

# 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  
Nöthnitzer Straße 38, 01187 Dresden, Germany

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Webpage: <http://www.pks.mpg.de/strongly-correlated-light-matter-systems/>

### Research Interests

- *Subject:* strong-coupling QED within materials.
- *Approach:* non-equilibrium quantum field theory merging quantum-optics and condensed-matter methods
- *Goals:* understand collective phenomena and many-body phases, with applications in quantum nonlinear optics and metrology, as well as in 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

### **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

### **Financed Projects and Awards**

1. *Max-Planck Research Group Leader (“Centrally Announced Open-Topic Group”)*.  
Awarded in 2016 from the Max-Planck Society. [Webpage](#)  
> 1000 Applicants worldwide  
~ 10 – 15 awarded.  
Budget: 1.7 Millions for 5 years.
2. *Von Humboldt Host*.  
Hosting an Alexander Von Humboldt Post-Doc (Peter Karpov, start 2019).  
Title: “Quantum Soft-Matter in Cavity-QED”.
3. *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.
4. *Von Humboldt Fellowship*.  
Awarded in 2011 from the Alexander Von Humboldt Foundation.  
Title: “Many-Body Physics with Atoms inside Optical Cavities”.

### **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*
- Dieter Jaksch and Frank Schlawin, 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