CV of Antonio Gnudi

Education

- "Laurea" in Electrical Engineering in 1983 at University of Bologna
- Ph.D. degree in 1989 at University of Bologna

Professional activities

- Visiting scientist in 1988-1989 at the Mathematical Science Department of the IBM T.J. Watson Research Center, Yorktown Heights, USA.
- Research assistant of Electronic Engineering at the Faculty of Engineering of the University of Bologna from 1990 to 1998.
- Associate professor of Electronic Engineering at the University of Bologna from 1998 to present.

Research interests and achievements

Semiconductor device modeling

- TCAD-oriented mobility models for thin-body Si and III-V FETs, also including quasi-ballistic corrections;
- Semi-analytical models of junctionless FETs, also including doping fluctuation effects;
- Hydrodynamic model for non-equilibrium charge transport in short-channel transistors;
- Approximate solution of the Boltzmann Transport Equation (BTE) by means of an expansion of the distribution function in spherical harmonics and its application to hot-carrier induced phenomena;
- Development of numerical tools for the simulation of non-conventional post-CMOS nano-devices (nanowire FETs, double-gate FETs, FinFETs) based on semi-classical transport models (deterministic solution of the BTE) or quantum transport models (QTBM and non-equilibrium Green's functions);
- Modeling of energy filtering high-slope transistors (III-V TFETs and superlattice-based FETs);
- Modeling of devices based on alternative channel materials (III-V nFETs, graphene-based FETs, vertical graphene-base heterojunction transistors, carbon nanotubes FETs);
- Development of full-quantum device simulation tools based on k.p Hamiltonian for III-V semiconductors and tight-binding Hamiltonian for graphene.

Analog circuit design

- CMOS analog circuits for sensor applications and signal conditioning (integrated lock-in amplifier);
- CMOS analog circuits for RF applications (low-noise amplifiers, frequency synthesizers);
- modeling, design and characterization of MEMS switches for RF applications;
- CMOS nano-power wake-up radio receivers.

Scientific publications

AG is coauthor of more than 90 scientific papers published in international journals and more than 110 contributions presented at peer-reviewed international conferences.

According to the SCOPUS database, the h-index of AG is 28 and the total number of citations is more than 2500.

Patents

AG is co-inventor of 3 US patents in the integrated circuit area.

Participation to research projects

AG has been involved in several national and EU-funded projects mainly in the device modeling area, such as (EU FP7): STEEPER, E2SWITCH, GRAND, GRADE, III-V-MOS.

Institutional assignments

- Member of the Ph.D Board in “Electronics engineering, telecommunications and information technology” of University of Bologna;
- Member of the Scientific Board of the joint STMicroelectronics-University of Bologna lab in Bologna.