

Curriculum Vitae

Dr. Francesco Piazza

Date and birthplace: January 28, 1983,
Castel San Pietro Terme (BO), Italy

Citizenship: Italian

Marital status: Married, two children

Knowledge of foreign languages: English and German, fluent in written and spoken language

Work address: Max-Planck Institute for the Physics of Complex Systems
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Research Interests

- *Systems:* hybrid light-matter setups in the quantum strong-coupling regime; for example photons coupled to (artificial) atoms or electrons in solid state.
- *Approach:* non-equilibrium quantum field theory merging quantum-optics and condensed-matter methods
- *Goals:* collective phenomena and many-body phases in quantum open systems; quantum non-linear optics, probing and controlling matter with quantum light.

Academic career:

2017-: Max-Planck Research Group Leader
Centrally awarded by the Max-Planck Society (5+4 year contract, W2-equivalent position)
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

- "The Quantum-Zeno Fermi-Polaron",
Conference: Korrelationstage, Dresden 2019
- "Non-equilibrium diagrammatic approach to strongly-interacting photons",
Conference: Quantum Simulations with Atoms and Light, Aarhus 2018
- "Supersolids with Light-Mediated Interactions",
Invited Talk at the APS-March-Meeting, Los Angeles, 2018
- "Interaction-Induced Transparency for Polaritons in Photonic Crystal Waveguides",
Conference: Quantum Optics IX, Danzig 2017
- "Non-equilibrium Many-Body Physics with Strongly Coupled Atoms and Photons",
Conference: Max-Planck Society Symposium, Berlin 2016
- "A Crystal of Atoms and Photons in Free Space",
Conference: Winter Colloquium - Physics of Quantum Electronics, Snowbird(UTAH) 2016

Organized conferences:

- "Many-body Physics with Ultracold Atoms and Beyond"
IBZ Munich, 2019. [Webpage](#)
- "Novel Paradigms in Many-Body Physics from Open Quantum Systems"
MPIPKS Dresden, 2018. [Webpage](#)
- (UPCOMING) "Shedding Quantum Light on Strongly Correlated Materials "
MPIPKS Dresden, 2021.
- (UPCOMING) "Non-Hermitian Topology: from Classical Optics to Quantum Matter"
MPIPKS Dresden, 2021.

Reviewer for:

- Physical Review Letters, Physical Review B, Physical Review A, Physical Review R
- Nature
- New Journal of Physics
- Annals of Physics
- European Journal of Physics B,D; Europhysics Letters

Editor for:

- PLOS One

Current External Collaborations

- Darrick Chang, ICFO Barcelona, Spain
Collaborating on strongly interacting photons
- Sebastian Diehl, ITP Cologne, Germany
Collaborating on out-of-equilibrium critical strange metals
- Tobias Donner, ETH Zurich, Switzerland
Collaborating on many-body cavity QED with ultracold atoms
- Frank Schlawin and Dieter Jaksch, University of Oxford, UK
Collaborating on cavity-induced electron superconductivity
- Farokh Mivehvar and Helmut Ritsch, ITP Innsbruck, Austria.
Collaborating on topological crystals of light and matter, quantum metrology
- Matthias Punk, LMU Munich, Germany
Collaborating on strongly correlated electrons
- Richard Schmidt, MPQ Munich, Germany
Collaborating on impurity physics out of equilibrium

Current Internal Collaborations

- David Luitz, MPIPKS Dresden, Germany
Collaborating on typicality in open quantum systems
- Roderich Moessner, MPIPKS Dresden, Germany
Collaborating on open quantum spin liquids

PhD- and Master-Thesis Supervision

- Kieran Fraser, MPIPKS Dresden, Germany
Supervising Ph.D. activity on crystals of light and matter
- Christian Johansen, MPIPKS Dresden, Germany
Supervising Ph.D. activity on Floquet open systems
- Johannes Lang, TU Munich, Germany
Co-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

PhD-Thesis Referee

- Arthur Jungkind, ITP Innsbruck, 2019
- Andrea Morales, ETH Zurich, 2018
- José Lebreuilly, BEC-Center and University of Trento, 2017