



**Southeastern Michigan Section**  
**“Chapter IV” Speaker Series**  
**Wed, Dec 2, 2009, 4:00 pm**  
*Appetizers and Networking at 3:30 pm*  
**Room #1005, EECS Bldg,**  
**North Campus, University of Michigan**  
**1301 Beal Ave, Ann Arbor, MI**



**“100+GHz silicon SoCs: portable, self-testable, scalable”**

**Sorin P. Voinigescu**

Professor of Electrical and Computer Engineering  
University of Toronto

**Abstract:**

The most advanced SiGe BiCMOS and 32-nm CMOS technologies with  $f_T$  and  $f_{MAX}$  simultaneously exceeding 300 GHz have opened up the 100-200 GHz spectrum for massive integration of transceivers, antennas, and digital signal processors into Systems on Chip (SoCs) that would have been unthinkable even 5 years ago. What are the applications that we can address with such systems? What are the design techniques and circuit topologies that can be employed at 160 GHz in silicon? Can we test such systems in production at less than 10 cents per part? These are some of the questions I will try to answer during my talk. Examples of single-chip 93-GHz CMOS Doppler radar detection and 140-GHz SiGe BiCMOS radio transmission experiments through the air at 4 Gb/s over 1-2 m will be shown.

**Speaker’s Biography:**

**Sorin P. Voinigescu** received the Ph.D. degree in Electrical and Computer Engineering from the University of Toronto, Canada, in 1994. His Ph.D. dissertation was on the design and fabrication of VLSI compatible Si/SiGe p-MOSFET's. Between 1994 and 2000 he was with NORTEL in Ottawa, Canada where he was responsible for projects in high-frequency characterization and statistical scalable compact model development for Si, SiGe and III-V heterostructure devices. In April 2000 he co-founded Quake Technologies Inc., an Ottawa-area fables semiconductor company focusing on the design and fabrication of 10 Gb/s and 40 Gb/s Physical Layer ICs. Quake was acquired by AMCC in 2006. In September 2002 he joined the Electrical and Computer Engineering Department at the University of Toronto where he is a full Professor. His current research and teaching interests focus on the modeling and characterization of nanoscale semiconductor technologies and on design techniques and circuit topologies for mm-wave DSP, radio, radar and imaging ICs operating in the 90-GHz to 200-GHz range.

**Public Invited**

**Appetizers and Networking at 3:30 pm**