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Positions held

2014-: Director, Argonne National Laboratory
2011- : Associate Laboratory Director, Physical Sciences & Engineering, Argonne National Lab
2011- : Professor of Physics, James Franck Institute, University of Chicago
1997-2011: Professor of Physics, Cambridge [2005-2011, Head of Department of Physics]
1992-1997: Head, Theoretical Physics Research, Bell Laboratories
1980-1997 and 1997-2001 (part-time) Member of Technical Staff, Bell Laboratories

Education

1977-1980, PhD in Physics, Cavendish Laboratory, University of Cambridge
1976-1977, Department of Physics, Massachusetts Institute of Technology
1973-1976, BA (1st class) in Natural Sciences (Physics), University of Cambridge

Other appointments

Associate Member, TWAS 2010
Fellow, Royal Society of London, 2007
Fellow, Institute of Physics, 2005
Matthias Scholar, Los Alamos National Laboratory, 2003-2004
Consultant, Los Alamos National Laboratory, 2004-
Consultant, National High Magnetic Field Laboratory, 2004-
Fellow, Trinity College Cambridge, 1997
Fellow, American Physical Society, 1989
Distinguished Member of Technical Staff, AT&T Bell Laboratories, 1989
Professeur Associé and Visiting Scientist, CNRS, Grenoble, 1986
Denman Baynes Student, Clare College, Cambridge 1979-80
Kennedy Scholar, Massachusetts Institute of Technology, 1976-77
Senior Scholar, Trinity College Cambridge, 1974-76

Scientific research

More than 200 articles in scientific journals and 6 patents, cited ~10000 times, h-index 50 (Web of Science).

Superconductivity. Collective modes. Phenomenology of high-temperature superconductivity. BEC-BCS crossover in fermionic ultra-cold atoms.

Materials. Microscopic theory of the ferroelectric phase transition in IV-VI compounds. Ordering in semiconductor alloys.

Non-linear dynamics. Theory of sliding charge density waves: screened dynamics, mode-locking, dynamic and self-organised critical behaviour.

Semiconductor optics. Theory of collective phenomena of excitons and polaritons.

Magnetic materials. Theory of colossal magnetoresistance and multiphase coexistence in manganites and other transition metal oxides. Theory of the resistance of disordered and magnetic semiconductors.

Applied science. Algorithms for holographic storage. Theory of optical fiber capacity. Semiconducting magnetic sensors. Acousto-optic switch. Modelling of ferroelectric devices. New materials for particle detectors. Materials for energy.