

Curriculum Vitae of Marcello Rosini

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Curriculum Vitae

Born in Modena on October 19, 1976.

“Laurea” in Physics in 2000 (full marks with honors) at the University of Modena and Reggio Emilia.

Civil service from January to July 2001.

In 2001 winner of a Ph.D. position at the University of Modena and Reggio Emilia.

Post-doc position at the University of Modena and Reggio Emilia, up to Jan-31 2008.

Currently post-doc position at the Fritz Haber Institut (MPG), Berlin.

Scientific curriculum

Laurea thesis at the Physics Department of the University of Modena and Reggio Emilia in the group of Prof. Carlo Jacoboni, working on Monte Carlo simulation applied to charge transport in semiconductors. Title of the Thesis: “Monte Carlo simulation of vertical electron transport in Si/SiO₂ superlattices”.

The Ph.D. activity, directed by Prof C. Jacoboni, was centered on the simulation of vertical transport properties in Si/SiO₂ superlattices with semiclassical Monte Carlo method and with a quantum approach using Wannier-Stark functions. A further research interest is the simulation of single electron transport in quantum wires with surface acoustic waves. The aim of this research is to propose quantum logic gates based on solid state devices. The title of the Ph.D. thesis is “Vertical Transport in Superlattices”.

During the Laurea and Ph.D. period I was fellow of the INFM (National Institute for Physics of Matter), and of S3 national center of INFM.

From March 2004 to June 2006, post-doc position at the University of Lecce, Dipartimento di Ingegneria dell'Innovazione, with the group of prof. Lino Reggiani, on electronic noise in mesoscopic structures. In particular the superlattice model is used to study shot noise for systems exhibiting hopping transport. A further research interest is the study of coherent effects of the interface roughness on electronic transport.

From July 2006 to January 2008, post-doc position at the University of Modena and Reggio Emilia, working with Prof. Rita Magri on ab-initio calculations of adsorption and diffusion on semiconductor surfaces.

From March to December 2007 affiliated to the CNR-INFM S3 centre in Modena.

From February to June 2008, post-doc position at the Fritz Haber Institut der Max Planck Gesellschaft, Berlin, with professor Peter Krater, working on the structural properties of surface steps in semiconductors and nucleation at steps.

Now working as a post-doc fellow at the University of Modena and Reggio Emilia, with prof. Rita Magri.

Teaching activities

During the last two years of the Ph.D. curriculum I held the exercise lectures of “Structure of Matter” at the Physics department of the University of Modena and Reggio Emilia, and I collaborated in preparing examinations.

I also taught Physics at secondary school, for a period of two months.

Other informations

Member of the organizing committee of HCIS14 conference (Nonequilibrium Carrier Dynamics in Semiconductors).

Member of the organizing committee of UPON4 conference (Unsolved Problems On Noise).

Co-editor of the volume 800 of AIP Conference Proceedings in Physics Series: Unsolved Problems On Noise.

Co-examiner of a physics degree thesis: “Studio del trasporto elettrico nei superreticoli con il metodo delle funzioni di Wannier-Stark”, University of Lecce.

Attendance at Conferences and Schools

- “Tutorial on quantum Monte Carlo method” held by professor D. Ceperley, CECAM - Lyon (France), October 22-26, 2001
- “Silicon Workshop”, Genova (Italy), February 6-8, 2002
- “European Material Research Society Spring Meeting”, Strasbourg (France), June 18-21, 2002
- National conference on physics of matter “INFMeeting 2002”, Bari (Italy), June 24-28, 2002
- “11th summer school of parallel computing”, CINECA - Bologna (Italy), July 8-19, 2002
- “National school of physics of matter”, Villa Gualino - Torino (Italy), September 9-20, 2002
- “Administration of a Linux system”, CICAIA - University of Modena and Reggio Emilia, March 2003
- “International Workshop on Computational Electronics”, Roma (Italy), May 25-28, 2003
- National conference on physics of matter “INFMeeting 2003”, Genova (Italy), June 23-25, 2003
- “13th International Conference on Nonequilibrium Carrier Dynamics in Semiconductors”, Modena (Italy), July 28 -August 1, 2003
- National conference on physics of matter “INFMeeting 2004”, Genova (Italy), June 8-10, 2004
- “12th International Symposium on Ultrafast Phenomena in Semiconductors”, Vilnius (Lithuania), August 22-25, 2004
- “4th International Conference on Unsolved Problems On Noise”, Lecce (Italy) June 5-10, 2005
- “14th International Conference on Nonequilibrium Carrier Dynamics in Semiconductors”, Chicago (USA), July 24-29, 2005
- “18th International Conference on Noise and Fluctuations”, Salamanca (Spain), September 19-23, 2005
- “Second international conference on Transport in Micro and Nano devices”, Barga (Italy), June 11-15, 2006
- “SANDiE Workshop SAN Simulation”, Duisburg (Germany), October 4-5, 2006
- “EMRS 2007 spring Meeting”, Strasbourg (France), May 27- June1 2007
- “Non-adiabatic dynamics at surfaces”, Reims (Germany), October 22-25, 2007
- “Towards reality in nanoscale materials”, Levi (Finland), December 10-13, 2007
- “Computational approaches to semiconductor, carbon and magnetic nanostructures”, CECAM (France), June 15-19, 2008

