Markus Aspelmeyer (* 14.6.1974, Schongau, Germany)

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Focus of Research

Quantum optical control of micro- and nanomechanics (quantum opto-mechanics)
Fundamentals of quantum optics and foundations of quantum physics
Low-energy tests of the gravity-quantum interface
Measurements of small-scale gravitational forces

Education

2002	PhD (Dr. rer. nat.) in Physics, Ludwig-Maximilians-Universität (LMU) Munich, Germany (with J. Peisl)
2000	Bachelor (Bakk.-Phil.) in Philosophy, Munich School of Philosophy, Germany
1998	Diploma (Dipl.-Phys.) in Physics, Ludwig-Maximilians-Universität (LMU) Munich
1993	Abitur, Gesamtschule Gymnasium Schongau, Germany

Career History

2019 –	Scientific Director, Institute for Quantum Optics and Quantum Information (IQOQI) Vienna, Austrian Academy of Sciences, Vienna, Austria
2009 –	Professor of Physics (Full Professor), Faculty of Physics, University of Vienna
2007 – 2009	Senior Scientist, IQOQI, Austrian Academy of Sciences, Vienna, Austria
2005 – 2006	Junior Scientist, IQOQI, Austrian Academy of Sciences, Vienna, Austria
2003 – 2006	Assistant Professor (Univ.-Ass.), Faculty of Physics, University of Vienna
2002 – 2003	Feodor Lynen Postdoctoral Fellow of the Alexander von Humboldt Foundation at the University of Vienna (Host: Anton Zeilinger)
1999 – 2001	Research Assistant, Ludwig-Maximilians-Universität (LMU) Munich, Germany

Various visiting positions, including at the California Institute of Technology (Caltech), the Institute for Condensed Matter Theory (ICMT) at the University of Illinois at Urbana-Champaign (UIUC), the Institute for Theoretical Atomic, Molecular and Optical Physics (ITAMP) at the Harvard-Smithsonian Center for Astrophysics and the Harvard Physics Department.

Honors and Awards

2017	Science Prize of the City of Vienna
2016	Berthold Leibinger Innovation Prize
2015	AMA Association for Sensors and Measurement Innovation Award
2015	ERC Consolidator Grant, European Research Council
2014	GEWINN Young Entrepreneur Prize 2014, Winner in category “High-Tech”
2014	Houska Prize 2014 Finalist, B&C Privatstiftung
2012	W.M. Keck Institute for Space Studies Distinguished Visiting Scholar, Caltech
2010	Friedrich Wilhelm Bessel Research Award, Alexander von Humboldt-Foundation
2009	ERC Starting Grant, European Research Council
2008	START Prize, Austrian Ministry of Science and Education (BMWF)
2008	Fritz Kohlrausch Prize, Austrian Physical Society
2007	Ignaz L. Lieben Prize, Austrian Academy of Sciences
2007	Fresnel Prize, European Physical Society

2002 Feodor Lynen Fellowship, Alexander von Humboldt Foundation

Elected Memberships

2018 Academy of Sciences and Humanities in Hamburg, Corresponding Member
2018 Austrian Academy of Sciences, Corresponding Member
2015 World Technology Network, Fellow
2013 European Academy of Sciences and Arts, Member
2013 American Physical Society, Fellow
2010 Austrian Academy of Sciences, Member of the "Junge Kurie" (Young Academy)

Editorial Boards

2018 Classical and Quantum Gravity, Guest Editor
2016 Quantum Science and Technology, Board Member
2011 Foundations of Physics, Guest Editor
2008, 2014 New Journal of Physics, Guest Editor

Institutional Responsibilities

2014 - Speaker of the Vienna Graduate School on “Complex Quantum Systems” (CoQuS)
2012 - Member of the Faculty Board, Faculty of Physics, University of Vienna, Austria
2010 - Speaker of the Vienna Center for Quantum Science and Technology (VCQ)
2010 - Partner Investigator, Australian Research Council (ARC) Center for Engineered Quantum Systems (EQUS), Australia

Commissions of Trust

2019 - Scientific Advisory Board, Munich Center for Quantum Science and Technology (MCQST)
2015 - Chairman of the Advisory Board, Crystalline Mirror Solutions GmbH
2014 - 2016 Member of the Board, Chemisch-Physikalische Gesellschaft (CPG)
2013 - 2018 Scientific Advisory Board, Max-Planck Institute for Gravitational Physics (Albert-Einstein Institute)
2013 - 2014 Executive Committee (Member at Large), Topical Group on Quantum Information, American Physical Society
2012 - 2015 Board of Directors, Young Academy (“Junge Kurie”) of the Austrian Academy of Sciences
2011 - APART and DOC Prize Committee of the Austrian Academy of Sciences

Review Panel Member among others of the Swiss National Science Foundation (SNF), the European Commission (EC), the U.S. National Science Foundation (NSF), the German Research Foundation (DFG), the French Research Agency (ANR), the Netherland National Research Council (NWO)

Other Activities

2013 Co-Founder of ‘Crystalline Mirror Solutions GmbH’
2010 Founding Member of the Vienna Center for Quantum Science and Technology (VCQ)

