

List of Publications of Anatoli Polkovnikov:

2011

1. **C. Neuenhahn, A. Polkovnikov, F. Marquardt**, Localized phase structures growing out of quantum fluctuations in a quench of tunnel-coupled atomic condensates, *arXiv:1112.5982*
2. **L. Mathey, K. J. Günter, J. Dalibard, A. Polkovnikov**, Dynamic Kosterlitz-Thouless transition in 2D Bose mixtures of ultra-cold atoms, *arXiv:1112.1204*
3. **I. Danshita, A. Polkovnikov**, Superfluid to Mott insulator transition in the one-dimensional Bose-Hubbard model for arbitrary integer filling factors, *Phys. Rev. A* **84**, 063637 (2011).
4. **I. Danshita, A. Polkovnikov**, Quantum phase slips in one-dimensional superfluids in a periodic potential, *arXiv:1110.4306*
5. **V. Gritsev, A. Polkovnikov**, Dynamical quantum Hall effect in the parameter space, *arXiv:1109.6024*
6. **M. Tomka, A. Polkovnikov, V. Gritsev**, Geometric phase contribution to quantum non-equilibrium many-body dynamics, *arXiv:1108.4611*
7. **C. De Grandi, A. Polkovnikov, A. Sandvik**, Universal nonequilibrium quantum dynamics in imaginary time, *Phys. Rev. B* **84**, 224303 (2011)
8. **L. Santos, A. Polkovnikov, M. Rigol**, Entropy of isolated quantum systems after a quench, *Phys. Rev. Lett.* **107**, 040601 (2011)
9. **V. Mukherjee, A. Polkovnikov, A. Dutta**, Oscillating fidelity susceptibility near a quantum multicritical point, *Phys. Rev. B* **83**, 075118 (2011).
10. **A. Polkovnikov, K. Sengupta, A. Silva, and M. Vengalattore**, Nonequilibrium dynamics of closed interacting quantum systems; *Rev. Mod. Phys.* **83**, 863 (2011)
11. **G. Bunin, L. D'Alessio, Y. Kafri, A. Polkovnikov**, Universal energy fluctuations in thermally isolated driven systems, *Nature Physics* **7**, 913 (2011).
12. **R. Barnett, A. Polkovnikov, M. Vengalattore**, Prethermalization in quenched spinor condensates, *Phys. Rev. A* **84**, 023606 (2011)

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13. **I. Danshita, R. Hipolito, V. Oganessian, A. Polkovnikov**, Quantum damping of Fermi-Pasta-Ulam revivals in ultracold Bose gases, *arXiv:1012.4159*.
14. **L. Mathey, A. Polkovnikov**, Light cone dynamics and reverse Kibble-Zurek mechanism in two-dimensional superfluids following a quantum quench, *Phys. Rev. A* **81**, 033605 (2010)
15. **V. Gritsev and A. Polkovnikov**, Universal Dynamics Near Quantum Critical Points, contribution to "Understanding in Quantum Phase Transitions", edited by Lincoln Carr, (Taylor & Francis, Boca Raton, 2010); *arXiv:0910.3692*.
16. **R. Hipolito and A. Polkovnikov**, Breakdown of macroscopic quantum self-trapping in coupled mesoscopic one dimensional Bose gases, *Phys. Rev. A* **81**, 013621 (2010).
17. **C. De Grandi and A. Polkovnikov**, Adiabatic perturbation theory: from Landau-Zener problem to quenching through a quantum critical point, contribution to "Quantum Quenching, Annealing and Computation", Eds. A. Das, A. Chandra and B. K. Chakrabarti, *Lect. Notes in Phys.*, **802**, p. 75, Springer, Heidelberg 2010); *arXiv:0910.2236*.

18. **C. De Grandi, V. Gritsev, A. Polkovnikov**, Quench dynamics near a quantum critical point: application to the sine-Gordon model, *Phys. Rev. B* **81**, 224301 (2010).
19. **C. De Grandi, V. Gritsev, A. Polkovnikov**, Quench dynamics near a quantum critical point, *Phys. Rev. B* **81**, 012303 (2010).
20. **E. Altman, Y. Kafri, A. Polkovnikov, G. Refael**, Superfluid-insulator transition of disordered bosons in one-dimension, *Phys. Rev. B* **81**, 174528 (2010).
21. **A. Polkovnikov**, Phase space representation of quantum dynamics, *Annals of Phys.* **325**, 1790 (2010).
22. **I. Danshita and A. Polkovnikov**, Accurate numerical verification of the instanton method for macroscopic quantum tunneling: dynamics of phase slips, *Phys. Rev. B* **82**, 094304 (2010).
23. **A. Polkovnikov**, Microscopic diagonal entropy and its connection to basic thermodynamic relations, *Annals of Physics* **326**, 486 (2010).

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24. **B. Berg, L. I. Plimak, A. Polkovnikov, M. K. Olsen, M. Fleischhauer, W. P. Schleich**, Commuting Heisenberg operators as the quantum response problem: Time-normal averages in the truncated Wigner representation, *Phys. Rev. A* **80**, 033624 (2009).
25. **A. Altland, V. Gurarie, T. Kriecherbauer, and A. Polkovnikov**, Non-adiabaticity and large fluctuations in a many particle Landau Zener problem, *Phys. Rev. A* **79**, 042703 (2009).

