

Curriculum Vitae

Name: Franco Pellegrini

Address: Corso Libertà 61, 20811, Cesano Maderno (MB), Italy

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Research Activity:

2012-2018 Postdoctoral Researcher (Assegnista di ricerca) on “Theory and Modeling of Frictional Phenomena in Nanosystems”
International School for Advanced Studies (SISSA), Trieste, Italy

Education:

- 2007-2011 Ph.D. in Condensed Matter Theory
International School for Advanced Studies (SISSA), Trieste, Italy
Thesis: “Quantum Dissipation at the Nanoscale”
Supervisors: Prof. Erio Tosatti, Prof. Giuseppe Santoro
- 2002-2007 Master’s degree in Physics – Scuola Normale Superiore (SNS), Pisa, Italy
Final mark 70/70 cum laude
- 2005-2007 Master’s degree in Physics – University of Pisa, Italy
Thesis: “Dynamics of a Quantum Phase Transition in the XXZ Model”
Supervisor: Prof. Rosario Fazio
Final mark 110/110 cum laude
- 2002-2005 Bachelor’s degree in Physics – University of Pisa, Italy
Thesis: “Fractal Behaviour of Fidelity in Chaotic Maps”
Supervisor: Prof. Rosario Fazio
Final mark 110/110 cum laude

Selected Scientific Publications:

- 2017 M. Teruzzi, F. Pellegrini, A. Laio, and E. Tosatti
“A Markov state modeling analysis of sliding dynamics of a 2D model”
J. Chem. Phys. 147, 152721
- 2016 F. Pellegrini, F.P. Landes, A. Laio, S. Prestipino, and E. Tosatti
“Markov state modeling of sliding friction”
Phys. Rev. E 94, 053001
- 2015 M. Kisiel, F. Pellegrini, G.E. Santoro, M. Samadashvili, R. Pawlak, A. Benassi, U. Gysin, R. Buzio, A. Gerbi, E. Meyer, and E. Tosatti
“Noncontact Atomic Force Microscope Dissipation Reveals a Central Peak of SrTiO₃ Structural Phase Transition”
Phys. Rev. Lett. 115, 046101

- 2014 M. Langer, M. Kisiel, R. Pawlak, F. Pellegrini, G.E. Santoro, R. Buzio, A. Gerbi, G. Balakrishnan, A. Baratoff, E. Tosatti, and E Meyer
"Giant frictional dissipation peaks and charge-density-wave slips at the NbSe₂ surface "
Nature materials 13 (2), 173
- 2011 F. Pellegrini, C. Negri, F. Pistolesi, N. Manini, G.E. Santoro, E. Tosatti
"Crossover from Adiabatic to Antiadiabatic Quantum Pumping with Dissipation"
Phys. Rev. Lett. 107, 060401

Teaching Experience:

- 2012-2016 Teaching Assistant of the course "Solid State Problems" (Prof. Tosatti)
International School for Advanced Studies (SISSA), Trieste, Italy
- 2016-2018 Teaching Assistant of the course "Quantum Mechanics Problems" (Prof. de Gironcoli)
International School for Advanced Studies (SISSA), Trieste, Italy

Skills:

- Scientific Experience in numerical and analytical modeling of complex classical and quantum dynamical systems. Proficiency with various analytical approaches and numerical tools (master equation, Markov state modeling, neural networks, molecular dynamics, mean field theories, tight binding, path integral, DMRG). Experience in the description of realistic material properties through effective model design.
- Software Experience in programming in multiple languages and frameworks for low level and numerical applications (C/C++/C#, Fortran, Python, bash, Mathematica), web and networking (HTML, Javascript, PHP, Ajax, SQL, WebSocket), 3D graphics (OpenGL, WebGL). Computer graphics skills (Photoshop, GIMP, Blender). Experience with multiple game engines (Unreal Engine, Unity), mobile development (Java, Android studio, Cocos2D), virtual reality (Oculus, Vive, WebVR), computer vision (openCV), neural networks (TensorFlow), robotics (Arduino).
- Languages Italian (native), English (fluent), French (basic)