Communications and Posters at Conferences

- “Silicon Workshop”, 2002: ORAL: “Monte Carlo simulation of electron transport in Si/SiO₂ Superlattices”
- “EMRS Spring Meeting” 2002: POSTER: “Monte Carlo analysis of electron heating in Si/SiO₂ superlattices”
- “INFMeeting 2002”: POSTER: “Monte Carlo analysis of electron heating in Si/SiO₂

- superlattices”
- “SPIE International Symposium” 2002: POSTER: “Monte Carlo simulation of electron transport in Si/SiO₂ superlattices”
- “IWCE 9”, 2003: POSTER: “Semiclassical and Quantum transport in Si/SiO₂ superlattices”
- “INFMeeting 2003” 2003: POSTER: “Coherent transport in coupled quantum wires assisted by surface acoustic waves”
- “HCIS 13” 2003: POSTER: “Coherent transport in coupled quantum wires assisted by surface acoustic waves”
- “UFPS 12” 2004: ORAL: “Frequency dependence of shot noise in coherent resonant diodes”
- “IWCE 10” 2004: POSTER: “Single Electron Transport and Entanglement Induced by a Surface Acoustic Waves versus Free Ballistic Propagation in Coupled Quantum Wires”
- “UPON 4” 2005: POSTER: “The puzzle of shot noise suppression in a series of N tunnel barriers”
- “UPON 4” 2005: ORAL: “Shot Noise Suppression as Indicator of Coherent Tunneling in Resonant Diodes”
- “HCIS 14” 2005: POSTER: “Drift and diffusion in superlattices within Wannier-Stark approach”
- “ICNF” 2005: ORAL: Noise and diffusion in superlattices within the Wannier-Stark approach
- “IWCE11”: ORAL: Conductance of winding wires
- “ICPS” 2006: POSTER: Transport anisotropy in high mobility In_{0.75}Ga_{0.25}As 2DEGs
- “Second international conference on Transport in Micro and Nano devices”: ORAL: Drift diffusion and noise in hopping systems
- “EMRS 2007 spring Meeting”: ORAL: In diffusion on a $\alpha 2(2 \times 4)$ reconstructed InGaAs surface
- “EP2DS17-MSS”: POSTER: Transport anisotropy in 2D electron gases
- “HCIS15”: ORAL: Electron Transport in Superlattices
- “HCIS15”: ORAL: Roughness Effect on Electron Transport Through Quantum Wires
- “ICNF2007”: ORAL: Noise and Diffusion of Particles Obeying Asymmetric Exclusion Processes
- “Non-adiabatic dynamics at surfaces”, POSTER: In adsorption and diffusion on In-rich (2x4) reconstructed surfaces on GaAs(001)
- “Towards reality in nanoscale materials”, ORAL: In adsorption and diffusion on In-rich (2x4) reconstructed surfaces on GaAs(001)

Invited talks

- “Vertical transport in superlattices”, Dipartimento di ingegneria dell’innovazione, University of Lecce (Italy), December 4, 2003
- “Drift diffusion and noise in superlattices and hopping systems”, National Nanotechnology Laboratory, Lecce (Italy), June 2006
- “Drift diffusion and noise in hopping systems”, Second International Conference on Transport Phenomena in Micro and Nanodevices, Barga (Italy), June 2006
- “Diffusion and noise in hopping systems”, National Nanotechnology Laboratory, Lecce (Italy), December 2006