3rd SINANO Summer School

1 – 5 September 2008

Centro Residenziale Universitario
Bertinoro (FC), Italy

Foreword

The ARCES Research Center of the University of Bologna and the Italian Consortium for Nanoelectronics (IUNET) are pleased to welcome you at the Bertinoro Residential Center of the University of Bologna, to attend to the third SINANO summer school on “Modeling and Simulation of Silicon Nano-Devices”.

The SINANO summer school was established in 2005, in the frame of the SiNANO Network of Excellence (EU F.P. VI). The first two editions of the school were held in Glasgow, Scotland UK in 2005 and Bertinoro (FC) Italy in 2006, respectively.

The third edition is hosted by the consortium IUNET and the ARCES research center of the University of Bologna under the auspices of the European Integrated Project PULLNANO and of the European Network of excellence NANOSIL.

The school provides a comprehensive set of classes aimed at doctoral or post-doctoral level researchers from both industry and academia and will be taught by world's leading device simulation and electrical characterization experts.
The program consists of lectures and tutorials aimed at expanding and refining the students' knowledge of the design, optimization, simulation and characterization of cutting edge Nano-CMOS devices.

The specific topic areas covered by the school are:
- physical models for device simulation;
- analytical and compact models;
- electrical characterization techniques;
- device beyond-CMOS technology (More than Moore);
- technologies for photo-voltaic conversion.

In addition, on 6 September, right after the end of the School a workshop on the modeling of mobility in advanced MOSFETs, organized in the framework of the NANOSIL network of excellence will take place.

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SiNANO Silicon-based Nanodevices

PULLNANO

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Current trends in device modeling and simulation
Dr. Mark Stettler, INTEL Co. USA, “Beyond current CMOS Technology: opportunities and challenges”
Prof. Giorgio Baccarani, University of Bologna and IUNET, Italy, “Device physics for the modeling of future nano-scale silicon devices”

Variability and atomistic effects in nanoelectronics
Prof. Asen Asenov, University of Glasgow, Scotland UK, “Variability in Nano-Electronics”
Prof. Alexander L. Shluger, University College London, UK, “Atomistic effects in ultra-thin body devices and at the Si-SiO2 interface”

Transport models for device simulation
Prof. Tibor Grasser TU-Wien, Austria, “Device simulation based on the statistical moments of the Boltzmann transport equation”
Prof. David Esseni, University of Udine and IUNET, Italy, “Advanced transport modelling in pMOS transistors: basic issues and recent advancements”
Prof. Christoph Jungemann, Bundeswehr University, Germany, “Modeling of noise by Legendre polynomial expansion of the Boltzmann equation”
Prof. Andreas Schenk, ETHZ, Switzerland, “Simulation of quantum effects in nanoscale devices part I”
Prof. Antonio Gnudi, University of Bologna and IUNET, Italy, “Simulation of quantum effects in nanoscale devices part II”

Electrical characterization of nano-scale MOSFETs
Prof. Luca Selmi, University of Udine and IUNET, Italy, “Introduction to experimental characterization of nano-scale MOSFETs”
Prof. Guido Groeseneken, IMEC, Belgium, “Experimental characterization and modeling of the reliabity of electron devices”
Dr. Gerard Ghibaudo, IMEP INPG, France, “Experimental characterization of advanced nano-scale MOSFETs”

Devices beyond CMOS
Prof. Massimo Macucci, University of Pisa and IUNET, Italy, “Devices beyond CMOS technology”
Prof. Marco Sampietro, Politecnico of Milan, Italy, “Plastic transistors: technology and applications”
Prof. Marco Tartagni, University of Bologna, Italy, “Electron devices for cellular and molecular biology”

Analytical and compact models for nano-scale MOSFETs and memories
Prof. Raphael Clerc, IMEP INPG, France, “Device technology oriented analytical models”
Dr. Peter Baumgartner, Infineon Technologies, Germany, “RF and noise characterization of transistors and circuits”
Prof. Paolo Pavan, University of Modena and Reggio Emilia and IUNET, Italy, “Current trends in non-volatile memories”

Technology for photo-voltaic energy conversion
Dr. Michel Frei, Applied Materials, USA, “Silicon-based thin-film photovoltaic cells”
Dr. Barry P. Rand IMEC, Belgium, “Organic solar cells”
Dr. Mark Pinto, Applied Materials, USA “Technology development for photovoltaic energy conversion: the role of modeling and characterization”