

Curriculum vitae

Michele Parrinello

Computational Science

Department of Chemistry and Applied Biosciences, ETH Zurich and

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Personal information

Date of birth: 7 September 1945

Place of birth: Messina, Italy

Nationality: Swiss / Italian

Residence: Lugano, Switzerland

Marital status: Married, with one child

Education

Italian *Laurea* in physics, University of Bologna, 1968

Professional experience

Professor in Computational Sciences, ETH, Zurich and Università della Svizzera Italiana USI, Lugano, Switzerland, 2001-present

Professor of Computational Chemistry, *Scuola Normale*, Pisa, Italy, 2004-2008

Director, Swiss Center for Scientific Computing (CSCS), Manno, Switzerland, 2001-2003

Director, Max-Planck-Institut für Festkörperforschung, Stuttgart, Germany, 1994-2001

Manager, IBM Research Laboratory, Zurich, Switzerland, 1991-1994

Research Staff Member, IBM Research Laboratory, Zurich, Switzerland, 1989-1991

Summer Visitor, IBM Research Laboratory, Zurich, Switzerland, 1987

Full Professor, International School for Advanced Studies (SISSA), Trieste, Italy, 1986-1989

Summer Visitor, University of Minnesota, Minneapolis, USA, 1986

Summer Visitor, IBM Research Laboratory, Yorktown, USA, 1985

Associate Professor, University of Trieste, Italy, 1982-1986

Visiting Scientist, Argonne National Laboratory, Chicago, USA, 1980-1981

Lecturer, University of Trieste, Italy, 1976-1982

Visiting Scientist, Imperial College, London, UK, 1975-1976

Lecturer, University of Messina, Italy, 1972-1977

Borsista del Consiglio Nazionale delle Ricerche, University of Messina, Italy, 1970-1971

Awards and Distinctions

Hewlett-Packard Europhysics Prize (with R. Car), European Physical Society (1990)
 Boys-Rahman Prize, Royal Society of Chemistry, UK (1994)
 Rahman Prize (with R. Car), American Physical Society (1995)
 Award in Theoretical Chemistry, American Chemical Society (2001)
 Schroedinger Medal of the World Association of Theoretically Oriented Chemists (2005)
 Triennial Somaini Physics Prize, Italian Physical Society (2006)
 Gutenberg Lecture Award, University of Mainz, Germany (2008)
 FOMMS Medal Award, University of Michigan, USA (2009)
 Sidney Fernbach Award (with R. Car), IEEE Computer Society, USA (2009)
 Dirac Medal (with R. Car), ICTP Trieste, Italy (2009)
 Berni J. Alder CECAM Prize (with R. Car), CECAM, Switzerland (2010)
 Marcel Benoist Prize, Marcel Benoist Stiftung, Federal Dept. of Home Affairs, Switzerland (2011)
 Enrico Fermi Prize, Italian Physical Society, Italy (2012)
 Hirschfelder Prize, University of Wisconsin-Madison, USA (2012)
Grande Ufficiale della Repubblica Italiana (2012)

Honorary degrees

Honorary Doctorate in Chemistry, University of Messina, Italy (2003)
 Honorary Doctorate in Materials Science and Technology, University of Rome 2, Italy (2005)
 Honorary Doctorate in Materials Science, University of Cagliari, Sardinia, Italy (2006)
 Honorary Doctorate in Industrial Chemistry, University of Como, Italy (2007)
 Honorary Doctorate in Physics and Chemistry of Biological Systems, Scuola Internazionale Superiore di Studi Avanzati, SISSA, Trieste, Italy (2008)
 Honorary Doctorate in Science, King's College, London, UK (2011)
 Honorary Doctorate in Science, University of St. Andrews, Scotland (2012)
 Honorary Doctorate in Science, Università degli Studi di Messina, Italy (2015)

Honorary academic appointments

Honorarprofessor, University of Stuttgart, Germany (1995)
 Honorary Fellow, Sidney Sussex College, Cambridge, UK (2005)
 Distinguished Visiting Professor, University of California, Santa Barbara, USA (2006/2007)
 Adjunct Professor, Università della Svizzera Italiana, Lugano, Switzerland (2006)
 Honorary Fellow, St. Catherine's College, Oxford, UK (2007)
 Honorary Professor, East China University of Science and Technology, Shanghai, China (2008)

