Victor Gurarie

Curriculum Vitae

Department of Physics CB390
University of Colorado
Boulder CO 80309

Phone: *+1-303-735-5898*
Fax: *+1-303-492-2998*
e-mail: gurarie@colorado.edu

Honors:

2009	Friedrich Wilhelm Bessel Research Award by the Humboldt Foundation, Germany
2005	National Science Foundation Career Award
2004	Junior Faculty Development Award, University of Colorado
2002	Advanced Research Fellowship by the Engineering and Physical Sciences Research Council, United Kingdom

Employment History:

2010-current	Associate Professor, University of Colorado, Boulder CO
2003-2010	Assistant Professor, University of Colorado, Boulder CO
2002-2003	EPSRC Advanced Fellow, Oxford University, Oxford, UK
2000-2002	Postdoc with the Condensed Matter Theory Group, Oxford University, Oxford, UK
1997-2000	Postdoctoral Fellowship in Condensed Matter Theory at the Institute for Theoretical Physics, University of California Santa Barbara
1996-1997	Member of the Institute for Advanced Study, Princeton NJ

Education:

	Princeton University
1996	Ph.D. in Theoretical Physics. Advisor: Alexander Polyakov Thesis: "Statistics without Thermodynamic Equilibrium"
1992	M.A. in Physics
	Moscow Institute of Physics and Technology
1991	B.A. in Physics

Research support:

Aug 05 - July 11	NSF DMR-0449521 "Disorder and Symmetries in Condensed Matter Physics", $400,000, PI
Aug 09 - July 12	NSF PHY-0904017 "Quantum Information with Alkaline Earth Atoms", $480,000, co-PI with A-M Rey and M Holland
July 08 - June 10	ICAM "Creating and Manipulating Topological States with p-wave Superconductors", $36,500, co-PI with N. Cooper (Cambridge University, UK)
Aug 12 - July 15	NSF DMR-1205303 "Phases and phase transitions of quantum gases in optical lattices", $300,000, PI
Aug 12 - July 15	NSF PHY-1211914 "Manipulating quantum information with polar molecules", $450,000, co-PI with A-M Rey and M Holland

Publications:

1. "Logarithmic operators and logarithmic conformal field theories", V. Gurarie, J. Phys. A: Math. Gen. **46**, 494003 (2013)

2. "Quantum quench in a p plus ip superfluid: Winding numbers and topological states far from equilibrium", M. S. Foster, M. Dzero, V. Gurarie, E. Yuzbashyan, Phys. Rev. B **88**, 104511 (2013)

3. "From Cosmology to Cold Atoms: Observation of Sakharov Oscillations in a Quenched Atomic Superfluid", C.-L. Hung, V. Gurarie, C. Chin, Science **341**, 1213 (2013)

4. "Z(2) topological invariants in two dimensions from quantum Monte Carlo", T. C. Lang, A. M. Essin, V. Gurarie, S. Wessel, Phys. Rev. B **87**, 205101 (2013)

5. "Topological invariants for fractional quantum hall states", V. Gurarie, A. Essin, JETP Lett. **97**, 223 (2013)

6. "Freezing of an unconventional two-dimensional plasma", E.V. Herland, E. Babaev, P. Bonderson, C. Nayak, L. Radzihovsky, A. Sudbo, Phys. Rev. B **87**, 075117 (2013)

7. "Global large time dynamics and the generalized Gibbs ensemble", V. Gurarie, J. Stat. Phys. P02014, (2013)

8. "Reentrant BCS-BEC Crossover and a Superfluid-Insulator Transition in Optical Lattices", Z. Shen, L. Radzihovsky, V. Gurarie, Phys. Rev. Lett. **109**, 245302 (2012)

9. "Topological invariants and interacting one-dimensional fermionic systems", S. R. Manmana, A. M. Essin, R. Noack, V. Gurarie, Phys. Rev. B **86**, 205119 (2012)
10. "Antiferromagnetic topological insulators in cold atomic gases", Phys. Rev. B **85**, 195116 (2012)

