

PERSONAL

- **First name:** Stefano **Last name:** Zippilli
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EDUCATION

- **15/05/2006:** PhD degree in physics (grade: “sehr gut”, very good) at Universität Ulm.
Thesis: “Dynamics of cold atoms in an optical cavity”. Advisor: Prof. Giovanna Morigi.
 - **2003-2006:** PhD studies at Universität Ulm, working in the Department of Quantum Physics lead by Prof. Wolfgang Schleich. Research work on cold atoms in optical resonators under the supervision of Prof. Giovanna Morigi. The PhD studies have been financed by the european (FP5 IST) Network project QGATES.
 - **18/06/2002:** “Laurea” (master degree) in physics (grade: 110/110 cum laude), at Università degli studi di Camerino. Research work in the Quantum Optics Group.
Thesis: “Controllo della decoerenza in cavità” (“Decoherence control in cavities”). Advisor: Prof. David Vitali.
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OTHER EDUCATIONAL EXPERIENCES

- **14-18/02/2011:** School on “New Trends in Quantum Dynamics and Quantum Entanglement”, The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy.
 - **11-24/06/2006:** Summer School on “Scalable Quantum Information Processing and Computing” in Benasque, Spain (this school was part of the education and dissemination program of the FP6 Integrated Project SCALA).
 - **05-15/07/2005:** International School of Physics “Enrico Fermi” - COURSE CLXII QUANTUM COMPUTERS, ALGORITHMS AND CHAOS in Varenna, Italy.
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PROFESSIONAL EXPERIENCES

- **Since 03/06/2014:** Postdoctoral researcher at Università degli studi di Camerino (unicam), in the Quantum Optics Group lead by Prof. David Vitali.
 - From 03/06/2014 to 02/06/2016, “Assegno di ricerca: Squeezing ponderomotivo: ottimizzazione e sua applicazione in interferometri ottici per la rivelazione di forze deboli”.
- **From 02/05/2011 to 31/05/2014:** Postdoctoral researcher at Università degli studi di Salerno (UniSa), in the Quantum Theory group lead by Prof. Fabrizio Illuminati.
 - From 01/06/2013 to 31/05/2014, (“Assegno di ricerca: Correlazioni quantistiche”) financed by the european (FP7-ICT) project “Integrated quantum information technology” (IQIT).
 - From 01/06/2012 to 31/05/2013, (“Assegno di ricerca: Controllo di sistemi complessi forzati e dissipativi”) financed by the european (FP7-ICT) project “Integrated quantum information technology” (IQIT).
 - From 02/05/2011 to 30/04/2012, (“Assegno di ricerca: Sistemi Quantistici e Informatici Aperti”) financed by the european (FP7-ICT) project “Hybrid information processing” (HIP).
- **From 15/03/2010 to 31/03/2011:** Postdoctoral researcher at Technische Universität Kaiserslautern (TUK), in the Theoretical Quantum Optics Group lead by Prof. Michael Fleischhauer.
 - From 15/03/2010 to 15/09/2010, financed by the Marie-Curie-Network EMALI, (Contract No. MRTN-CT-2006-035369).
- **From 01/01/2010 to 28/02/2010:** Postdoctoral researcher at Universität des Saarlandes, in the Theoretical Quantum Physics Group lead by Prof. Giovanna Morigi.

- **From 01/12/2006 to 30/11/2009:** Postdoctoral researcher at Universitat Autònoma de Barcelona (UAB), in the Quantum Optics Group lead by Prof. Giovanna Morigi.
 - “Juan de La Cierva” individual Fellowship of the Ministerio de Educacion y Ciencias (Spanish Government).
- **From 03/02/2006 to 30/11/2006:** Postdoctoral researcher at ICFO–Institut de Ciències Fotòniques in Barcelona, in the Group lead by Prof. Jürgen Eschner.
 - Financed by the European (FP6-IST) Integrated Project SCALA.