Named lectures

Eli Burstein Lecturer in Materials Science, University of Pennsylvania, USA (1993)
 Gilbert Newton Lewis Lecturer, University of California, Berkeley, USA (2001)
 DuPont-Marshall Lecturer, University of Pennsylvania, Philadelphia, USA (2001)
 Lise Meitner Lecturer, Lise Meitner-Minerva Center for Computational Quantum Chemistry,
 Jerusalem, Israel (2001/2002)
 Celsius Lecturer, Uppsala University, Sweden (2002)
 Falk-Plaut Lecturer, Columbia University, New York, USA (2002)
 Jean Perrin Lecturer, Chemical Physics Division, Physical and Chemical Societies, France (2003)
 Linnett Visiting Professor, Cambridge University, UK (2005)
 Cyril Hinshelwood Lecturer, Oxford University, UK (2006/2007)
 Greg Watson Lecturer, Rutherford Appleton Laboratory, Didcot, UK (2007)
 Charles A. Coulson Lecturer, University of Georgia, Athens, USA (2008)
 Richard M. Noyes Lecturer, University of Oregon, Eugene, USA (2009)
 Almlöf-Gropen Lecturer, Centre for Theoretical and Computational Chemistry, Norway (2010)
 Arthur William Scott Lecturer, Cavendish Laboratory, Cambridge University, UK (2012)
 Mulliken Lecturer, University of Chicago, Chicago, USA (2012)
 Aneesur Rahman Lecturer, Argonne National Laboratory, Argonne, USA (2012)
 Charlemagne Distinguished Lecture, RWTH Aachen University, Aachen, Germany (2013)
 Pitzer Lecture, Ohio State University, Columbus, USA (2013)

Academy and learned society memberships

Fellow, American Physical Society (1991)
Socio corrispondente, Accademia dei Pericolanti, Italy (1992)
 Member, International Academy of Quantum Molecular Science (1995)
 Honorary Member of the Materials Research Society of India (1999)
 Member, Berlin-Brandenburgische Akademie der Wissenschaften, Germany (2000)
 External Scientific Member, Max Planck Society, Germany (2001-2012)
 Foreign Member of the Royal Society, UK (2004)
 Member, European Academy of Sciences (2004)
 Fellow, World Association of Theoretically Oriented Chemists (WATOC) (2005)
Socio corrispondente, Accademia Nazionale dei Lincei, Roma, Italy (2005)
 Foreign Member, *Istituto Lombardo, Accademia di Scienze e Lettere*, Milan, Italy (2007)
 Foreign Member, The National Academy of Sciences, USA (2010)
 Foreign Member, The American Academy of Arts and Sciences, USA (2012)
Socio nazionale, Accademia Nazionale dei Lincei, Rome, Italy (2014)

Society memberships

American Physical Society
 American Chemical Society
 Institute of Physics
 Swiss Chemical Society
 Italian Physical Society

Research interests

Computer simulations and modelling of condensed matter, chemical and biophysical systems:

- Ab-initio molecular dynamics
- Metadynamics
- Simulation of rare events
- Structural and chemical transformations in solids under the effect of pressure
- Nucleation
- Chemical reactions in condensed phases
- Protein-protein interaction

Publications

Over 600 research papers, review articles and edited books. His work has been cited 45'000 times, which makes him one of the most cited authors in physics and chemistry in the world. In particular, the first paper with Roberto Car is *Physical Review Letters*' 5th most cited of all time. His h-index is 106.

Current and past advisory activities

- Microsoft Science Advisory Board, Redmond, USA
- International Centre for Science and High Technology (ICS), Trieste, Italy
- International School for Advanced Studies, (SISSA), Trieste, Italy
- Scientific Council of the Fondazione Bruno Kessler, Trento, Italy
- Scientific Council of the Fondazione Silvio Tronchetti Provera, Milan, Italy
- Scientific Council of the Department of Materials and Devices, National Research Council, (INR), Rome, Italy
- Board of Centro E. Fermi, Rome, Italy
- Scientific Council of CINECA, Casalecchio di Reno (Bologna), Italy

Editorial activities

Has been or is a member of the editorial advisory board of:

- Chemical Physics*
- Chemical Physics Letters*
- ChemPhysChem*
- Computational Materials Science*
- Computing in Science and Engineering*
- Journal of Computer-Aided Materials Design*
- Journal of Physics*
- Science*
- Theoretical Chemistry Accounts*

Refereeing

Research proposals from Austria, Canada, Germany, Italy, Netherlands, Switzerland, United Kingdom, United States.

Scientific articles from *Europhysics Letters*, *Journal of Chemical Physics*, *Journal of Physical Chemistry*, *Journal of the American Chemical Society*, *Molecular Physics*, *Nature*, *Physical Review*, *Physical Review Letters*, *Science*, and many others.

Lectures

Several hundred seminars and colloquia delivered throughout the world at major universities, research and industrial laboratories and professional meetings.

3 most important publications

“Polymorphic transitions in single crystals: a new molecular dynamics method”

M. Parrinello and A. Rahman
J. Appl. Phys. **52**, 7182 (1981)

“Unified approach for molecular dynamics and density-functional theory”

R. Car and M. Parrinello
Phys. Rev. Lett. **55**, 2471 (1985)

“Escaping free-energy minima”

A. Laio and M. Parrinello
Proc. Natl. Acad. Sci. **99**, 12562 (2002)