List of Publications

Francesco Piazza

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Preprints

3. "Quantum-Zeno Fermi-Polaron", T. Wasak, R. Schmidt, F. Piazza, arXiv:1912.06618
2. "Non-equilibrium diagrammatic approach to strongly interacting photons", J. Lang, D. E. Chang, and F. Piazza, arXiv:1810.12921
1. "Interaction-induced transparency for strong-coupling polaritons", J. Lang, D. E. Chang, and F. Piazza, arXiv:1810.12912

Journal articles

41. "Hierarchy of relaxation timescales in local random Liouvillians", K. Wang, F. Piazza, D. J. Luitz, Phys. Rev. Lett. 124, 100604
40. "Emergent Quasicrystalline Symmetry in Light-Induced Quantum Phase Transitions", F. Mivehvar, H. Ritsch, F. Piazza, Phys. Rev. Lett. 123, 210604 arXiv:1908.01782
39. "Time crystallinity in dissipative Floquet systems", A. Lazarides, S. Roy, F. Piazza, R. Moessner, Physical Review Research 2, 022002(R)
38. "Crystalline droplets with emergent topological color-charge in many-body systems with sign-changing interactions", P. Karpov, F. Piazza, Physical Review A 100, 061401(R) arXiv:1905.13217
37. "Exceptional points and the topology of quantum many-body spectra", D. J. Luitz, F. Piazza, Phys. Rev. Research 1, 033051 arXiv:1906.02224
36. "Hofstadter butterfly in a cavity-induced dynamic synthetic magnetic field", E. Colella, F. Mivehvar, F. Piazza, H. Ritsch, Phys. Rev. B 100, 224306arXiv:1909.05975
35. "Topological soliton-polaritons in 1D systems of light and fermionic matter", K. A. Fraser and F. Piazza, Nature Communications Physics 2, 48 (2019) arXiv:1809.06151
34. "Cavity-Quantum-Electrodynamical Toolbox for Quantum Magnetism", F. Mivehvar, H. Ritsch, and F. Piazza, Physical Review Letters 122, 113603 (2019) arXiv:1809.09129
33. "Multipartite entanglement dynamics in a regular-to-ergodic transition: Quantum Fisher information approach", K. Gietka, J. Chwedenczuk, T. Wasak, F. Piazza Physical Review B 99, 064303 (2019); arXiv:1812.01013
32. "Breaking of Goldstone modes in a two-component Bose-Einstein condensate", A. Recati, F. Piazza Physical Review B 99, 064505 (2019); arXiv:1609.01954
31. "Non-Fermi liquid at the FFLO quantum critical point", D. Pimenov, I. Mandal, F. Piazza, M. Punk, Physical Review B 98, 024510 (2018); arXiv:1711.10514

30. "Aging dynamics in quenched noisy long-range quantum Ising models", J. C. Halimeh, M. Punk, F. Piazza, Physical Review B 98, 045111 (2018); arXiv:1803.00280

29. "Driven-Dissipative Supersolid in a Ring Cavity", F. Mivehvar, S. Ostermann, F. Piazza, H. Ritsch, Physical Review Letters 120, 123601 (2018); arXiv:1801.00756

28. "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

27. "Superradiant Topological Peierls Insulator inside an Optical Cavity", F. Mivehvar, H. Ritsch, F. Piazza, Physical Review Letters 118, 073602 (2017); arXiv:1611.04876

26. "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

25. "Probing and characterizing the growth of a crystal of ultracold bosons and light", S. Ostermann, F. Piazza, H. Ritsch, New Journal of Physics 19, 125002 (2017); arXiv:1710.05577

24. "Quantum-enhanced interferometry with cavity QED-generated non-classical light", K. Gietka, T. Wasak, J. Chwedeńczuk, F. Piazza, H. Ritsch, The European Physical Journal D 71, 273 (2017); arXiv:1703.03651

23. "Critical Relaxation with Overdamped Quasi-Particles in Driven-Dissipative Systems", J. Lang, F. Piazza, Phys. Rev. A 94, 033628 (2016); arXiv:1602.05102

22. "Spontaneous crystallization of light and ultracold atoms", S. Ostermann, F. Piazza, H. Ritsch, Physical Review X 6, 021026 (2016); arXiv:1601.04900

21. "Self-organised limit-cycles, chaos and phase-slippage with a superfluid inside an optical resonator", F. Piazza, H. Ritsch, Phys. Rev. Lett. 115, 163601 (2015); arXiv:1507.08644

20. "Self-ordered stationary states of driven quantum degenerate gases in optical resonators", R. M. Sandner, W. Niedenzu, F. Piazza, H. Ritsch, Europhys. Lett. 111, 53001 (2015); arXiv:1507.00271

19. "FFLO strange metal and quantum criticality in two dimensions: theory and experimental evidence in organic superconductors", F. Piazza, W. Zwerger, P. Strack, Physical Review B 93, 085112 (2016); arXiv:1506.08819