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26. **V. Gritsev, E. Demler, A. Polkovnikov**, Interferometric probe of paired states, *Phys. Rev. A* **78**, 063624 (2008).
27. **A. Polkovnikov**, Microscopic expression for the heat in the adiabatic basis, *Phys. Rev. Lett.* **101**, 220402 (2008).
28. **C. De Grandi, R. Barankov, A. Polkovnikov**, Adiabatic nonlinear probes of one-dimensional Bose gases, *Phys. Rev. Lett.* **101**, 230402 (2008).
29. **R. Barankov, A. Polkovnikov**, Optimal non-linear passage through a quantum critical point, *Phys. Rev. Lett.* **101**, 076801 (2008).
30. **S. Trotzky, P. Cheinet, S. Fölling, M. Feld, U. Schnorrberger, A. M. Rey, A. Polkovnikov, E. A. Demler, M. D. Lukin, I. Bloch**, Time-resolved Observation and Control of Superexchange Interactions with Ultracold Atoms in Optical Lattices, *Science* **319**, 295 (2008).
31. **E. Altman, Y. Kafri, A. Polkovnikov and G. Refael**, The insulating phases and superfluid-insulator transition of disordered boson chains, *Phys. Rev. Lett.* **100**, 170402 (2008).
32. **A. Polkovnikov and V. Gritsev**, Breakdown of the adiabatic limit in low dimensional gapless systems, *Nature Physics* **4**, 477 (2008).
33. **L. Mathey, A. Polkovnikov, A.H. Castro Neto**, Phase-locking transition of coupled low-dimensional superfluids, *Europhys. Lett.* **81**, 10008 (2008).

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34. **Y. Kafri, D.R. Nelson, and A. Polkovnikov**, Unzipping Vortices in Type-II Superconductors, *Phys. Rev. B* **76**, 144501 (2007).

- 35. **V. Gritsev, E. Demler, M. Lukin, and A. Polkovnikov**, Analysis of quench dynamics of coupled one dimensional condensates using quantum sine Gordon model, *Phys. Rev. Lett.* **99**, 200404 (2007).
- 36. **V. Gritsev, A. Polkovnikov, and E. Demler**, Linear response theory for a pair of coupled one-dimensional condensates of interacting atoms, *Phys. Rev. B* **75**, 174511 (2007).
- 37. **A. Polkovnikov**, Shot noise of interference between independent atomic systems, *Europhys. Lett.* **78**, 10006 (2007).

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- 38. **Y. Kafri and A. Polkovnikov**, DNA unzipping and the unbinding of directed polymers in a random media, *Phys. Rev. Lett.* **97**, 208104 (2006).
- 39. **V. Gritsev, E. Altman, A. Polkovnikov, and E. Demler**, How to study correlation functions in fluctuating Bose liquids using interference experiments, *arXiv:cond-mat/0702647*; *AIP Conference Proceedings* **869**, 173 (2006).
- 40. **V. Gritsev, E. Altman, E. Demler, and A. Polkovnikov**, Full quantum distribution of contrast in interference experiments between interacting one-dimensional Bose liquids, *Nature Physics* **2**, 705 (2006).
- 41. **A. Polkovnikov, E. Altman, and E. Demler**, Interference between independent fluctuating condensates, *Proc. Natl. Acad. Sci. USA* **103**, 6125 (2006).
- 42. **R. Barnett, A. Polkovnikov, E. Demler, W.-G. Yin and W. Ku**, Coexistence of gapless excitations and commensurate charge-density wave in the 2H-transition metal dichalcogenides, *Phys. Rev. Lett.* **96**, 026406 (2006).
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- 45. **A. Polkovnikov, E. Altman, E. Demler, B. Halperin, and M. Lukin**, Decay of a superfluid currents in a moving system of strongly interacting bosons, *Phys. Rev. A* **71**, 063613 (2005).
- 46. **E. Altman, A. Polkovnikov, E. Demler, B. Halperin, and M. Lukin**, Superfluid-insulator transition in a moving system of interacting bosons, *Phys. Rev. Lett.* **95**, 020402 (2005).
- 47. **A. Polkovnikov, Y. Kafri, and D.R. Nelson**, Vortex pinning by a columnar defect in planar superconductors with point disorder, *Phys. Rev. B* **71**, 014511 (2005).
- 48. **A. Polkovnikov**, Universal adiabatic dynamics across a quantum critical point, *Phys. Rev. B.* **72**, 161201(R) (2005).

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- 49. **A. Polkovnikov, E. Altman, E. Demler, B. Halperin, and M. Lukin**, Decay of super-currents in condensates in optical lattices, *J. of Superconductivity* **17**, 577 (2004).
- 50. **E. Altman, Y. Kafri, A. Polkovnikov and G. Refael**, Phase transition of one-dimensional bosons with strong disorder, *Phys. Rev. Lett.* **93**, 150402 (2004).

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