

Personal details

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address: Salurner Strasse 16/ Top 3, Wattens 6112, Austria

date and place of birth: 26 January 1978, Piatra Neamt, Romania

children: daughter Siena Johanna Genes, born 02.04.2010

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Education

- 2001-2006, Ph. D. in physics, University of Michigan, Ann Arbor, USA
- 1996-2000, B.S. in physics, University of Bucharest, Romania
- 1999, Erasmus student, University of Hannover, Hannover, Germany
- 1992-1996, high-school Petru Rares, Piatra Neamt, Romania

Research career

Positions

- 2013 -... independent senior researcher at the University of Innsbruck, Austria
- 2012, visiting scientist at the University of Vienna, Austria (groups of Profs. M. Aspelmeyer and M. Arndt) and at the University of Strasbourg, France (Prof. G. Pupillo)
- 2009-2012, senior postdoctoral researcher with Prof. Helmut Ritsch, Institute of Theoretical Physics, University of Innsbruck, Austria
- 2008-2009, postdoctoral researcher with Prof. Peter Zoller, Institute for Quantum Optics and Quantum Information, University of Innsbruck, Austria
- 2006-2008, junior postdoctoral researcher with Profs. David Vitali and Paolo Tombesi, Quantum Optics and Information Group, University of Camerino, Italy

Research themes

- Quantum optics
- Cavity QED with atoms
- Spin squeezing, quantum metrology
- Optomechanics with atoms and massive objects
- Entanglement generation
- Hybrid optomechanics with solid state and atomic systems

Publishing impact

- Citations total 1488 out of which 1329 after 2010 (according to google scholar)
- h-index 17 according to google scholar

Awards:

- 2013, winner of the Ludwig Boltzmann-Award 2013 (most outstanding theoretical physicist under age 35 in Austria during 2012-2013) of the Austrian Physical Society (ÖPG) for “groundbreaking work in the field of cavity optomechanics”
- 1999 – Erasmus fellowship (duration 6 months) at the University of Hannover, Germany with Prof. M. Lewenstein
- 1990-1996, winner of many awards (1st, 2nd and 3rd prizes) at high-school and pre-high-school national physics competitions in Romania

Fellowships and grants:

- 2015, participant as Innsbruck node in Hy-Mech (*Hybrid Mechanical Systems*), proposal soon to be submitted for the H2020-FETOPEN-2014-2015-RIA
- 2014, participant as Innsbruck node in OPENMAP (*Opto/electromechanical Platforms for Engineering Many-Body Physics*), proposal submitted for the H2020-FETOPEN-2014-2015-RIA
- 2013, granted funds from the ESF (European Science Foundation) to organize a strategic workshop “*Quantum technologies based on hybrid emitter - solid state systems*” that took place in Strasbourg, France between September 21st-24th, 2014 (chair) (€ - 20 K)
- 2013, granted an FWF stand-alone project (*Hybrid Cavity Quantum Optomechanics - P24968-N27*) as principal investigator from the Austrian Science Fund (€ - 214 K)

- 2013, granted funds from the SFB (Special Research Programs from FWF) and networks CCQED and CQOM to organize a workshop in Innsbruck, “*Cavity optomechanics – from the micro to the macroscale*” (Nov. 4-6), Innsbruck, Austria (chair) (€ - 20 K)
- 2013, participant in HYBRONICS (*Atomic Scale Hybrid Optomechanics*), proposal submitted for the call ICT-2013.9.7 FET Proactive: Atomic and molecular scale devices and systems, (not granted)
- 2013, participant in MOSFIT (*Multielement Optomechanical Systems for Information Technologies*), proposal submitted for the call ICT-2013.9.5 FET-Open Xtrack: Future and Emerging Technologies, (not granted)
- 2013, granted an STSM within the COST action MP1006: Fundamental Problems in Quantum Physics, project title: *Fundamental quantum aspects in the collective ultra-strong coupling regime of cavity QED*
- 2013, granted an STSM within the COST action MP1001: Ion Traps for Tomorrow’s Applications, project title: *Quantum elasticity of ion crystals*
- 2010-2011, postdoctoral research grant on the “Nanofibre Optical Interfaces for Ions, Atoms and Molecules” (european collaborative project)
- 2008-2010, postdoctoral research grant on the “Cavity-mediated Cooling of Molecules ” (european collaborative project)
- 2006-2008, postdoctoral fellowship award from the “L’Istituto Nazionale per la Fisica della Materia” and recipient of the “Rientro dei Cervelli” fellowship (Italy)
- 2003-2006, research assistantship from the University of Michigan, Ann Arbor, USA
- 2001-2003, Ph. D. fellowship and teaching assistantship from the University of Michigan, Ann Arbor, USA
- 1999, Erasmus fellowship, University of Hannover, Germany
- 1996-2000, B.S. fellowship from the University of Bucharest, Romania