PREPRINTS

- [a.29] • *Mechanical EPR entanglement beyond the resolved sideband regime with a finite-bandwidth squeezed reservoir*, M. Asjad, S. Zippilli, and D. Vitali, (2016).
arXiv:1603.02756
- [a.28] • *Discriminating the effects of collapse models from environmental diffusion with levitated nanospheres*, Jie Li, Stefano Zippilli, Jing Zhang, David Vitali, (2015).
arXiv:1508.00466

PUBLICATIONS

- [a.27] • *Generation and detection of large and robust entanglement between two different mechanical resonators in cavity optomechanics*, Jie Li, Iman Moaddel Haghighi, Nicola Malossi, Stefano Zippilli, David Vitali, New. J. Phys. **17**, 103037 (2015).
doi:10.1088/1367-2630/17/10/103037
arXiv:1506.03126
- [a.26] • *Steady-state nested entanglement structures in harmonic chains with single-site squeezing manipulation*, Stefano Zippilli, Jie Li, and David Vitali, Phys. Rev. A. **92**, 032319 (2015).
doi:10.1103/PhysRevA.92.032319
arXiv:1507.02836
- [a.25] • *Large Distance Continuous Variables Communication with Concatenated Swaps*, Muhammad Asjad, Stefano Zippilli, Paolo Tombesi, and David Vitali, Phys. Scr. **90**, 074055 (2015).
doi:10.1088/0031-8949/90/7/074055
arXiv:1411.7216
- [a.24] • *Entanglement and squeezing of continuous-wave stationary light*, Stefano Zippilli, Giovanni Di Giuseppe, David Vitali, New. J. Phys. **17**, 043025 (2015).
doi:10.1088/1367-2630/17/4/043025
arXiv:1411.5609
- [a.23] • *Simulating ground-state long distance entanglement in spin models with superconducting flux qubits*, Stefano Zippilli, Miroslav Grajcar, Evgeni Il'ichev, Fabrizio Illuminati, Phys. Rev. A **91**, 022315 (2015).
doi:10.1103/PhysRevA.91.022315
arXiv:1410.5444
- [a.22] • *Adiabatic quantum simulation with a segmented ion trap: Application to long-distance entanglement in quantum spin systems*, Stefano Zippilli, Michael Johanning, Salvatore Marco Giampaolo, Christof Wunderlich, Fabrizio Illuminati, Phys. Rev. A **89**, 042308 (2014).
doi:10.1103/PhysRevA.89.042308
arXiv:1304.0261
- [a.21] • *Non-Markovian dynamics and steady-state entanglement of cavity arrays in finite-bandwidth squeezed reservoirs*, Stefano Zippilli, Fabrizio Illuminati, Phys. Rev. A **89**, 03380 (2014).
doi:10.1103/PhysRevA.89.033803
arXiv:1401.8241

- [a.20] • *Stationary entanglement of photons and atoms in a high-finesse resonator*,
Hessam Habibian, Stefano Zippilli, Fabrizio Illuminati, Giovanna Morigi, Phys. Rev. A **89**, 023832 (2014).
doi:10.1103/PhysRevA.89.023832
arXiv:1311.2778
- [a.19] • *Surface Entanglement in Quantum Spin Networks*,
Stefano Zippilli, Salvatore Marco Giampaolo, Fabrizio Illuminati, Phys. Rev. A **87**, 042304 (2013).
doi:10.1103/PhysRevA.87.042304
arXiv:1302.1205
- [a.18] • *Entanglement replication in driven-dissipative many body systems*,
Stefano Zippilli, Mauro Paternostro, Gerardo Adesso, Fabrizio Illuminati, Phys. Rev. Lett. **110**, 040503 (2013).
doi:10.1103/PhysRevLett.110.040503
Erratum: Entanglement Replication in Driven Dissipative Many-Body Systems [Phys. Rev. Lett. 110, 040503 (2013)], Phys. Rev. Lett. **111**, 169901 (2013).
doi:10.1103/PhysRevLett.111.169901
arXiv:1204.5713
- [a.17] • *Quantum light by atomic arrays in optical resonators*,
Hessam Habibian, Stefano Zippilli, Giovanna Morigi, Phys. Rev. A **84**, 033829 (2011).
doi:10.1103/PhysRevA.84.033829
arXiv:1104.0182
- [a.16] • *Quantum-noise quenching in quantum tweezers*,
Stefano Zippilli, Bernd Mohring, Eric Lutz, Giovanna Morigi, Wolfgang Schleich, Phys. Rev. A (Rapid Communications) **83**, 051602 (2011).
doi:10.1103/PhysRevA.83.051602
arXiv:1011.1114
- [a.15] • *Quantum jumps induced by the center-of-mass motion of a trapped atom*,
J. Mauricio Torres, Marc Bienert, Stefano Zippilli, Giovanna Morigi, Eur. Phys. J. D, **61**, 21 (2011).
doi:10.1140/epjd/e2010-10387-4
arXiv:1007.0694
- [a.14] • *Ground-state cooling the vibrations of suspended carbon-nanotubes with constant electron current*,
Stefano Zippilli, Adrian Bachtold, Giovanna Morigi, Phys. Rev. B **81**, 205408 (2010).
doi:10.1103/PhysRevB.81.205408
arXiv:1003.3816
- [a.13] • *Two-photon lasing by a single quantum dot in a high-Q microcavity*,
Elena del Valle, Stefano Zippilli, Fabrice P. Laussy, Alejandro Gonzalez-Tudela, Giovanna Morigi, Carlos Tejedor, Phys. Rev. B **81**, 035302 (2010).
doi:10.1103/PhysRevB.81.035302
arXiv:0907.1861
- [a.12] • *Cooling Carbon Nanotubes to the Phononic Ground State with a Constant Electron Current*,
Stefano Zippilli, Giovanna Morigi, Adrian Bachtold, Phys. Rev. Lett. **102**, 096804 (2009).
doi:10.1103/PhysRevLett.102.096804
arXiv:0811.2942
- [a.11] • *Entanglement of distant atoms by projective measurement: the role of detection efficiency*,
Stefano Zippilli, Georgina A. Olivares-Rentería, Giovanna Morigi, Carsten Schuck, Felix Rohde, Jürgen Eschner, New J. Phys. **10**, 103003 (2008).
doi:10.1088/1367-2630/10/10/103003
arXiv:0806.1052
- [a.10] • *Nonlinear optics with two trapped atoms*,
Sonia Fernández-Vidal, Stefano Zippilli, Giovanna Morigi, Phys. Rev. A **76**, 053829 (2007).
doi:10.1103/PhysRevA.76.053829
arXiv:0708.1390

