

# SiGe-THz devices: Physics and reliability



Chair: T. Zimmer (*IMS Lab Univ. Bordeaux*)

Download the slides @:

<http://www.iee.et.tu-dresden.de/iee/eb/res/dot7/dot7.html>



# Research in Europe on Bipolar Circuits and Technology

---

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



## RF2THz at a glance

---

- The project CATRENE RF2THZ CT209 aims at the establishment of silicon technology platforms for emerging Radio Frequency (RF), Millimeter-Wave (MMW) and TeraHertz (THz) consumer applications.
- Duration:
  - 42 months: from 01.07.2011 to 31.12.2014
- Consortium:
  - 32 partners from 5 European countries
- Total effort:
  - 237.35PA
- Coordinator: Jean-Louis Carbonero (ST Microelectronics)



## 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

---

- Open Bipolar Workshop dedicated to Research in Europe on bipolar circuits and technology
- 4 sessions
  - Session 1: Device physics(9h15-10h45)
    - Coffee Break: 10h45-11h00
  - Session 2: Safe-Operating-Area(11h00-12h30)
    - Lunch Break: 12h30-14h00
  - Session 3: Reliability (14h00-15h30)
    - Coffee Break: 15h30-15h45
  - Session 4: Design with Reliability (15h45-17h15)
    - 17h15-17h30 Q&A, 17h30 End of Workshop
- Download the slides @:  
<http://www.iee.et.tu-dresden.de/iee/eb/res/dot7/dot7.html>  
Or send a mail: [thomas.zimmer@ieee.org](mailto:thomas.zimmer@ieee.org)



# Programme

---

- **Session 1: Physics based device simulation (9h15-10h45)**
  - *Christoph Jungemann, RWTH Aachen University*
- *Coffee Break: 10h45-11h00*
- **Session 2: Safe operating limits of SiGe-THz devices (11h00-12h30)**
  - *Anjan Chakravorty, IIT Madras, India, now guest professor at the University of Bordeaux*
- *Lunch Break: 12h30-14h00*
- **Session 3: Reliability of SiGe-THz devices (14h00-15h30)**
  - *Grazia Sasso, University of Naples, Italy now with Intel Germany*
- *Coffee Break: 15h30-15h45*
- **Session 4: Reliability aware circuit design (15h45-17h15)**
  - *Cristell Maneux, University of Bordeaux, France*
- **17h30: End of SiGe-THz device Tutorial**



# Acknowledgement

---

- This Workshop is part of the:
  - DOTSEVEN project supported by the European Commission through the Seventh Framework Programme for Research and Technological Development.
- Thanks to the IMS for hosting this WS.