Collaborations (past and present)

Local (Austrian)

- H. Ritsch and P. Zoller, University of Innsbruck
- M. Aspelmeyer and M. Arndt, University of Vienna

International

- P. R. Berman, University of Michigan, USA
- D. Vitali and P. Tombesi, University of Camerino, Italy
- M. Drewsen and A. Dantan, University of Aarhus, Denmark
- G. Pupillo and T. W. Ebbesen, ISIS and IPCSM, University of Strasbourg, France
- P. Treutlein, University of Basel, Switzerland
- H. J. Kimble, California Institute of Technology, Pasadena, California, USA
- A. Xuereb and M. Paternostro, Queen's University Belfast, Belfast, United Kingdom
- K. Hammerer, University of Hannover, Germany
- K. Ohmori, Institute for Molecular Sciences, Okazaki , Japan
- J. Schachenmayer, JILA and University of Colorado, USA.

Teaching and supervision activities

- Currently co-supervising L. Ostermann (Ph.D student, Innsbruck) and E. Tignone (Ph. D student, Strasbourg). Joint publications 2 Phys. Rev. Lett. , 2 Phys. Rev. A. and 1 arxiv paper.
- Co-supervised master thesis of D. Plankensteiner (currently co-supervising his Ph.D thesis). Joint publications 1 Phys. Rev. A. and 1 paper in the review process..
- Currently co-supervising T. Hinkel (master student). Joint publications: 1 accepted paper.
- Co-supervised R. Schulze (as a master student, Innsbruck). Joint publication 1 Phys. Rev. A.
- Co-supervised K. Jähne (awarded a PhD in 2010, Innsbruck), W. Niedenzu (awarded a Ph.D in 2012, Innsbruck). Joint publications 1 Phys. Rev. A and 1 Journal of Phys. B.
- Co-supervised A. Mari (as a master student, Camerino). Joint publications 1 Phys. Rev. A and 1 book contribution.
- 2001-2002, Teaching assistant (4 classes each of 20 students), University of Michigan, Ann Arbor, USA

Organization of conferences

- 2009, co-organizer “*Quantum Optics Meeting*”, Obergurgl, Austria
- 2013, main organizer “*Cavity optomechanics – from the micro to the macroscale*” (Nov. 4-6), Innsbruck, Austria
- 2014, main organizer “*Quantum Technologies based on hybrid emitter - solid state systems*” (Sept. 21-24), Strasbourg, France (ESF - strategic workshop)

Referee activity

- Refereed more than 150 papers for: Phys. Rev. Lett., Phys. Rev. A., Journal of Mod. Opt., Eur. Phys. J. D, Opt. Letts., etc.

Languages

- Romanian (mother tongue), English (fluent), Italian (almost fluent), German (almost fluent), French (reading)

Theses

- 2006, Atomic entanglement and decoherence, Ph. D. thesis supervised by Prof. P. R. Berman, University of Michigan, Ann Arbor. USA
- 2000, Two-mode gaussian states of light, B. S. thesis supervised by Prof. T. Marian, University of Bucharest, Romania

Conference participations, (invited) talks and seminars and research visits:

