

# Ann Berlinsky Kallin

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## Personal

Born on September 11, 1985 in Vancouver, BC.

Canadian and American citizen.

## Education

Ph.D. in Physics, University of Waterloo, Ontario (In Progress)

M.Sc. in Physics, University of Waterloo, Ontario (2010)

B.Sc. in Honours Physics, McMaster University, Hamilton, Ontario (2008)

## Awards and Honours

J. Alan George Student Leadership Award (2011)

Alumni Gold Medal Award (2011)

NSERC Postgraduate Scholarship (PGS D) (2011-2012)

Outstanding Achievement in Graduate Studies Award (Master's) (2010)

Ontario Graduate Scholarship (2010) (Declined)

CAM Graduate Student Physics Conference Presenter Scholarship (2009)

NSERC Postgraduate Scholarship (PGS M) (2008-2010)

Ontario Graduate Scholarship (2008) (Declined)

NSERC Undergraduate Student Research Award (2008)

McMaster University Futures Fund Graduated Award (2008)

Harry Lyman Hooker Scholarship (2007)

The Boyd McLay Scholarship in Physics (2007)

NSERC Undergraduate Student Research Award (2007)

Dean's Honour List each undergraduate term, graduated with distinction (2004-2008)

The McMaster Honour Entrance Award (2004 - 2005)

## International Workshops

**KITP Affiliate** for the program Disentangling Quantum Many-body Systems: Computational and Conceptual Approaches (2010)

**Boulder Summer School** on Computational and Conceptual Approaches to Quantum Many-Body Systems (2010)

## Conference Talks and Posters

APS March Meeting, Boston, Massachusetts (2012)

Talk – *Scaling of Entanglement Entropy in the 2D Heisenberg Ground State*

Workshop on Quantum Information in Quantum Many-Body Physics, Université de Montréal (2011)

Talk – *Entanglement Scaling in the 2D Heisenberg Model*

KITP program on Disentangling Quantum Many-body Systems, Santa Barbara, California (2010)

Invited Talk – *Computing Entanglement Scaling in Condensed Matter Ground States*

Boulder Summer School for Condensed Matter and Materials Physics, Boulder, Colorado (2010)

Invited Poster – *Measuring Renyi Entanglement Entropy in Quantum Monte Carlo Simulations*

APS March Meeting, Portland, Oregon (2010)

Talk – *Measuring Renyi Entanglement Entropy with Quantum Monte Carlo*

Waterloo Graduate Student Research Conference, Waterloo, Ontario (2010)

Talk – *Measuring Renyi Entanglement Entropy with Quantum Monte Carlo*

Candian-American-Mexican Graduate Student Physics Conference, Acapulco, Mexico (2009)

Talk – *Valence Bond and von Neumann Entanglement Entropy in Quantum Monte Carlo*

SHARCNET Research Day, Waterloo, Ontario (2009)

Poster – *Entanglement Entropy in Quantum Monte Carlo*

Canadian Undergraduate Physics Conference, Fredericton, New Brunswick (2006)

Poster – *Crystal Growth: In the Zone*

Canadian Undergraduate Physics Conference, London, Ontario (2005)

Poster – *Floating Zone Crystal Growth of High- $T_c$  Superconductors*

## Publications

1. *Entanglement scaling in two-dimensional gapless systems*  
Hyejin Ju, Ann B. Kallin, Paul Fendley, Matthew B. Hastings, and Roger G. Melko  
Phys. Rev. B **85**, 165121 (2012)
2. *Anomalies in the Entanglement Properties of the Square-Lattice Heisenberg Model* [4 citations]  
Ann B. Kallin, Matthew B. Hastings, Roger G. Melko, and Rajiv R. P. Singh  
Phys. Rev. B **84**, 165134 (2011)
3. *Finite-Temperature Critical Behavior of Mutual Information* [5 citations]  
Rajiv R. P. Singh, Matthew B. Hastings, Ann B. Kallin, and Roger G. Melko  
Phys. Rev. Lett. **106**, 135701 (2011)

4. *Finite-size scaling of mutual information in Monte Carlo simulations: Application to the spin-1/2 XXZ model* [8 citations]  
Roger G. Melko, Ann B. Kallin, and Matthew B. Hastings  
Phys. Rev. B **82**, 100409(R) (2010)
5. *Measuring Renyi Entanglement Entropy in Quantum Monte Carlo* [29 citations]  
Matthew B. Hastings, Ivan Gonzalez, Ann B. Kallin, and Roger G. Melko  
Phys. Rev. Lett. **104**, 157201 (2010)
6. *Valence Bond and von Neumann Entanglement Entropy in Heisenberg Ladders* [23 citations]  
Ann B. Kallin, Ivan Gonzalez, Matthew B Hastings, and Roger G. Melko  
Phys. Rev. Lett. **103**, 117203 (2009)
7. *Diagonal and collinear incommensurate spin structures in underdoped  $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$*  [3 citations]  
S. R. Dunsiger, Y. Zhao, B. D. Gaulin, Y. Qiu, P. Bourges, Y. Sidis, J. R. D. Copley, A. B. Kallin, E. M. Mazurek, and H. A. Dabkowska  
Phys. Rev. B **78**, 092507 (2008)

## Service

### Outreach

1. Instructor for UW DIRECTIONS ESTEEM Conference, an Aboriginal High School Enrichment Program (May 2012)
2. Volunteer/Instructor at a Canadian Association for Girls in Science (CAGIS) event hosted by the IQC (April 2012)
3. Volunteer Judge for Centennial Public School Science Fair (March 2012)
4. Instructor for UW DIRECTIONS ESTEEM Conference (March 2011)

### International Conference Organizer

1. Taipei 101 DMRG Winter School (2012)
2. Waterloo DMRG Winter School (2011)

**Referee** for Physical Review Letters, Physical Review A, Physical Review B, Physica A

## Extracurricular Activities

Member of Perimeter Institute Monday morning hockey league (2011 - Present)  
 Member of the uWaterloo Physics intramural ice hockey team (2008 - Present)  
 Member of LOCO Roller Derby - Kitchener Chapter (2011)  
 Volunteer for the Tri-City Roller Girls (2011)