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THz-Workshop: Millimeter- and Sub-Millimeter- Wave circuit design and characterization

Chair: T. Zimmer

September 26, 2014, Venice, Italy



Research in Europe on Bipolar Circuits and Technology

- RF2THz
 - Catrene
 - Cluster for Application and Technology Research in Europe on NanoElectronics
 - www.catrene.org/
- DOTSEVEN
 - 7th Framework Programme (European commission)
 - Integrated Project, section ICT: Information and Communication Technologies
 - <http://cordis.europa.eu/fp7/ict/programme/>



DOTSEVEN at a glance

- Development of a SiGe HBT technology with cut-off frequency ($f_{\max}$) around 700 GHz (0.7 THz).
 - Demonstration of manufacturability and integratability with CMOS
 - Demonstration of capabilities and benefits of 0.7 THz SiGe HBT technology by benchmark circuits and system applications in the 0.1 to 1 THz range
- 6 European countries, 13 partners
- 42 months duration: from 01.10.2012 to 31.03.2016
- EC grant: 8.600.000€ for a budget of ~12M€
- Coordinator:
 - Rudolf Lachner – INFINEON,
 - Deputy : Klaus Aufinger – INFINEON
 - Technical Director: Michael Schroter, University Dresden, San Diego



Overview

- The purpose of this full-day workshop is to discuss state-of-the-art methods and techniques used to design mmWave and sub-mmWave circuits and how to measure them
- 3 sessions (with 3 speakers each)
 - Session 1: Circuit building blocks (9h00-10h30)
 - Coffee Break: 10h30-11h00
 - Session 2: Characterization (11h00-12h30)
 - Buffet Lunch Break: 12h30-13h30
 - Session 3: mm-wave systems (13h30-15h00)
 - 15h00: End of the Workshop
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Or send a mail: thomas.zimmer@ieee.org



Session 1: Circuit building blocks (9h00-10h30)

- 9:00 Coherent sub-THz transmission systems in Silicon technologies: design challenges for frequency synthesis
 - Alexandre Siligaris, CEA-Leti, Grenoble, France
- 9:30 Circuit building blocks for millimeter and sub-millimeter-wave systems
 - Richard Al Hadi, University of Wuppertal, Germany
- 10:00 Millimeter-wave amplifiers for E- and V-band wireless backhaul
 - Erik Öjefors, SiversIMA, Sweden



Session 2: Characterization (11h00-12h30)

- 11:00 Measurement and characterization of circuits in the mm-wave and sub-THz range
 - Marco Spirito, Technical University of Delft, Netherlands
- 11:30 Nonlinear distortion in mm-wave SiGe HBTs: Modeling and measurements
 - Paulius Sakalas, University of Dresden, Germany
- 12:00 Accuracy investigations of calibration and de-embedding techniques
 - Manuel Potereau, University Bordeaux 1, France



Session 3: mm-wave systems (13h30-15h00)

- 13:30 Integrated mm-wave sensors with antenna-in-package: From concepts to applications
 - Andreas Stelzer, Johannes Kepler University Linz, Austria
- 14:00 Toward 100-Gbit/s 240-GHz short-range communication using SiGe-transceivers and an FPGA-based baseband
 - Janne Leivo, Trebax, Sweden
- 14:30 From Research to Industry: Highly integrated mm-wave transceiver for automotive radar applications
 - Erich Kolmhofer, Infineon - DICE GmbH & Co KG, Austria



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