

2015 Integrated Nonlinear Microwave and Millimetre-wave Circuits Workshop (INMMiC 2015)

**Taormina, Italy
1-2 October 2015**



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1st October

10:00-17:00 **Poster Session and Exhibition**

10:00-11:20 **Opening Session** SESSION I

Chair **Prof. Alina Caddemi** - Co-chair **Prof. Giorgio Vannini**

Welcome Address

Conference Chairs and TPC Chairs

Gallium Nitride Power MMICs - Promise and Problems

Dr. Charles F. Campbell - Invited Speaker

Exhibitor Introduction

11:20-12:40 **Advances in Nonlinear Characterization Techniques** SESSION II

Chair **Prof. Dominique Schreurs** - Co-chair **Dr. Jon Martens**

Calibration Method for Coupler Based Time Domain Waveform Measurements

B. Pichler, N. Leder, T. Faseth, H. Arthaber

Hybrid Load-Pull System Using a Two-Source Nonlinear Vector Network Analyzer

K. Lukasik, P. Barmuta, T. Nielsen, K. Madziar, D. Schreurs, A. Lewandowski

Theoretical Consideration on Harmonic Manipulated Amplifiers Based on Experimental Data

A. Raffo, P. Colantonio, E. Cipriani, V. Vadalà, G. Bosi, T. M. Martin-Guerrero, G. Vannini, F. Giannini

On Passive Intermodulation Test of Analog and Digital Systems

D. Kozlov, A. Shitvov, A. Schuchinsky

12:40-14:00 **Lunch**

14:00-15:40 **Advances in Nonlinear Modelling Techniques** SESSION III

Chair **Dr. Antonio Raffo** - Co-chair **Dr. Peter Zampardi**

Transistor Characterization and Modeling and the Use of Embedding Device Models for the Design of Microwave Power Amplifiers

Prof. Patrick Roblin - Invited Speaker

Concurrent Surrogate Modeling and Adaptive Sampling in Load-Pull Measurements

P. Barmuta, F. Ferranti, K. Lukasik, A. Lewandowski, D. Schreurs

Temperature Dependent Contact and Channel Sheet Resistance Extraction of GaN HEMT

A. K. Sahoo, N. K. Subramani, J. Nallatamby, N. Rolland, R. Quere, F. Medjdoub

Neural Network Modelling of GaAs pHEMTs Suitable for Millimeter-Wave Mixer Design

Z. Marinkovic, G. Crupi, G. Avolio, V. Markovic, A. Caddemi, D. Schreurs

15:40-16:00 **Coffee Break**

16:00-17:40 **Challenges and Solutions for Communication Systems** SESSION IV

Chair **Prof. Christian Fager** - Co-chair **Dr. Anding Zhu**

Technology Comparison and Considerations for Handset Power Amplifiers

Dr. Peter J. Zampardi - Invited Speaker

An Empirical Behavioral Model for RF PAs Including Self-heating

G. Gibiino, T. Cappello, D. Niessen, D. Schreurs, A. Santarelli, F. Filicori

A Reliable Methodology for Experimental Extraction of Power Amplifier Dynamic Volterra Model

D. Gapillout, C. Maziere, E. Ngoya, S. Mons

On the Robustness of a Widely Nonlinear Approach to Model Impairments in I/Q Modulators

M. Madero-Ayora, J. Reina-Tosina, C. Crespo-Cadenas, J. Becerra-González

17:40-18:40 **NVNA Users' Forum**



2nd October

09:00-17:00 **Poster Session and Exhibition**

09:00-10:40 **Nonlinear Design Strategies for Power Amplifiers** SESSION V

Chair *Dr. Charles Campbell* - Co-chair *Dr. Holger Arthaber*

The Doherty Amplifier: Past, Present & Future

Prof. Franco Giannini - Invited Speaker

A 300 W Si-LDMOS Doherty PA for 700-950 MHz LTE Applications Based on a Compensated Output Network Design

A. Cidronali, S. Maddio, N. Giovannelli, A. Del Chiaro

Impact of Trapping Effects on GaN HEMT Based Doherty PA Load-Pull Ratios

L. C. Nunes, P. M. Cabral, J. C. Pedro

Design Procedure for Millimeter-Wave InP DHBT Stacked Power Amplifiers

M. Squartecchia, T. K. Johansen, V. Midili

10:40-11:00 **Coffee Break**

11:00-12:40 **Optimum Design Methodologies for Nonlinear Circuits** SESSION VI

Chair *Dr. Stephen Maas* - Co-chair *Prof. Wolfgang Bösch*

Design of Wideband Frequency Multipliers for High Chirp Bandwidth mm-Wave FMCW Sensors

Prof. Hermann Schumacher - Invited Speaker

Gallium Nitride Schottky and MIS Power Switch Performance Comparison for 35 GHz Applications