Organization of Conferences

2019 “ITAMP workshop on Laboratory Cosmology: AMO Physics Techniques and Applications”, ITAMP, Harvard, USA, with Hossein Sadeghpour, Andrew Geraci
2019 “Primordial black holes, de Sitter space and quantum tests of gravity”, DESY Hamburg, Germany, with Wilfried Buchmüller, Karsten Danzmann, Georgi Dvali, Elisabetta Gallo, Jürgen Schmitt, Roman Schnabel

2018 "Relativistic Quantum Information North (RQI-N) 2018", Vienna, Austria, with Caslav Brukner, Alessio Belenchia, Esteban Castro Ruiz, Flaminia Giacomini, Philip Höhn

2018 Gordon Research Conference on "Mechanical Systems in the Quantum Regime", Ventura, CA, USA, with John Teufel

2016 "Quantum Physics and Gravity", 5-week thematic program funded by the Erwin-Schrödinger-Institute (ESI), with Caslav Brukner, Daniel Grumiller, Domenico Giulini, Soo-Jong Rey

2015 "Gravitation 2015", with D. Grumiller; 4-week centennial event at the Austrian Academy of Sciences targeted towards a general audience; including 8 public lectures, an education program for school classes, guided public exhibit and a 3-day scientific workshop "100 years of curved space-time"; the general program attracted more than 2,000 visitors

2015 "Probing the Mystery: Theory and Experiment in Quantum Gravity", Galiano Island, Canada, with Philip C. E. Stamp, William G. Unruh, Robert M. Wald

2014 Invited Session on "Quantum Foundation Meets General Relativity", 14th Växjö Conference "Quantum Theory: from Problems to Advances", Sweden; Session Chair, with Caslav Brukner

2014 "18th International Winterschool on New Developments in Solid State Physics", Mauterndorf Castle, Austria; Member of the Organizing Committee

2013 Conference "Quantum Nano- and Micromechanics", Monte Verita, Switzerland, with Tobias Kippenberg and Martino Poggio

2012 OSA Incubator Meeting on "Cavity Optomechanics", Washington D.C., USA, with Pierre Meystre

2012 11th International Conference on Quantum Measurement, Information and Computing "QCMC2012", Vienna, Austria, Co-Organizer

2010 International Academy Traunkirchen Workshop "What exists in the quantum world?", Traunkirchen, Austria, with Anton Zeilinger

2010 438th WE-Hereaus Seminar "Quantum Optics of Nano- and Micromechanical Systems", Bad Honnef, Germany, with Florian Marquardt and Tobias Kippenberg

2009 2nd Vienna Symposium "Foundations of Modern Physics", Vienna, with Anton Zeilinger and Caslav Brukner

2008 423rd WE-Heraeus Seminar "New Frontiers in Quantum Information Science", Bad Honnef, Germany, with Michael Wolf

2008 CLEO/QELS "Joint Symposium on Novel Resonators", San Jose, CA, USA, Symposium Chair, with Hui Cao

Selected Publications and Invited Presentations

ISI Highly Cited Researcher (2017,2018), more than 100 publications, 19 in Nature and Science, 2 patents, including

- "Hanbury Brown and Twiss interferometry of single phonons from an optomechanical resonator". S. Hong, R. Riedinger, I. Marinkovic, A. Wallucks, S. G. Hofer, R. A. Norte, M. Aspelmeyer, S. Gröblacher, Science 358, 203-206 (2017)
- "Cavity cooling of an optically levitated sub-micron particle". N. Kiesel, F. Blaser, U. Delic, D. Grass, R. Kaltenbaek, M. Aspelmeyer, PNAS USA 110, 14180 (2013)
- "Tenfold reduction of Brownian noise in optical interferometry". G. D. Cole, W. Zhang, M. J. Martin, J. Ye, M. Aspelmeyer, Nature Photonics 7, 644–650 (2013)
- "Laser cooling of a nanomechanical oscillator into its quantum ground state". J. Chan, T. P. Mayer Alegre, A. H. Safavi-Naeini, J. T. Hill, A. Krause, S. Gröblacher, M. Aspelmeyer, O.Painter, Nature 478, 89-92 (2011)
- „Observation of strong coupling between a micromechanical resonator and an optical cavity field". S. Gröblacher, K. Hammerer, M. R. Vanner, M. Aspelmeyer, Nature 460, 724-727 (2009)
- „Self-cooling of a micro-mirror by radiation pressure". S. Gigan, H. R. Böhm, M. Paternostro, F.

Blaser, G. Langer, J. B. Hertzberg, K. Schwab, D. Baeuerle, M. Aspelmeyer, A. Zeilinger, Nature 444, 67-70 (2006)

More than 200 invitations to international conferences, workshops, colloquia and advanced graduate schools, more than 20 public talks, including

- Jentschke Lecture, DESY, November 2018, Hamburg, Germany
- Kavli Colloquium, TU Delft, March 2017, Delft, Netherlands
- Ångström Lecture, Uppsala University, May 2016, Uppsala, Sweden
- Enrico Fermi Colloquium, LENS, November 2015, Florence, IT
- Plenary Lecture, Photonics West, February 2013, San Francisco, USA
- Plenary Lecture, German Physical Society Annual Meeting, March 2012, Stuttgart, Germany
- Stoner Colloquium, University of Leeds, April 2012, Leeds, UK