

Curriculum Vitae

Education

University of Reading (UK), Ph.D. Physics, July 1973

University of Pisa (IT), Laurea Physics, March 1969

Positions

Full Professor, Matter Physics, University of Pisa, November 2000 onwards

Full Professor, Quantum Optics, University of Messina, Nov. 1994-Oct. 2000

Associate Professor, Experimental Physics, University of Pisa, Nov. 1988-Oct. 1994

CNR Researcher/Senior Researcher, Atomic and Molecular Physics Institute, Pisa, Jan. 1972-Oct.1988

Teaching activity

Present: Introductory physics courses (mechanics, thermodynamics, electro-magnetism) and advanced courses (Optics and nano-optics), Engineering Faculty, University of Pisa.

Past: Quantum Optics, Optoelectronics, University of Messina.

Research activity

Atomic, Molecular and Laser Physics: A large part of my research activity has been devoted to experiments in this area. These investigations have ranged from analysis of energy partitioning at the microscopic level (binary collisions) to the study of macroscopic phenomena such as avalanche ionization. Also included in this area has been my work on the intrinsic properties of atoms and small molecules, principally investigated by high resolution laser spectroscopy. This study has comprised fundamental properties of matter as manifested in the precise measurement of the Rydberg constant. More recently, at the Laboratoire Aimé Cotton, Orsay, I have participated to experiments dealing with the control of the internal degrees of freedom (vibration and rotation) of ultracold molecules prepared by photoassociation of two laser cooled atoms. Currently, I am involved in the development of a multiple gyrolasers system (INFN project GINGER) to measure underground the consequences of the rotation of the Earth relative to the absolute space of Newton, (frame dragging and gravito-magnetism effects of general relativity).

Condensed Matter Physics: My research interests in this field began during my Ph.D. work "Polaron Anomalies in the Magnetic Behaviour of the III-V Semiconductors", at the University of Reading (UK), and have been resumed in recent years with pulsed laser ablation and deposition, light emitting materials and devices, photoluminescence, carbon nanotubes, ferroelectric materials and phenomena, micro-cavities and nanostructures, scanning probe microscopy (AFM, SNOM with particular contrast mechanisms), nanolithography through laser cooled atom beams, near-field nanowriting on azo-polymers, photonics, nano-optics and nano-plasmonics.

The interplay between these different areas of specialization is of great benefit for my research as well as for mentoring of young students and researchers.

Publications

Over 300 articles in peer-reviewed journals (h-index 28 from ISI Web of Science), over 250 contributions (including invited talks) to international conferences, 3 textbooks, 2 patents. As invited seminar speaker, I have presented the results of my research in prestigious institutions in various countries.

Research Experience Abroad

- USA: Brookhaven National Laboratory, University of Missouri-St. Louis, Lehigh University, JILA-Joint Institute for Laboratory Astrophysics Boulder, NIST-National Institute of Standards and Technology Gaithersburg
- Canada: Herzberg Institute of Astrophysics Ottawa
- France: Ecole Normale Supérieure Paris, Laboratoire Aimé Cotton Orsay
- Germany: Max Planck Institut für Quantenoptik Garching, Ulm University, Ludwig-Maximilian University München
- Denmark: Niels Bohr Institute Copenhagen

Enabling activities

Evaluation experience:

- In May 2011 I was nominated by the French Ministry of Research and Higher Education in the "Conseil Scientifique" of their [Evaluation Agency of Research and Higher Education](#) (AERES)
- Expert evaluator for the European Commission for the Directorate General Research and Innovation in various panels of FP5, FP6 and FP7
- Panel member of the International Science Foundation (Soros Foundation)

- Expert evaluator for several funding agencies in Europe, Middle East and USA
- Member (2007-2008) of the “junior” selective panel of the Institut Universitaire de France (IUF)
- General chair (2009) of the “senior” selective IUF panel and chair of “sciences” sub-panel (2010)
- Member and/or chair of recruitment committees (Universities, CNR, INFN, INFN)
- Referee for several scientific international journals
- External examiner of Ph.D. defense committees in various countries

Organization, management:

- Ab imis set up of a research laboratory on scanning probe microscopy at the University of Messina and head of the NanoLab at the Physics Department, Pisa University
- Scientific responsibility and management of national and European research projects and of bilateral exchange programs with Austria, Brazil, France, Japan, Russia, South Korea, USA
- Chair and/or member of Scientific and/or Organizing Committee of International Conferences and Schools.
- Member of the Advisory Editorial Board of Optics Communications (1994-98) and of the International Journal of Nanomaterials and Technology (present)
- 1996-2001 Elected in the board of the European Group of Atomic Spectroscopy
- 1997-2004 Elected in the board of Atomic, Molecular and Laser Physics Division, Italian Institute for the Physics of the Matter (INFN)
- 2000-2004 Nominated in the INFN Committee for Educational and Public Awareness
- 2001-2004 Nominated Coordinator of the INFN Committee for International Relations
- 2001-2006 Elected in the Executive Committee of the European Physical Society and nominated Treasurer for the years 2004-2006
- 2001-2005 Nominated in the Scientific Council of the Département des Sciences Physiques et Mathématiques, CNRS, France
- 2006-2009 Elected in the Executive Committee of the Division of the Atomic, Molecular and Optical Physics, American Physical Society
- 2006-2010 Elected in the Board of Directors of the Consorzio Interuniversitario per le Scienze Fisiche della Materia (CNISM, Italy)
- 2008-2012 Coordinator of Physics Courses at the Faculty of Engineering, University of Pisa
- 2009-2012 Elected in the Executive Committee of the Division of the Laser Science, American Physical Society
- 2009-2012 Nominated in the International Affairs Committee of the American Physical Society.

Awards

- 2009 Fellow of the European Academy of Sciences
 2004 Professor “Honoris causa”, St. Petersburg University, Russia
 2001 Fellow of the Institute of Physics, UK
 2000 Professor Qualification, France
 1987 NATO Senior Fellow
 1977 NATO Junior Fellow
 1976 Canada Council Fellow
 1971 Italian Physical Society "Young Physicist" Prize