11. "High-temperature properties of fermionic alkaline-earth-metal atoms in optical lattices", K. R. Hazzard, V. Gurarie, M. Hermele, A.-M. Rey, Phys. Rev. A **85**, 041604 (2012)

12. "Screening properties and phase transitions in unconventional plasmas for Ising-type quantum Hall states", E. V. Herland, E. Babaev, P. Bonderson, V. Gurarie, C. Nayak, A. Sudbo, Phys. Rev. B85, 024520 (2012)

13. "Topological liquids and valence cluster states in two-dimensional SU(N) magnets", M. Hermele and V. Gurarie, Phys. Rev. B 84, 174441 (2011)

14. "Bulk-boundary correspondence of topological insulators from their respective Green's functions", A. Essin and V. Gurarie, Phys. Rev. B 84, 125132 (2011)

15. "Lattice-Induced Resonances in One-Dimensional Bosonic Systems", J. von Stecher, V. Gurarie, L. Radzihovsky, A.-M. Rey, Phys. Rev. Lett 107, 059901 (2011)

16. "Single-particle Green's functions and interacting topological insulators", V. Gurarie, Phys. Rev. B 83, 085426 (2011)

17. "Plasma analogy and non-Abelian statistics for Ising-type quantum Hall states", P. Bonderson, V. Gurarie, C. Nayak, Phys. Rev. B 83, 075303 (2011)

18. "Structure and consequences of vortex-core states in p-wave superfluids", G. Moller, N. R. Cooper, V. Gurarie, Phys. Rev. B 83, 014513 (2011)

19. "Heavy fermions in an optical lattice", M. Foss-Feig, M. Hermele, V. Gurarie, A.-M. Rey, Phys. Rev. A 82, 053624 (2010)

20. “Relation between ac Josephson effect and double-well Bose-Einstein-condensate oscillations”, L. Radzihovsky, V. Gurarie, Phys. Rev. A 81, 063609 (2010)

21. “Phase diagram of the disordered Bose-Hubbard model”. V. Gurarie, L. Pollet, N. V. Prokof'ev, B. Svistunov, M. Troyer, Phys. Rev. B 80, 214519 (2009)
22. “Mott Insulators of Ultracold Fermionic Alkaline Earth Atoms: Underconstrained Magnetism and Chiral Spin Liquid”, Michael Hermele, Victor Gurarie, Ana Maria Rey, Phys. Rev. Lett. 103, 135301 (2009)

23. “Nonequilibrium dynamics of weakly and strongly paired superconductors”, V. Gurarie, Phys. Rev. Lett. **103**, 075301 (2009)

24. “Two-orbital SU(N) magnetism with ultracold alkaline-earth atoms”, A. V. Gorshkov, M. Hermele, V. Gurarie, C. Xu, P. S. Julienne, J. Ye, P. Zoller, E. Demler, M. D. Lukin, A. M. Rey, Nat. Phys. 6, 289 (2010)

25. “Central Charge and Quasihole Scaling Dimensions From Model Wavefunctions: Towards Relating Jack Wavefunctions to W-algebras”, B. Andrei Bernevig, Victor Gurarie, Steven H. Simon, J. Phys. A: Math. Theor. **42**, 245206 (2009)

26. “Feshbach molecule production in fermionic atomic gases”, V. Gurarie, Phys. Rev. A 80, 023626 (2009)

27. “Non-adiabacity and large flucutations in a many particle Landau Zener problem”, A. Altland, V. Gurarie, T. Kriecherbauer, A. Polkovnikov, Phys. Rev. A **79**, 042703 (2009)

28. “Stability of the fermionic gases close to a p-wave Feshbach resonance”, J. Levinsen, N. R. Cooper, V. Gurarie, Phys. Rev. A **78**, 063616 (2008)

29. “Excitations of the One Dimensional Bose-Einstein Condensates in a Random Potential”, V. Gurarie, G. Refael, J. T. Chalker, Phys. Rev. Lett. **101**, 170407 (2008)

30. “Collapse and revivals of a the photon field in a many-body Landau-Zener process”, J. Keeling and V. Gurarie, Phys. Rev. Lett. **101**, 170407