- [a.9] • *Resonance fluorescence of a cold atom in a high-finesse resonator*,
Marc Bienert, J. Mauricio Torres, Stefano Zippilli, Giovanna Morigi, Phys. Rev. A **76**, 013410 (2007).
doi:10.1103/PhysRevA.76.013410
arXiv:quant-ph/0702053
- [a.8] • *Ground state cooling in a bad cavity*,
Stefano Zippilli, Giovanna Morigi, Wolfgang P. Schleich, J. Mod. Optics **54**, 1595 (2007).
doi:10.1080/09500340600736843
arXiv:quant-ph/0603250
- [a.7] • *Mechanical effects of optical resonators on driven trapped atoms: Ground state cooling in a high finesse cavity*,
Stefano Zippilli, Giovanna Morigi, Phys. Rev. A **72**, 053408 (2005).
doi:10.1103/PhysRevA.72.053408
arXiv:quant-ph/0508075
- [a.6] • *Cooling trapped atoms in optical resonators*,
Stefano Zippilli, Giovanna Morigi, Phys. Rev. Lett. **95**, 143001 (2005).
doi:10.1103/PhysRevLett.95.143001
arXiv:quant-ph/0506030
- [a.5] • *Forces and spatial ordering of driven atoms in a resonator in the regime of fluorescence suppression*,
Stefano Zippilli, Janos Asboth, Giovanna Morigi, Helmut Ritsch, Appl. Phys. B **79**, 969 (2004).
doi:10.1007/s00340-004-1660-x
- [a.4] • *Collective effects in the dynamics of driven atoms in a high-Q resonator*,
Stefano Zippilli, Giovanna Morigi, Helmut Ritsch, Eur. Phys. J. D **31**, 507 (2004).
doi:10.1140/epjd/e2004-00137-8
arXiv:quant-ph/0402152
- [a.3] • *Suppression of Bragg scattering by collective interference of spatially ordered atoms with a high-Q cavity mode*,
Stefano Zippilli, Giovanna Morigi, Helmut Ritsch, Phys. Rev. Lett. **93**, 123002 (2004).
doi:10.1103/PhysRevLett.93.123002
arXiv:quant-ph/0703184
- [a.2] • *Decoherence control with fully quantum feedback scheme*,
David Vitali, Stefano Zippilli, Paolo Tombesi, Jean-Michel Raimond, J. Mod. Optics **51**, 799 (2004).
doi:10.1080/09500340408233597
- [a.1] • *Scheme for decoherence control in microwave cavities*,
Stefano Zippilli, David Vitali, Paolo Tombesi, Jean-Michel Raimond, Phys. Rev. A **67**, 052101 (2003).
doi:10.1103/PhysRevA.67.052101
arXiv:quant-ph/0211101

