Curriculum Vitae

Dr. Francesco Piazza

Date and birthplace:	January 28, 1983, Castel San Pietro Terme (BO), Italy
Citizenship:	Italian
Knowledge of foreign languages:	English and German, fluent in written and spoken language
Work address:	Max-Planck Institute for the Physics of Complex Systems Nöthnitzer Straße 38, 01187 Dresden, Germany
Phone:	+49 351 871-2212
E-mail:	piazza@pks.mpg.de
Webpage:	http://www.pks.mpg.de/strongly-correlated-light-matter-systems/

Research Interests

- Non-equilibrium collective phenomena in driven/dissipative quantum systems
- Many-Body Quantum Optics
- Enhanced sensing with hybrid atom-photon interferometers
- Quantum Criticality in Strongly Correlated Fermionic Systems

Academic career:

2017-:	Research Group Leader Host: Max-Planck Institute for the Physics of Complex Systems (Dresden)
2015-2017:	APART research fellow at the University of Innsbruck Host: Prof. H. Ritsch, Institute of Theoretical Physics
2013-2014:	Post-doc at the TU Munich. Group of Prof. W. Zwerger
2011-2013:	Alexander Von Humboldt Fellow. Host: Prof. W. Zwerger, TU Munich
2007-2011:	Ph.D. in Physics, INO-CNR BEC Center and University of Trento, Italy
2002-2007:	Degree in Physics, University of Bologna, Italy

Selected conference talks

7) "Interaction-induced transparency for polaritons in photonic crystal waveguides",
Conference: Quantum Optics IX, Danzig 2017

6) "Non-equilibrium Many-Body Physics with Strongly Coupled Atoms and Photons",
Conference: Max-Planck Society Symposium, Berlin 2016

5) "A Crystal of Atoms and Photons in Free Space",
Conference: Winter Colloquium - Physics of Quantum Electronics, Snowbird(UTAH) 2016

4) "Dynamical Self-Ordering of Superfluids and Light",
Conference: Quantum Optics, Obergurgl, 2016

3) "Quantum Kinetics of Ultracold Atoms inside an Optical Cavity",
Conference: Strongly correlated fluids of light and matter, Trento, 2015

2) "Critical Velocity and Current-Phase Relation of Dilute Ultracold Bosonic Atoms",
Conference: Nonlinear Waves–Theory and Applications, Beijing 2013

1) "Quantum Metrology with Spatially Resolved Atom Detection",
Conference: Theory of Quantum Gases and Quantum Coherence, Lyon 2012

Reviewer for:

- Physical Review Letters
- Physical Review A
- Europhysics Letters
- New Journal of Physics
- European Journal of Physics B
- European Journal of Physics D
- Annals of Physics
- Nature - Scientific Reports

Financed Projects and Awards

1) *Max-Planck Research Group Leader ("Centrally Announced Group").*
Awarded in 2016 from the Max-Planck Society.
Few hundreds applicants worldwide, candidates from chemistry, physics and technology,
~ 6 awarded.

2) *APART Fellowship.*
Awarded in 2014 from the Austrian Academy of Science.
Title: "Strongly Correlated Atoms Inside an Optical Resonator".
Awarded as the only theoretical physicist.

3) *Von Humboldt Fellowship.*
Awarded in 2011 from the Alexander Von Humboldt Foundation.
Title: "Many-Body Physics with Atoms inside Optical Cavities".

External Collaborations

- Darrick Chang, ICFO Barcelona, Spain
  Collaborating on strongly interacting photons
- Jan Chwedenczuk, University of Warsaw
  Collaborating on quantum metrology with hybrid light-matter systems
- Farokh Mivehvar, ITP Innsbruck, Austria.
  Collaborating on topological crystals of light and matter
- Matthias Punk, LMU Munich, Germany
  Collaborating on strongly correlated electrons
- Helmut Ritsch, ITP Innsbruck, Austria.
  Collaborating on crystals of light and matter, quantum metrology
- Wilhelm Zwerger, TU Munich, Germany
  Collaborating on non-equilibrium quantum field theory, strongly correlated electrons

Scientific Supervision

- Kieran Fraser, MPIPKS Dresden, Germany
  Supervising Ph.D. activity on crystals of light and matter
- Jad Halimeh, MPIPKS Dresden, Germany
  Supervising PostDoc activity on non-equilibrium quantum correlated matter
- Johannes Lang, TU Munich, Germany
  Supervising Ph.D. activity on non-equilibrium quantum field-theory and strongly interacting photons
- Stefan Ostermann, ITP Innsbruck, Austria
  Co-supervising Ph.D. activity on crystals of light and matter
- Karol Gietka, University of Warsaw, Poland
  Co-supervising Ph.D. activity on quantum metrology in cavity QED
- Michael Rips, TU Munich, Germany
  Supervised Master thesis on crystals of light and matter

Teaching Experience

- Quantum Mechanics, Technical University of Munich (2014).
  Teaching coordinator ("Übungsleiter"). Occasionally teaching substitute ("Lehrvertretung").
- Theoretical Solid State Physics, Technical University of Munich (2013-2014).
  Teaching coordinator ("Übungsleiter"). Occasionally teaching substitute ("Lehrvertretung").
- General Physics I, University of Trento (2008-2009).
  Teaching assistant.

Selected publications about many-body quantum optics

For publications statistics please visit Google Scholar:
http://scholar.google.it/citations?sortby=pubdate&hl=it&user=oLqiPjEAAAAJ&view_op=list_works

1. "Disorder-Driven Density and Spin Self-Ordering of a Spinor Bose-Einstein Condensate in a Cavity", F. Mivehvar, F. Piazza, H. Ritsch, Physical Review Letters 119, 063602 (2017); arXiv:1705.06382
2. "Superradiant Topological Peierls Insulator inside an Optical Cavity", F. Mivehvar, H. Ritsch, and F. Piazza, Physical Review Letters 118, 073602 (2017); arXiv:1611.04876
3. "Collective excitations and supersolid behavior of bosonic atoms inside two crossed optical cavities", J. Lang, F. Piazza, W. Zwerger, New Journal of Physics 19, 123027 (2017); arXiv:1707.00017
4. "Critical Relaxation with Overdamped Quasi-Particles in Driven-Dissipative Systems", J. Lang and F. Piazza, Phys. Rev. A 94, 033628 (2016); arXiv:1602.05102
5. "Spontaneous crystallization of light and ultracold atoms", S. Ostermann, F. Piazza and H. Ritsch, Physical Review X 6, 021026 (2016); arXiv:1601.04900
6. "Self-organised limit-cycles, chaos and phase-slippage with a superfluid inside an optical resonator", F. Piazza and H. Ritsch, Phys. Rev. Lett. 115, 163601 (2015); arXiv:1507.08644
7. "Quantum kinetics of ultracold fermions coupled to an optical resonator ", F. Piazza and P. Strack, Phys. Rev. A 90, 043823 (2014); arXiv:1407.5642
8. "Umklapp Superradiance with a Collisionless Quantum Degenerate Fermi Gas", F. Piazza and P. Strack, Phys. Rev. Lett. 112, 143003 (2014); arXiv:1309.2714
9. "Bose-Einstein Condensation versus Dicke-Hepp-Lieb Transition in an Optical Cavity", F. Piazza and P. Strack, and W. Zwerger, Ann. of Phys. 339, 135 (2013); arXiv:1305.2928

Highlights

1. Synopsis on "APS-Physics" May 24, 2016
2. Cover page of "Physical Review Letters", Volume 115, Issue 16 (2015)
3. Research Highlights on "Nature Physics", Nat. Phys. 4, 903 (2008);