Automatic RF Techniques Group

99th ARFTG Microwave Measurement Conference

From Fundamental to Cutting-Edge Microwave Measurement Techniques to Support 6G and Beyond

Denver, CO, USA, June 24, 2022

08:00-08:10 **Welcome to the 99th ARFTG Conference – Introduction**
Conference Co-Chairs: Jeffrey Jargon and Marco Spirito
TPC Co-Chairs: Andrej Rumiantsev and Marc Vanden Bossche

08:10-08:50 **Keynote: Characterizing Cryogenic Josephson Microwave Sources for Communications and Quantum Information**
Alirio S. Boaventura (NIST)*

Session A: Enabling Wideband Characterization Techniques
Session Chair: TBD

A-1
08:50-09:10 **VNA-Based Testbed for Accurate Linearizability Testing of Power Amplifiers Under Modulated Signals**
Nizar Messaoudi (Keysight Technologies)*; Ahmed Ben Ayed (University of Waterloo); Jean-Pierre Teyssier (Keysight Technologies); Slim Boumaiza (Nil)

A-2
09:10-09:30 **Wideband Vector Corrected Measurements on a Modified Vector Network Analyzer (VNA) System**
Christoph Schulze (Ferdinand-Braun-Institut)*; Wolfgang Heinrich (Ferdinand-Braun-Institut); Joel Dunsmore (Keysight Technologies); Olof Bengtsson (Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik)

09:30-11:00 **Break – Exhibits and Interactive Forum**

Session B: mmWave Over-the-Air Characterization
Session Chair: TBD

B-1
11:00-11:20 **Traceable mmWave Modulated-Signal Measurements for OTA Test**
Joshua M. Kast (Colorado School of Mines)*; Paritosh Manurkar (University of Colorado Boulder); Kate Remley (NIST); Rob Horansky (NIST); Dylan Williams (NIST)

B-2
11:20-11:40 **On Coupling-related Distortion Behavior in mm-Wave Phased Arrays**
Jon Martens (Anritsu)*

B-3
11:40-12:00 **D-band Free Space Dielectric Characterization of a Low-Cost Ultradense Microdiamond Composite for Heat Spreading**
Shu-Ming Chang (UCSB)*; Chelsea Swank (UCSD); Andrew Kummel (UCSD); Muhannad Bakir (Georgia Tech); Mark Rodwell (UCSB); James Buckwalter (UCSB)

12:00-13:30 **Awards Luncheon**

Session C: Non-Linear, Large-Signal and VNA Techniques
Session Chair: TBD

C-1
13:30-13:50 **Local-Oscillator Third-Harmonic Injection for Improved Broadband Mixer Linearity**
Akim A. Babenko (Anritsu)*; Jon Martens (Anritsu)

C-2
13:50-14:10 **Surmounting W-band Scalar Load-Pull Limitations Using the ASM-HEMT Model for Millimeter-Wave GaN HEMT Technology Large-Signal Assessment**
Nicholas C. Miller (Air Force Research Laboratory)*; Michael Elliott (SelectTech Services); Ryan Gilbert (KBR); Erdem Arkun (HRL Laboratories); Daniel Denninghoff (HRL Laboratories)

C-3
14:10-14:30 **Impact of Broadband Modulation in Active Load-Pull On-Wafer Measurements of GaN HEMTs**
Alberto Maria Angelotti (University of Bologna)*; Gian Gibiino (University di Bologna); Troels Nielsen (Keysight Technologies, Inc.); Alberto Santarelli (University of Bologna); Jan Verspecht (Keysight Technologies, Inc.)

C-4
14:30-14:50 **Effective AM/AM and AM/PM Curves Derived from EVM Measurements on Constellations**
Jacques B. Sombrin (TESA Laboratory)*

14:50-16:00 **Break – Exhibits and Interactive Forum**

Session D: On-Wafer Techniques
Session Chair: TBD

D-1
16:00-16:20 **Parasitic Coupling Effects in Coplanar Short Measurements**
Gia Ngoc Phung (Physikalische Technische Bundesanstalt)*; Uwe Arz (Physikalisch-Technische Bundesanstalt (PTB))

D-2
16:20-16:40 **Extending the Open-Short De-embedding Frequency via M1 On-Wafer Calibration Approaches**
Ciro Esposito (TU Dresden)*

D-3
16:40-17:00 **Wideband mm-Wave Integrated Passive Tuners for Accurate Characterization of (Bi)CMOS Technologies**
Marc Margalef-Rovira (IEMN Laboratory)*; Caroline Maye (IEMN Laboratory); Sylvie Lepilliet (IEMN Laboratory); Daniel Gloria (STMicroelectronics); Guillaume Ducournau (IEMN Laboratory); Christophe Gaquiere (MC2-Technologies)

Interactive Forum
Session Chair: TBD

P-1
09:30-15:40 **Demonstration of Non-invasive Probing of CMOS Devices with Aluminum Pads at Frequencies up to 500 GHz**
Ryo Sakamaki (National institute of Advanced Industrial Science and Technology)*; Ryoko Kishikawa (National Institute of Advanced Industrial Science and Technology); Seitaro Kon (AIST); Yuya Tojima (AIST); Ichiro Somada (Mitsubishi Electric Company); Shunpei Matsui (Hiroshima University); Gakuto Taoka (Hiroshima University); Takeshi Yoshida (Hiroshima University); Shuhei Amakawa (Hiroshima University); Minoru Fujishima (Hiroshima University)

P-2
09:30-15:40 **Determination of the Coplanar Waveguide Propagation Constant via Non-contact, On-wafer Measurements in WR1.5 Band**
Mitch Wallis (NIST)*; Charles Little (NIST); Richard Chamberlin (NIST); George Burton (NIST); Nathan Orloff (NIST); Christian Long (NIST); Kubilay Sertel (TeraProbes Inc)

P-3
09:30-15:40 **A Single-Element CMOS-LRRM VNA Electronic Calibration Technique**
Jun-Chau Chien (National Taiwan University)*; Ali Niknejad (University of California Berkeley)

P-4
09:30-15:40 **The w-plane as a Graphical Representation of Sampler Configuration in a Sampled-Network Reflectometer**
Devon Donahue (University of Colorado Boulder)*; Taylor Barton (University of Colorado Boulder)

P-5
09:30-15:40 **Single-Sweep vs. Banded Characterizations of a D-band Ultra-Low-Loss SiC Substrate Integrated Waveguide**
Lei Li (Cornell University)*

Closing Notes – End of 99th ARFTG Conference