PRESENTATIONS IN CONFERENCES, WORKSHOPS AND MEETINGS

- [c.31] • **17-22/01/2016**: 605. WE-Heraeus-Seminar on MACROSCOPIC ENTANGLEMENT - Physikzentrum Bad Honnef, Germany.
POSTER *Entangling arrays of harmonic oscillators with squeezed light*, S. Zippilli.
- [c.30] • **10-12/09/2015**: IQIS 2015 – 8th Italian Quantum Information Science Conference, Monopoli, Italy.
TALK: *Steady state entanglement in arrays of harmonic oscillators*, S. Zippilli.
- [c.29] • **01-05/02/2015**: ANNUAL cQOM ITN WORKSHOP, Diavolezza, Switzerland.
TALK: *1. Entanglement and squeezing of continuous-wave stationary light. 2. Entanglement distribution along optomechanical and electro-optical chains*, S. Zippilli.
- [c.28] • **27-29/04/2014**: Meeting of the european project IQIT, Billund, Denmark.
TALK: *Quantum Simulation of long distance entanglement with superconducting flux qubits*, S. Zippilli.
- [c.27] • **23-27/09/2013**: IQIT Workshop, Corfu, Greece.
TALK: *Arrays of quantum systems in an entangled reservoir: steady-state entanglement replication in driven quantum many-body systems*, S. Zippilli.

- [c.26] • **22-24/04/2013:** Meeting of the european project IQIT, Bratislava, Slovakia.
TALK: *Adiabatic quantum simulation with a segmented ion trap: Application to long-distance entanglement in quantum spin systems*, S. Zippilli.
- [c.25] • **27-28/10/2012:** Meeting of the european project IQIT, Salerno, Italy.
TALK: *1. Long distance entanglement with trapped Ions (WP1). 2. Surface entanglement in spin networks. 3. Progresses on entanglement replication*, S. Zippilli.
- [c.24] • **26-27/04/2012:** Meeting of the european project IQIT, Jena, Germany.
TALK: *Long distance entanglement distribution in quantum many-body systems*, S. Zippilli.
- [c.23] • **13-18/03/2011:** Meeting of the German physical society (DPG Frühjahrstagung 2011), Dresden, Germany.
TALK: *Quantum-noise quenching in quantum tweezers*, S. Zippilli, B. Mohring, E. Lutz, W. Schleich, G. Morigi.
- [c.22] • **21-25/02/2011:** Workshop on New “Trends in Quantum Dynamics and Quantum Entanglement”, The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy.
POSTER: *Quantum-noise quenching in quantum tweezers*, S. Zippilli, B. Mohring, E. Lutz, W. Schleich, G. Morigi.
- [c.21] • **19-23/10/2009:** GDR09 - Annual Meeting of the GDR-I GNT, Science and Applications of Graphene and Nanotubes, Coma-ruga (Catalonia), Spain.
POSTER: *Cooling Carbon Nanotubes to the Phononic Ground State with a Constant Electron Current*, S. Zippilli, G. Morigi, A. Bachtold.
- [c.20] • **15-21/02/2009:** SCALA Conference 2009, Cortina, Italy.
POSTER: *Photonic interfaces based on single trapped atoms*, S. Zippilli, G. Morigi, G.A. Olivares-Renteira, C. Schuck, F. Rohde, J. Eschner.
- [c.19] • **04-09/02/2009:** CMMC Workshop, Obergurgl, Austria.
TALK: *Cavity cooling of trapped atoms and ions*, S. Zippilli, G. Morigi, A. Bachtold.
- [c.18] • **02-03/02/2009:** QOIT Meeting, Madrid, Spain.
TALK: *Quantum optics with semiconductor devices*, S. Zippilli, G. Morigi, E. del Valle, C. Tejedor, F.P. Laussy, A. Bachtold.
- [c.17] • **14-16/09/2008:** 2nd Annual meeting of the Marie-Curie-European-Network EMALI, Copenhagen, Denmark.
TALK: *Engineering and control of quantum states of photons, atoms, electrons and phonons*, S. Zippilli.
- [c.16] • **01-04/05/2008:** Workshop on modern trends in quantum optics and quantum information, Prague, Czech Republic.
INVITED TALK: *Engineering and control of quantum states of photons and atoms*, S. Zippilli, G. Morigi.
- [c.15] • **02-05/10/2007:** 1st Annual meeting of the Marie-Curie-European-Network EMALI, Heraklion, Greece.
TALK: *Quantum light sources with atoms, ions and quantum dots*, S. Zippilli, S. Fernandez Vidal, S. Rist, G. Morigi.
- [c.14] • **17-22/06/2007:** CLEO Europe IQCE 2007, Munich, Germany.
POSTER: *Dynamics of cavity cooling of trapped atoms*, S. Zippilli, G. Morigi, M. Bienert, J.M. Torres.
- [c.13] • **18-30/06/2006:** Workshop on Quantum-Classical Transition and Quantum Information, Benasque, Spain.
POSTER: *Collective dynamics of cold atoms in optical cavities*, S. Zippilli, S. Fernández-Vidal, J. Mompart, G. Morigi.
- [c.12] • **13-17/03/2006:** Meeting of the German Physical Society (DPG Frühjahrstagung, Frankfurt 2006), Frankfurt, Germany.
TALK: *Cooling trapped atoms in optical resonators*, S. Zippilli, G. Morigi.
- [c.11] • **12-17/06/2005:** CLEO-Europe EQEC 2005, München, Germany.
TALK: *Collective quantum dynamics of an atomic lattice coupled to an optical resonator*, G. Morigi, S. Zippilli, H. Ritsch.
- [c.10] • **06-09/06/2005:** 12th CEWQO - Central European Workshop on Quantum Optics, Ankara, Turkey.
(link to IOP proceedings)
INVITED TALK: *Quantum dynamics of cold atoms in optical resonators*, S. Zippilli, G. Morigi, H. Ritsch.

