

Ricercatore confermato (assistant professor) in General Physics

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PERSONAL DATA

Date of birth: October 19th, 1960

Place of birth: Magione (Perugia), Italy

EDUCATION

- **Graduation in Physics** (110/110 cum laude) obtained on July 24th, 1984 at the University of Perugia (Italy).
- **Master in Biophysics** (30/30) obtained on October 26th, 1988 at the International School for Advanced Studies (ISAS) in Trieste (Italy).
- **Ph. D. in Biophysics (30/30)** obtained on October 26th, 1988 at the International School for Advanced Studies (ISAS) in Trieste (Italy).

TEACHING ACTIVITIES

- In the A.A. period 1991/92 - 1996/97 he did tutorials for the **General Physics I** and **General Physics II** courses of the Mechanical and Management Engineering degree programs of the Faculty of Engineering, University of Udine.
- Between A.A period 2001/02 - 2009/10 he taught the **Statistical Mechanics** course of the Bachelor of Science in Computational Physics course of the Faculty of Mathematical Physical and Natural Sciences, University of Udine. Between A.A 2004/05 and 2006/07 he taught the **Physics 3** course of the Bachelor of Science in Biotechnology, Interfaculty course at the University of Udine.
- Since A.A. 1997/98 to the present, he has continuously taught courses in **General Physics I** e/o **General Physics II** of the Management and Mechanical Engineering degree courses of the Faculty of Engineering (before) and Polytechnic Department of Engineering and Architecture (now) of the University of Udine.

MAIN RESEARCH TOPICS

- Characterization by Electron Paramagnetic Resonance (EPR) of polycrystalline-amorphous phase transitions; simulation of EPR spectra with disorder; low-frequency vibrational dynamics of macromolecules; links between electronic relaxation and site conformation; nuclear relaxation and low-frequency vibrational dynamics of macromolecules; conformational sub-states of biological macromolecules and relationships with EPR spectra.
- Vibrational dynamics of fractal surfaces and geometry bonds and dynamic exponents (fractal and spectral dimensions); adsorption and wetting of fractal surfaces; pore-filling and complete-wetting phenomena; interface and complete-wetting patterns of self-affine surfaces; wetting transition and depinning of interfaces; surfaces with geometric disorder and nature of depinning transition; depinning of interfaces and polymers in hierarchical structures; reentrant wetting and depinning on

self-affine walls; effect of bulk and surface disorder on the order of the wetting transition on self-affine surfaces; continuous and discontinuous transitions; exact calculation of critical exponents by renormalization group.

- Protein Folding; lattice models for protein folding; study of parameters affecting compactness and aggregation; folding kinetics and identification of paths responsible for low folding speed in particular sequences; Monte Carlo simulations of lattice models; study of the nature of folding transition in the presence of kinetic partitioning phenomenon; competition between folding and aggregation.
- Since 2016, he joined the ATLAS experiment (CERN) and he is an ATLAS author since 2017. His main activities in ATLAS include: TCAD simulations of 3D silicon detectors for the ATLAS experiment in collaboration with the ATLAS Radiation Damage group; testing of semiconductor devices (pixels) for the realization of the ATLAS experiment (CERN) apex detector for phase-2 of the LHC accelerator (high luminosity phase).

INVOLVEMENT IN NATIONAL PROJECTS

- PRIN 1999 - Local Unit Leader, University of Udine - Project title "Solubility and Aggregation of Proteins: a Statistical Mechanistic Approach." Duration of the project: 3 years. National coordinator: prof. A. Maritan
- FIRB 2005 - Member of the local group. Local group coordinator: prof. A. Dovier (Department of Mathematics and Computer Science, University of Udine). Project concerning prediction of protein tertiary structures and refinement of simulation models. Duration of the project: 3 years. National coordinator: prof. U. Monaco.

FELLOWSHIPS AND PERIODS ABROAD

- 1987 - Duration 1 month. With grant from the Angelo della Riccia Foundation went to the Department of Physics, University of Illinois (Illinois, Urbana-Champaign, USA), to the laboratory of Prof. H. Stapleton for one month for an internship in low temperature electron spin relaxation measurements in metal-proteins.
- 1991 - Duration 3 months. With a grant from the Angelo della Riccia Foundation he went to the Physics Department of the Katholieke Universiteit of Leuven in Belgium to work on Wetting Phenomena on Rough and Self-Affine Surfaces with Solid-on-Solid models and Monte Carlo approaches. The work was carried out under the supervision of Dr. J. O. Indekeu.
- 2000 - Duration 3 months. Went to the Institute for Physical Science and Technology, University of Maryland (USA) for research activities on Protein Folding models on lattice under the supervision of Prof. Devarajan Thirumalai.

PUBLICATIONS

Since 1984 to date, he has published more than 400 papers into international refereed scientific journals. (See at <https://air.uniud.it/browse?type=author&order=ASC&rpp=50&authority=rp01271>)