



Curriculum Vitae Professor Dr Peter Zoller



Image: Markus Scholz | Leopoldina

Name: Peter Zoller

Date of Birth: 16 September 1952

Research Priorities: Quantum physics, solid-state physics, quantum information, laser light

Peter Zoller is a theoretical physicist and works in the field of quantum optics and quantum information. The focus of his research is on forming a bridge from quantum optics to quantum information and solid-state physics.

Academic and Professional Career

- since 2020 University Professor, Institute for Quantum Physics, Leopold-Franzens University Innsbruck, Innsbruck, Austria
- since 2020 Research Group Leader, Institute for Quantum Optics and Quantum Information, Austrian Academy of Sciences (ÖAW), Austria
- 2003 - 2020 Director of Research, Institute for Quantum Optics and Quantum Information, ÖAW, Austria
- 1994 - 2020 Professor of Physics, Institute for Theoretical Physics, Leopold-Franzens University Innsbruck, Innsbruck, Austria
- 1991 - 1994 Professor of Physics, Joint Institute for Laboratory Astrophysics (JILA), University of Colorado, Boulder, USA
- 1981 Habilitation, Leopold-Franzens University Innsbruck, Innsbruck, Austria
- 1978 - 1979 Max Kade Fellow, University of Southern California, Los Angeles, USA
- 1977 - 1990 Assistant Professor, Leopold-Franzens University Innsbruck, Innsbruck, Austria
- 1977 PhD, Leopold-Franzens University Innsbruck, Innsbruck, Austria

Functions in Scientific Societies and Committees

- since 2009 Member, Advisory Board, Physics Frontier Center, Joint Quantum Institute (JQI), University of Maryland, College Park, USA
- since 2009 Member, Advisory Board, Physics Frontier Center, JILA, University of Colorado, Boulder, USA
- 2009 - 2012 Member, Advisory Board, Centre for Quantum Engineering and Space-Time Research (QUEST), Leibniz University Hanover, Germany
- since 2005 Member, Advisory Board, Arnold Sommerfeld Center for Theoretical Physics, Ludwig Maximilian University (LMU) Munich, Germany
- 2001 - 2011 Member, Advisory Board, Max Planck Institute for Quantum Optics, Garching, Germany

Project Coordination, Membership in Collaborative Research Projects

- 2011 - 2014 Project "Perspectives of quantum information processing with Rydberg ions", Austrian Science Fund (FWF), Austria
- 1999 - 2008 Project "Control and Measurement of Quantum Systems", FWF, Austria
- 1999 - 2008 Spokesperson, Special Research Area "Quantum Control and Measurement", German Research Foundation, Germany
- 1998 - 2005 Project "Theoretical Quantum Optics and Quantum information", FWF, Austria

Honours and Awarded Memberships

- since 2024 Corresponding Member, Bavarian Academy of Sciences and Humanities, Munich, Germany
- 2019 Honorary Doctorate, University of Colorado, Boulder, USA
- 2019 Micius Quantum Prize (together with Juan Ignacio Cirac), Micius Quantum Foundation, University of Science and Technology of China (USTC), Hefei, China
- 2019 John Stewart Bell Prize, Centre for Quantum Information and Quantum Control (CQIQC), University of Toronto, Toronto, Canada
- 2018 Norman F. Ramsey Prize, American Physical Society (APS), USA
- 2018 Willis E. Lamb Award, Colloquium on Physics of Quantum Electronics (PQE), Snowbird, USA
- 2016 Simons Distinguished Visiting Scholar, Kavli Institute for Theoretical Physics (KITP), University of California, Santa Barbara, USA

