

Michael J. Lawler

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Research Interests:

Theoretical condensed matter physics; strongly correlated electrons; electronic liquid crystals; quantum magnetism; physics of frustration; quantum criticality; quantum Hall effect.

Education

8/99 - 5/06	University of Illinois, Urbana-Champaign , Ph.D. Physics: <i>Thesis - "Liquid Crystal phases in strongly correlated systems"</i> <i>Adviser: Eduardo H. Fradkin</i>
9/95 - 5/99	Queen's University , Canada, B.Sc. Engineering Physics: <i>Thesis - "Design of accurate tuner display for old vacuum tube radios"</i> <i>Adviser: Prof. Kyle Lake</i>

Work Experience

9/08 - present	Binghamton University , Assistant Professor Dept. of Physics, Applied Physics and Astronomy
7/08 - 6/08	Cornell University , Adjunct Assistant Professor Department of Physics; Laboratory of Atomic and Solid State Physics.
9/06 - 6/08	University of Toronto , Postdoctoral Fellow Research in condensed matter physics in the Kim-Kee-Paramekanti Group; lead a student and postdoc journal club.
8/99 - 5/05, Fall to Spring	University of Illinois at Urbana-Champaign , Teaching Assistant Experience leading discussion sections and labs; graded 9 graduate courses.
5/98 - 8/98	Computing Devices Canada , Signal Processing Engineer
5/99 - 8/99	Simulated a military Sonar system's digital signal processing algorithms using MatLab. Eliminated a 1000 yard "blind" spot.
6/96 - 8/96	Aluminum Canada , Software Engineer
5/97 - 8/97	Designed network software with Visual Basic and C++ to allow access to factory real time data for material science engineers.

Honors and Awards

4/06	John Bardeen Award for outstanding contributions to electronic materials
8/05 - 12/05	University of Illinois fellowship
12/00, 5/00	Teaching Excellence Awards
5/00 - 8/00	University of Illinois fellowship
3/99	NSERC CGS Scholarship (<i>Turned down upon accepting admission to UIUC.</i>)
9/95 - 5/99	Queen's University Dean's Scholarship
1997	Top 25% in Canadian Association of Physics University Prize Exam

Talks and Presentations

2008	LASSP seminar, Cornell University <i>"Spin liquid phases in the quantum anti-ferromagnet $\text{Na}_4\text{Ir}_3\text{O}_8$"</i>
2008	Kid's seminar, Harvard University <i>"Emergent paramagnetic phases in the hyper-kagome quantum anti-ferromagnet $\text{Na}_4\text{Ir}_3\text{O}_8$"</i>
2008	Invited talk, Stripes 08 Conference, Erice Sicily, Italy <i>"Theory of the nematic to smectic quantum phase transition in electronic systems"</i>
2008	Contributed talk, APS March Meeting, New Orleans, LA. <i>"Theory of the valence-bond-solid phase in Zn-Paratacamite"</i>
2007- 2008	Invited seminars, University of California at Los Angeles, Cornell University, Seoul National University (South Korea) <i>"Emergent paramagnetic phases in $\text{Na}_4\text{Ir}_3\text{O}_8$ and Zn-Paratacamite"</i>
2007	Invited talk, KIAS Workshop on "Quantum Magnetism" <i>"New magnetic phases in $\text{Na}_4\text{Ir}_3\text{O}_8$ and Zn-Paratacamite"</i>
2007	Contributed talk, Aspen workshop on topological quantum computing. <i>"Topological spin liquid on the hyper-kagome lattice of $\text{Na}_4\text{Ir}_3\text{O}_8$"</i>
2007	Contributed talk, APS March Meeting, Denver, CO. <i>"Topological spin liquid on the hyper-kagome lattice of $\text{Na}_4\text{Ir}_3\text{O}_8$"</i>
2006	Invited speaker, KIAS workshop on quantum materials, Seoul, Korea. <i>"Quantum critical behaviour near the nematic instability of a Fermi fluid"</i>
2006	Poster presentation, Gordon conference on strongly correlated electrons. <i>"Local quantum criticality at the nematic quantum phase transition"</i>
2006	Invited seminar, University of California at Riverside, University of British Columbia, University of California at Berkeley. <i>"The nematic instability of a Fermi fluid"</i>
2006	Contributed talk, APS March Meeting, Baltimore, MD. <i>"Local quantum criticality of the nematic Fermi fluid"</i>

- 2005 Invited seminar, University of Toronto.
"The nematic instability of a Fermi fluid"
- 2005 Invited seminar, University of Illinois at Urbana-Champaign.
"High dimensional bosonization approach to the nematic Fermi fluid: fate of the fermions"
- 2005 Contributed talk, APS March Meeting, Los Angeles, CA.
"Non-Perturbative Behaviour of Pomeranchuk Quantum Phase Transitions"
- 2005 Contributed talk, APS March Meeting, Los Angeles, CA.
"Measuring Fractional Charge and Statistics in Fraction Quantum Hall Jain States"
- 2004 Contributed talk, APS March Meeting, Montreal, Canada.
"Non-Fermi Liquid Behavior of Quantum Liquid-Crystal Phases"
- 2003 Poster presentation, Boulder Summer School for Condensed Matter and Materials Physics, *Frontiers in Magnetism*.
"A Renormalization Group Study of Quantum Hall Smectics"
- 2003 Contributed talk, APS March Meeting, Austin, TX.
"Sliding Symmetry and the Renormalization Group"