- [c.9] • **04-09/03/2005:** Meeting of the German physical society (DPG Frühjahrstagung 2005), Berlin, Germany.
POSTER: *Cooling atomic motion in an optical resonator*, S. Zippilli, G. Morigi.
- [c.8] • **21-24/09/2004:** MIQOP - International Workshop on “Microcavities in Quantum Optics”, Ringberg Castle, Tegernsee, Germany.
POSTER: *Motion of driven atoms in cavity in the regime of suppression of fluorescence*, S. Zippilli, J. Asboth, G. Morigi, H. Ritsch.
- [c.7] • **21-24/09/2004:** MIQOP - International Workshop on “Microcavities in Quantum Optics, Ringberg Castle, Tegernsee, Germany.
POSTER: *Collective effects in the dynamics of driven atoms in a high-Q resonator*, G. Morigi, S. Zippilli, H. Ritsch.
- [c.6] • **01-05/09/2004:** 333. Wilhelm and Else Heraeus-Seminar, “New Frontiers in Quantum Theory and Measurement” - Schloss Reisenburg, Günzburg, Germany.
POSTER: *Dynamics of transversally driven optical cavity*, S. Zippilli, G. Morigi, H. Ritsch.
- [c.5] • **21-26/03/2004:** Meeting of the German physical society (DPG Frühjahrstagung 2004), München, Germany.
TALK: *Collective interference of N driven dipoles with a high-Q cavity mode*, S. Zippilli, G. Morigi, H. Ritsch.
- [c.4] • **06-12/03/2004:** QUEST - International Conference, “Quantum information with Atoms, Ions and Photons” Conference, La Thuile, Italy.
POSTER: *Dynamics of transversally driven optical cavity*, S. Zippilli, G. Morigi, H. Ritsch.
- [c.3] • **February 2004:** Ulm-Augsburg-Meeting, Augsburg, Germany.
TALK: *Collective interference of N driven atomic dipoles with a high-Q cavity mode*, S. Zippilli, G. Morigi, H. Ritsch.
- [c.2] • **27/09 - 02/10/2003:** EURESCO Conference on Quantum Optics and Nanotechnology, Granada, Spain.
POSTER: *Interference effects in the dynamics of driven atoms coupled to a cavity mode*, S. Zippilli, G. Morigi.
- [c.1] • **29/04 - 04/05/2003:** YEP Meeting 2003, Budmerice, Slovakia.
TALK: *Decoherence control in microwave cavities*, S. Zippilli, D. Vitali, P. Tombesi, J.M. Raimond.

OTHER ACHIEVEMENTS

- **Scientific referee** for Physical Review Letters, Physical Review A, Physical Review B, New Journal of Physics, Journal of the Optical Society of America B, Optics Express, Optics Communications, Physics Letters A, Physics A, European Physical Journal D, Scientific Reports.
- **Languages:** Italian (native), Spanish (fluent), English (fluent), German (basic).