialin Cai, Thomas J. Brazil, University College Dublin, Ireland*
- 798 **Compact Multi-Notched UWB Bandpass Filter Using E-Shape Microstrip Structure**  
*Raaed T. Hammed, Dariush Mirshekar-Syahkal, University of Essex, UK*
- 802 **Non-Uniform Q-Factor Distribution in Microwave Filters**  
*P. Martín Iglesias, I.C. Hunter, University of Leeds, UK*
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