

Michael A. Levin

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Education

B.A. Mathematics, Harvard University, 2001.

Ph.D. Physics, Massachusetts Institute of Technology, 2006.

Thesis title: String-net condensation and topological phases in quantum spin systems.

Thesis advisor: Xiao-Gang Wen.

Employment

Massachusetts Institute of Technology, Department of Physics

Teaching Assistant, September 2003–January 2006.

Research Assistant, January 2004–July 2006.

University of California, Santa Barbara, Department of Physics

Postdoctoral Researcher, Matthew P. A. Fisher, February 2008–February 2009.

Harvard University, Department of Physics

Junior Fellow at Harvard Society of Fellows, July 2006–July 2010.

University of Maryland, Department of Physics

Assistant Professor, July 2010–Present.

Awards and Fellowships

Bronze medal in International Physics Olympiad, 1997.

Fourth place in Boston Area Undergraduate Physics Competition, 1999.

Honorable mention (second place) for AMS Morgan prize for undergraduate mathematics research, 2001.

MIT Presidential Compton Fellowship, 2001.

Andrew M. Lockett award for MIT doctoral theoretical physics research, 2004.

Junior Fellowship, Harvard Society of Fellows, 2006.

Service

Regular referee for professional journals (Physical Review Letters, Physical Review B).

Publications

- [1] E. Berg, M. Levin, and E. Altman. Quantized pumping and phase diagram topology of interacting bosons. *arXiv:1008.1590*, 2010.
- [2] M. Levin and S. G. Johnson. Is the electrostatic force between a point charge and a neutral metallic object always attractive? *arXiv:1007.2175*, 2010.
- [3] M. Levin, A. P. McCauley, A. W. Rodriguez, M. T. H. Reid, and S. G. Johnson. Casimir repulsion between metallic objects in vacuum. *arXiv:1003.3487*, to appear in *Phys. Rev. Lett.*
- [4] A. Stern and M. Levin. Liberating anyons from two dimensions. *Physics*, 3:7, 2010.
- [5] M. Levin and A. Stern. Fractional topological insulators. *Phys. Rev. Lett.*, 103:196803, 2009.
- [6] M. Levin and M. P. A. Fisher. Gapless layered three-dimensional fractional quantum hall states. *Phys. Rev. B*, 79:235315, 2009.
- [7] M. Levin and B. I. Halperin. Collective states of non-abelian quasiparticles in a magnetic field. *Phys. Rev. B*, 79:205301, 2009.
- [8] Z.-C. Gu, M. Levin, B. Swingle, and X.-G. Wen. Tensor-product representations for string-net condensed states. *Phys. Rev. B*, 79:085118, 2009.
- [9] M. Levin and T. Senthil. Lattice models for non-fermi liquid metals. *Phys. Rev. B*, 78:245111, 2008.
- [10] Z.-C. Gu, M. Levin, and X.-G. Wen. Tensor-entanglement renormalization group approach as a unified method for symmetry breaking and topological phase transitions. *Phys. Rev. B*, 78:205116, 2008.
- [11] S.-P. Kou, M. Levin, and X.-G. Wen. Mutual chern-simons theory for z_2 topological order. *Phys. Rev. B*, 78:155134, 2008.
- [12] M. Levin, B. I. Halperin, and B. Rosenow. Particle-hole symmetry and the pfaffian state. *Phys. Rev. Lett.*, 99:236806, 2007.
- [13] M. Levin and C. P. Nave. Tensor renormalization group approach to two-dimensional classical lattice models. *Phys. Rev. Lett.*, 99:120601, 2007.
- [14] R. K. Kaul, A. Kolezhuk, M. Levin, S. Sachdev, and T. Senthil. Hole dynamics in an antiferromagnet across a deconfined quantum critical point. *Phys. Rev. B*, 75:235122, 2007.
- [15] M. Levin and X.-G. Wen. Mean field approach for string condensed states. *Phys. Rev. B*, 75:075116, 2007.
- [16] M. Levin and X.-G. Wen. Detecting topological order in a ground state wave function. *Phys. Rev. Lett.*, 96:110405, 2006.
- [17] M. Levin and X.-G. Wen. Quantum ether: photons and electrons from a rotor model. *Phys. Rev. B*, 73:035122, 2006.
- [18] M. Levin and X.-G. Wen. Photons and electrons as emergent phenomena. *Rev. Mod. Phys.*, 77:871, 2005.
- [19] M. A. Levin and X.-G. Wen. String-net condensation: A physical mechanism for topological phases. *Phys. Rev. B*, 71:045110, 2005.
- [20] M. Levin and T. Senthil. Deconfined quantum criticality and neel order via dimer disorder. *Phys. Rev. B*, 70:220403, 2004.
- [21] M. Levin and X.-G. Wen. Fermions, strings, and gauge fields in lattice spin models. *Phys. Rev. B*, 67:245316, 2003.
- [22] C. Adams, T. Fleming, M. Levin, and A. M. Turner. Crossing number of alternating knots in $s \times i$. *Pacific Journal of Mathematics*, 203, 2002.

- [23] R. Ehrenborg, M. Levin, and M. A. Readdy. A probabilistic approach to the descent statistic. *Journal of Combinatorial Theory A*, 98:150, 2002.

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