

Alberto Nocera

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Education

Universita degli Studi di Roma Tre, Italy	Physics	Ph.D., 2013
Universita degli Studi di Napoli "Federico II", Italy	Physics	M.S., 2009

Research Interests

Focusing on the study of strongly correlated materials, where the many degrees of freedom, such as charge, orbital, spin and lattice can induce new collective phenomena. My expertise covers both computational methods, such as the density matrix renormalization group DMRG (and time dependent variants) and analytical approaches, such as the non-equilibrium Keldysh techniques and Floquet formalism.

Professional Experience

2015-Present	Postdoctoral Research Associate, Center for Nanophase Materials Sciences, ORNL
2013-2015	Postdoctoral Research Associate, Northeastern University, Boston, MA

Peer Reviewed Journal Publications (also see [Publications](#))

1. "Interplay of charge, spin, and lattice degrees of freedom in the spectral properties of the one-dimensional Hubbard-Holstein model", A. Nocera, M. Soltanieh-ha, C. A. Perroni, V. Cataudella, A. E. Feiguin, Phys. Rev. B 90 195134 (2014).
2. "Noise-assisted charge pump in elastically deformable molecular junctions", CA Perroni, F Romeo, A Nocera, V Marigliano Ramaglia, R Citro, V Cataudella, Journal of Physics: Condensed Matter 26, 365301 (2014).
3. "The Effects of Different Electron-Phonon Couplings on the Spectral and Transport Properties of Small Molecule Single-Crystal Organic Semiconductors", C. A. Perroni, F. Gargiulo, A. Nocera, V.M. Ramaglia, V. Cataudella, Electronics 3 (1), 165-189 (2014).
4. "Single-parameter charge pumping in carbon nanotube resonators at low frequency", C.A. Perroni, A. Nocera, V. Cataudella, EPL (Europhysics Letters) 103 (5), 58001 (2013).
5. "Magnetic effects on nonlinear mechanical properties of a suspended carbon nanotube", A. Nocera, C.A. Perroni, V.M. Ramaglia, G. Cantele, V. Cataudella, Phys. Rev. B 87 155435 (2013).
6. "Probing nonlinear mechanical effects through electronic currents: the case of a nanomechanical resonator acting as electronic transistor", A. Nocera, C.A. Perroni, V.M. Ramaglia, V. Cataudella, Phys. Rev. B 86, 035420 (2012).
7. "Spectral, optical, and transport properties of the adiabatic anisotropic Holstein model: Application to slightly doped organic semiconductors", C.A. Perroni, A. Nocera, V.M. Ramaglia, V. Cataudella, Phys. Rev. B 83, 245107 (2011).
8. "Stochastic dynamics for a single vibrational mode in molecular junctions", A. Nocera, C.A. Perroni, V.M. Ramaglia, V. Cataudella, Phys. Rev. B 83, 115420 (2011).

Professional Meetings and Workshops

"Controlling the condensate in driven optical lattices" APS March meeting, San Antonio TX, USA	Mar 2015
"Pairing and nanoscale phase-separation in Bose-Fermi mixtures" Poster, XXVI IUPAP Conference on Computational Physics, CCP2014	Aug 2014

- “Phase diagram of a one-dimensional spin-full Bose-Fermi mixture at large boson densities” Mar 2014
 APS March meeting, Denver CO, USA
- “Magnetic effects on nonlinear mechanical properties of a suspended carbon nanotube NEMS” Feb 2013
 Invited Seminar, University of Regensburg, Germany
- “Probing nonlinear mechanical effects through electronic currents: The case of a nanomechanical resonator acting as an electronic transistor” Dec 2012
 Contributed Talk, ElecMol12:6th International meeting on molecular electronics, Grenoble, France
- “Stochastic dynamics for a single vibrational mode in molecular junctions” Dec 2012
 Poster, Spin Master Voice workshop, "Challenges and opportunities of Spin-Transfer Nano-Oscillators"
 Chateau de Villiers-le-Mahieu, France
- “Back-action effects on the electronic current in a Carbon Nanotube nanoelectromechanical system” Oct 2012
 Contributed Talk, MAMA-Hybrids - Multi-functional Hybrids And Organics, Ischia, Italy
- “Back-action effects on the electronic current in a self-detecting single-electron transistor” Oct 2012
 Contributed Talk, Non-Equilibrium Processes and Fluctuation-Dissipation Theorems, Capri, Italy
- “Back-action effects on the electronic current in a Carbon Nanotube nanoelectromechanical system” Jun2012
 Poster, Workshop on Surfaces, INterfaces and Functionalization Processes in Organic Compounds
 and Applications-SINFO Parma, Italy

Professional Service

Referee for Physical Review B (American Physical Society)

Graduate and Postdoctoral Advisors

Ph.D. Advisors: Prof. V. Cataudella, V. Marigliano Ramaglia, C. A. Perroni (Universita degli Studi di Napoli, Italy)
 Postdoctoral Advisors: Adrian E. Feiguin (Northeastern University, Boston, MA), G. Alvarez (ORNL), E. R. Dagotto (ORNL, University of Tennessee), B. G. Sumpter (ORNL).