- 2016 Herbert Walther Award, Optical Society of America, USA and German Physical Society (DPG), Germany
- 2015 Jacques Solvay Professor of Physics, International Solvay Institutes, Brussels, Belgium
- since 2014 Foreign Member, Max Planck Institute for Quantum Optics, Garching, Germany
- since 2013 Member, Academia Europea
- 2013 Distinguished Fellow, Max Planck Institute for Quantum Optics, Garching, Germany
- 2013 Wolf Prize in Physics, Wolf Foundation, Jerusalem, Israel
- 2012 Distinguished Fellow, Max Planck Institute for Quantum Optics, Garching, Germany
- 2012 Honorary Doctorate, University of Amsterdam, Amsterdam, The Netherlands
- 2011 Hamburg Prize for Theoretical Physics, Joachim Herz Foundation, Hamburg, Germany
- since 2011 Member, European Academy of Sciences and Arts
- 2010 Arnold Sommerfeld Lecturer, LMU Munich, Munich, Germany
- 2010 Moore Distinguished Scholar, Caltech – California Institute of Technology, Pasadena, USA
- 2010 Blaise Pascal Medal, European Academy of Sciences
- 2010 Benjamin Franklin Medal in Physics, Franklin Institute, Philadelphia, USA
- since 2010 Member, German National Academy of Sciences Leopoldina, Germany
- 2009 Science Prize, Stiftung Südtiroler Sparkasse, Innsbruck, Austria
- since 2009 Foreign Associate Member, National Academy of Sciences, USA
- since 2008 Foreign Associate Member, Royal Spanish Academy, Spain
- since 2008 Foreign Member, Royal Netherlands Academy of Arts and Sciences, The Netherlands
- 2008 Moore Distinguished Scholar, Caltech – California Institute of Technology, Pasadena, USA
- 2008 Frontiers of Knowledge Award in Basic Sciences, BBVA Foundation, Madrid, Spain
- 2007 Distinguished Lecturer, Technion, Haifa, Israel
- 2006 Visiting Professor, Institut Henri Poincaré, Paris, France
- 2006 Dirac Medal, International Centre for Theoretical Physics (ICTP), Trieste, Italy
- 2006 6th International Quantum Communication Award, Tamagawa University, Tokyo, Japan
- 2005 Lorentz Professor, Institute of Physics, Leiden University, Leiden, The Netherlands
- 2005 Niels Bohr Medal, UNESCO

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| 2005 | Max Planck Medal, DPG, Germany |
| 2004 | Loeb Lecturer, Harvard University, Boston, USA |
| 2004 | Yan Jici Professor (Chair), University of Science and Technology of China, Heifei, China |
| 2004 | Professor (Chair), Tsinghua University, Beijing, China |
| 2002 | Tirol Prize for Science, Regional Government of Tirol, Innsbruck, Austria |
| 2001 | Kardinal Innitzer Prize, Archdiocese of Vienna, Vienna, Austria |
| since 2001 | Member, ÖAW, Austria |
| 2000 | Senior Humboldt Award, Alexander von Humboldt Foundation, Bonn, Germany |
| 1998 | Erwin-Schrödinger Prize, Stifterverband, Bonn, Germany |
| 1998 | Max Born Prize, Institute of Physics (IOP), UK, DPG |
| 1998 | Wittgenstein Award, Federal Ministry of Science and Transport, Austria |
| 1993 | Fellow, APS, USA |
| 1988 | Visiting Fellow, JILA, University of Colorado, Boulder, USA |
| 1986 | Visiting Professor, Paris-Sud University, Orsay, France |
| 1983 | Ludwig-Boltzmann Prize, Austrian Physical Society (ÖPG), Austria |
| 1981 - 1982 | Visiting Fellow, JILA, University of Colorado, Boulder, USA |
| 1981 | City of Innsbruck Award for Scientific Research, Innsbruck, Austria |

Research priorities

Peter Zoller is a theoretical physicist and works in the field of quantum optics and quantum information. The focus of his research is on forming a bridge from quantum optics to quantum information and solid-state physics.

As a theorist, Peter Zoller has written essential work on the interaction of laser light and atoms. In addition to fundamental developments in quantum optics, he has been able to form bridges to quantum information and solid-state physics. A model of a quantum computer proposed by him and the Spanish physicist Ignacio Cirac in 1995 is based on the interaction of lasers with cold ions stored in an electromagnetic trap. The main features of this idea have been implemented experimentally in recent years. It is one of the most promising concepts for the development of a scalable quantum computer.

Along with his research colleagues, Peter Zoller has also established a link between quantum physics and solid-state physics. One of his suggestions has been to build a quantum simulator with cold atoms.