A. Pantellini, A. Nanni, A. Bettidi, D. Carosi, D. Dominijanni, C. Lanzieri

24 GHz Beam Forming Network for Indoor Positioning Systems

D. Calzona, L. Boccia, S. Scaccianoce, G. Amendola, A. Shamsafar

Defining Acceptable Phase-Modulated Nonlinearities in

77 GHz FMCW Automotive Radar Systems

F. Müller, D. Steinbuch, M. Steinhauer, T. Walter, R. Weigel

12:40-14:00 **Lunch**

14:00-15:40 **Nonlinear Circuits and Systems** SESSION VII

Chair *Dr. Michael Gadringer* - Co-chair *Prof. Teresa M. Martín-Guerrero*

Amplitude and Frequency Analysis of Multi-sine Wireless Power Transfer

N. Pan, A. S. Boaventura, M. Rajabi, D. Schreurs, N. B. Carvalho, S. Pollin

Nonlinear Simulation of Digital RF Transmitters Under Modulated Excitation

N. Leder, B. Pichler, H. A. Routsalainen, T. I. Faseth, H. Arthaber

Support Vector Regression for Harmonic Optimization in Continuous Class-F Power Amplifier Design

P. Chen, B. M. Merrick, T. J. Brazil

RF Active Circuit Simulating a Floating Inductance

L. Pantoli, V. Stornelli, G. Leuzzi

Analysis of Thermal Effects in Active Antenna Array Transmitters Using a Combined EM/Circuit/Thermal Simulation Technique

C. Fager, K. Hausmair, T. Eriksson, K. Buisman

15:40-16:00 **Coffee Break**



International Workshop on Integrated Nonlinear Microwave and Millimetre-wave Circuits

2nd October

16:00-17:00 Noise Characterisation and Modelling of Nonlinear Devices SESSION VIII

Chair Prof. Ernesto Limiti - Co-chair Prof. Christophe Gaquiere

MM-wave Noise Measurements Under Nonlinear Conditions

J. Martens

GaN HEMT Modelling Through 50- Ω NF Measurements

A. Nalli, A. Raffo, G. Crupi, S. D'Angelo, D. Resca, F. Scappaviva, G. Salvo, A. Caddemi, G. Vannini

Flicker Noise Comparison of Direct Conversion Mixers Using Schottky and HBT Diode Rings in SiGe:C BiCMOS Technology

T. K. Johansen, R. S. Michaelsen, K. Tamborg, M. Squartecchia

17:00-18:00 Closing Session SESSION IX

Chair Prof. Giorgio Vannini - Co-chair Prof. Alina Caddemi

Nonlinear Microwave Simulation Techniques

Prof. Almudena Suarez - Invited Speaker

Best Student Paper Award

Announcement next INMMiC

Closing Address

Poster Session

Chair Dr. Zlatica Marinkovic - Co-chair Dr. Valeria Vadalà

A New Methodology to Estimate E-band pHEMT Linearity Optimum Load from Low Microwave Frequency Load Pull Measurements

A. Meazza, G. Sivverini, A. Colzani, M. Fumagalli, A. Traversa, E. Cardillo

Analysis of the Switching Threshold in Dual-Level Class-G Modulated Power Amplifiers

N. Wolff, W. Heinrich, O. Bengtsson

Robust GaN Successive-Detection Logarithmic Video-Amplifier for EW Applications

L. Di Alessandro, M. Palomba, S. Colangeli, E. Limiti

In Situ Waveform Measurement Approach within an Inverse Class F GaN Power Amplifier

S. Probst, B. Geck

Designing a Tri-Band Concurrent Doherty Power Amplifier

R. Giofrè, F. Costanzo, D. N. Maroor Vikraman, P. Colantonio, F. Giannini

A GaN High Power and Efficient Amplifier for L-Band Galileo System

R. Giofrè, P. Colantonio, F. Giannini, F. De Arriba, L. Gonzales, L. Cabria, D. Baglieri

Class AB Gyrator-Based Active Inductor

L. Pantoli, V. Stornelli, G. Leuzzi

A Modified Simultaneous Perturbation Stochastic Optimization Algorithm for Digital Predistortion Model Extraction

N. Kelly, A. Zhu

Continuous-Time Modeling of a Traveling-Wave Tube Amplifier

W. Saabe, E. Ngoya, J. Sombrin, G. Soubercaze-Pun, L. Lapierre

Sequential Asymmetric Superposition Windowing for

Crest Factor Reduction and Its Effects on Doherty Power Amplifier

D. Maroor Vikraman, R. Giofrè, P. Colantonio, F. Giannini

Realization and Measurement of an RF Energy Harvesting Circuit Working on LTE Frequency Bands

L. Scucchia, M. Palomba, R. Cleriti, S. Colangeli, E. Limiti