- December 2014, invited talk: *Quantum metrology, transport and state preparation with interacting systems of quantum emitters*, Theory Colloquium, University of Erlangen, (invited talk).
- December 2014, talk: *Quantum metrology, transport and state preparation with interacting systems of quantum emitters*, Engineering of quantum emitter properties, workshop, University of Innsbruck, (talk).
- August 2014, invited seminar: *Application of collective dynamics to quantum metrology and exciton transport*, at the invitation of Prof. D. Chang, (invited seminar).
- May 2014, collaboration visit on the topic: *Rydberg-based quantum simulators* and talk: *Protected state quantum metrology*, at the invitation of Prof. K. Omoji, IMS, Okazaki, Japan, (invited seminar).
- May 2014, collaboration visit: *Hybrid Optomechanical systems*, with Prof. A. Dantan at the University of Aarhus, Denmark.
- March 2014, *Multi-element Optomechanical Platforms*, seminar JILA, Boulder, Colorado, USA (invited seminar).
- March 2014, *Multi-element Optomechanical Platforms in the Linear and Nonlinear Regimes*, Gordon Research Seminar: Mechanical Systems in the Quantum Regime, Ventura Beach, CA, USA (invited talk).
- February 2014, *Protected state quantum metrology*, Quantum Optics meeting, Obergurgl, Austria (invited talk).
- November 2013, *Protected state enhanced quantum metrology with interacting two-level ensembles*, Workshop for quantum simulation of open quantum systems, FRIAS, Freiburg, Germany (talk)
- September 2013, *Single and multielement optomechanical platform*, Boltzmann Award talk, ÖPG annual meeting, Linz, Austria (invited talk)
- April 2013, *Optomechanical platforms: strong coupling and optical coalescence application in cavity QED*, University of Camerino, Camerino, Italy (invited seminar)
- December 2012, *Many body dynamics in optomechanical arrays*, SFB meeting, Vienna, Austria (talk)
- July 2012, *Collective optomechanics with arrays of membranes*, SFB meeting, Innsbruck, Austria (invited talk)
- May 2012, *Strong coupling in collective optomechanical systems*, seminar at the University of Vienna, Austria (invited talk)

- October 2011, *Quantum hybrid optomechanics*, invitations by Prof. M. Drewsen and Prof. A. Dantan at the University of Aarhus, Denmark (invited talk)
- April 2011, Workshop on *Quantum Information and Quantum Dynamics in Ion Traps*, Madrid, Spain (poster)
- March 2011, research visit, invited by Prof. K. Hammerer at the University of Hannover, Germany
- October 2010, *Nanofibre Optical Interfaces for Ions, Atoms and Molecules* project meeting, Bad Honnef, Germany
- September 2010, *Cold Quantum Matter: Achievements and Prospects*, EuroQUAM, Ischgl, Austria (poster)
- December 2009, *SFB (Spezialforschungsbereiche)* meeting, Vienna, Austria (talk)
- July 2009, research visit, invited by Prof. P. Domokos at the Budapest Quantum Optics Group, Budapest, Hungary (talk)
- July 2009, *Control of Quantum Dynamics of Atoms, Molecules and Ensembles by Light*, Nessebar, Bulgaria (talk)
- February 2009, *Cavity-mediated Cooling of Molecules* meeting, Obergurgl, Austria (organizer)
- October 2008, *Nanomechanics Workshop*, Munich, Germany (poster)
- April 2008, invited talk at the Institute for Quantum Optics and Quantum Information, University of Innsbruck, Austria (talk)
- May 2008, annual meeting of the *Division of Atomic, Molecular and Optical Physics*, State College, USA (talk)
- July 2007, workshop on *Nanomechanics: From Cells to solids* Pasadena, USA (talk)
- June 2007, *Central European Workshop on Quantum Information*, Palermo, Italy (talk)
- August 2006, seminar at the Research Center for Quantum Information, Bratislava, Slovakia (invited talk)
- March 2005, attended the EAB meeting of FOCUS (Frontiers in Optical Coherent and Ultrafast Science) center, Ann Arbor, Michigan, USA (poster)
- September 2004, invited talk at the FOCUS (Frontiers in Optical Coherent and Ultrafast Science) center, Ann Arbor, Michigan, USA (talk)
- May 2004, annual meeting of the *Division of Atomic, Molecular and Optical Physics*, Tucson, Arizona, USA (talk)
- May 2003, annual meeting of the *Division of Atomic, Molecular and Optical Physics*, Boulder, Colorado, USA (poster)