31. “Many body generalization of the Landau Zener problem”, A. Altland and V. Gurarie, Phys. Rev. Lett. **100**, 063602

32. “Strongly resonant p-wave superfluids”, J. Levinsen, N. Cooper, V. Gurarie, Phys. Rev. Lett. 99, 210402 (2007)

33. “Zero modes of two dimensional chiral p-wave superconductors”, V. Gurarie and L. Radzihovsky, Phys. Rev. B **75**, 212509 (2007)

34. “Resonantly paired fermionic superfluids”, V. Gurarie and L. Radzihovsky, Ann. Phys. **322**, 2 (2007)

35. “The equivalence between the canonical and microcanonical ensembles when applied to large systems”, V. Gurarie, Am. J. Phys. **75**, 747 (2007)

36. “Superfluid transition in a rotating resonantly-interacting Fermi gas”, M. Y. Veillette, D. E. Sheehy, L. Radzihovsky, V. Gurarie, Phys. Rev. Lett. **97**, 250401 (2006).

37. “Properties of strongly paired fermionic condensates”, V. Gurarie and J. Levinsen, Phys. Rev. A**73**, 053607 (2006).

38. “One-dimensional gas of bosons with Feshbach-resonant interactions”, V. Gurarie, Phys. Rev. A**73**, 033612 (2006).

39. "Phonons in Random Disordered Media and the Boson Peak", V. Gurarie and A. Altland, Phys. Rev. Lett. **94**, 245502 (2005).

40. "Quantum Phase Transitions across a p-Wave Feshbach Resonance", V. Gurarie, L. Radzihovsky, A. Andreev, Phys. Rev. Lett. **94**, 230403 (2005).

41. "Spectra of pinned charge density waves with background current", V. Gurarie and J. Levinsen, J. Phys. A: Math. Gen. **38**, 4085 (2005).

42. "Conformal Field Theory at central charge c=0 and Two-Dimensional Critical Systems with Quenched Disorder", V. Gurarie and A. Ludwig. A review article in the Ian Kogan Memorial Collection "From Fields to Strings: Circumnavigating Theoretical Physics", World Scientific (2005) (*non peer-reviewed*).

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44. "Magnon localization in Mattis glass", Gurarie and A. Altland, J. Phys. A: Math. Gen. 37, 9357 (2004).

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50. "Quantum Hall Transition in the Classical Limit", V. Gurarie and A. Zee, Int. J. Mod. Phys. **15**, 1225 (2001).

51. "Conformal Algebras of 2D Disordered Systems", V. Gurarie and A.W.W. Ludwig, J. Phys. A: Math. Gen. **35**, L377 (2002).

52. "Orthogonality Catastrophe and Spontaneous Symmetry Breaking in Double-layer Fermi-liquid-like States", V. Gurarie and Y.-B. Kim, Europhys. Lett. **52**, 667 (2000).

53. "Parafermion Statistics and Quasihole Excitations for the Generalizations of the Paired Quantum Hall States", V. Gurarie and E. Rezayi, Phys. Rev. B**61**, 5473 (2000)

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55. Density of States in the non-Hermitian Lloyd model", V. Gurarie, C. Mudry, P.W. Brouwer, B.I. Halperin and A. Zee, Phys. Rev. B**58**, 13539 (1998).

56. "A Plasma Analogy and Berry Matrices for Non-Abelian Quantum Hall States", V. Gurarie and C. Nayak, Nucl. Phys. B**506**, 685 (1997).

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58. “Instantons in the Burgers Equation”, V. Gurarie and A. Migdal, Phys. Rev. E**54**, 4908 (1996).

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60. “Runaway Quarks”, Phys. Rev. D**52**(3), 1639 (1995)

61. “Probability Density, Diagrammatic Technique, and Epsilon Expansion in the Theory of Wave Turbulence”, V. Gurarie, Nucl. Phys. B**441**, 569 (1995).

62. “Logarithmic Operators in Conformal Field Theory”, V. Gurarie, Nucl. Phys. B**410**, 535 (1993)