18. "Parity Symmetry Breaking and Topological Phases in a Superfluid Ring", X. Zhang, F. Piazza, W. Li, A. Smerzi, Phys. Rev. A 94, 063601 (2016); arXiv:1608.01904

17. "Instability of the superfluid flow as black-hole lasing effect", S. Finazzi, F. Piazza, M. Abad, A. Smerzi, A. Recati, Phys. Rev. Lett. 114, 245301 (2015); arXiv:1409.8068

16. "Phase-slips and vortex dynamics in Josephson oscillations between Bose-Einstein condensates ", M. Abad, M. Guilleumas, R. Mayol, F. Piazza, D. M. Jezek, A. Smerzi, Europhys. Lett. 109, 40005 (2015); arXiv:1409.5598

15. "Quantum kinetics of ultracold fermions coupled to an optical resonator ", F. Piazza and P. Strack, Phys. Rev. A 90, 043823 (2014); arXiv:1407.5642

14. "Umklapp Superradiance with a Collisionless Quantum Degenerate Fermi Gas", F. Piazza and P. Strack, Phys. Rev. Lett. 112, 143003 (2014); arXiv:1309.2714

13. "Bose-Einstein Condensation versus Dicke-Hepp-Lieb Transition in an Optical Cavity", F. Piazza and P. Strack, W. Zwerger, Ann. of Phys. 339, 135 (2013); arXiv:1305.2928

12. "Critical velocity for a toroidal Bose–Einstein condensate flowing through a barrier", F. Piazza, L. A. Collins, A. Smerzi, J. Phys. B: At. Mol. Opt. Phys. 46, 095302 (2013); arXiv:1208.0734

11. "Multipath interferometer with ultracold atoms trapped in an optical lattice", J. Chwedeńczuk, F. Piazza, A. Smerzi, Phys. Rev. A 87, 033607 (2013); arXiv:1210.4772

10. "Sub shot-noise interferometry from measurements of the one-body density", J. Chwedeńczuk, P. Hyllus, F. Piazza, A. Smerzi, New J. Phys. 14, 093001 (2012); arXiv:1108.2785

9. "Phase Estimation from Atom Position Measurements", J. Chwedeńczuk, F. Piazza, A. Smerzi, New J. Phys. 13, 065023 (2011); arXiv:1012.3593

8. "Instability and Vortex Rings Dynamics in a Three-Dimensional Superfluid Flow Through a Constriction", F. Piazza, L. A. Collins, A. Smerzi, New J. Phys. 13, 043008 (2011); arXiv:1011.5041

7. "Dynamics of a tunable superfluid junction", L. J. LeBlanc, A. B. Bardon, J. McKeever, M. H. T. Extavour, D. Jervis, J. H. Thywissen, F. Piazza, A. Smerzi, Phys. Rev. Lett. 106, 025302 (2010); arXiv:1006.3550

6. "Phase Estimation With Interfering Bose-Condensed Atomic Clouds", J. Chwedeńczuk, F. Piazza, A. Smerzi, Phys. Rev. A 82, 051601(R) (2010); arXiv:1007.0703

5. "Rabi Interferometry and Sensitive Measurement of the Casimir-Polder Force with Ultra-Cold Gases", J. Chwedeńczuk, L. Pezzé, F. Piazza, A. Smerzi, Phys. Rev. A 82, 032104 (2010); arXiv:0909.0705

4. "Current-phase relation of a Bose-Einstein condensate flowing through a weak link", F. Piazza, L. A. Collins, A. Smerzi, Phys. Rev. A 81, 033613 (2010); arXiv:0912.3209

3. "Critical velocity of superfluid flow through single-barrier and periodic potentials", G. Watanabe, F. Dalfovo, F. Piazza, L. P. Pitaevskii, S. Stringari, Phys. Rev. A 80, 053602 (2009); arXiv:0907.0621

2. "Vortex-induced phase-slip dissipation in a toroidal Bose-Einstein condensate flowing through a barrier", F. Piazza, L. A. Collins, A. Smerzi, Phys. Rev. A 80, 021601(R) (2009); arXiv:0903.2534

1. "Macroscopic Superpositions of Phase States with Bose-Einstein condensates", F. Piazza, L. Pezzé and A. Smerzi, Phys. Rev. A 78, 051601(R) (2008); arXiv:0803.2265

Highlights

5. Cover page of "Physical Review Letters", Volume 124, Issue 10 (2020)

4. Cover page of "Physical Review Letters", Volume 123, Issue 21 (2019)

3. Synopsis on "APS-Physics" May 24, 2016

2. Cover page of "Physical Review Letters", Volume 115, Issue 16 (2015)

1. Research Highlights on "Nature Physics", Nat. Phys. 4, 903 (2008);

Review Articles

1. F. Mivehvar, F. Piazza, T. Donner, H. Ritsch, "Many-body physics with ultracold atoms in optical resonators", to appear in Advances in Physics 2020.

Book Contributions

1. F. Piazza, L. A. Collins, and A. Smerzi, chapter contribution to the book "Physics of Quantum Fluids - New Trends and hot topics in atomic and polariton condensates", Springer (2013)