Lindsay Jane LeBlanc

Department of Physics
3-207 CCIS
University of Alberta
Edmonton, AB T6G 2E1
Canada

ph: (780) 492-6562
fax: (780) 492-0714

lindsay.leblanc@ualberta.ca
www.ualberta.ca/∼ljleblan

Professional experience

2013 - present **Assistant Professor**
Department of Physics, University of Alberta, Edmonton AB, Canada

Research experience

2010 - 2013 **Postdoctoral Fellow**
Joint Quantum Institute, National Institute of Standards and Technology, and the University of Maryland, Gaithersburg MD, USA
Supervisors: Drs. Ian B. Spielman and William D. Phillips

2004 - 2010 **Research Assistant**, masters and doctoral level
Department of Physics, University of Toronto, Toronto ON, Canada
Supervisor: Prof. Joseph H. Thywissen

2009 **Visiting student** (5 weeks)
Institute for Experimental Physics, University of Innsbruck, Innsbruck, Austria
Supervisor: Prof. Francesca Ferlaino

2002 - 2003 **Research Assistant**, undergraduate research course
Department of Electrical and Computer Engineering, University of Alberta, Edmonton, AB, Canada
Supervisor: Prof. James N. McMullin

2002 **Research Assistant**, undergraduate summer research assistantship
Department of Physics, University of Alberta, University of Alberta, Edmonton, AB, Canada
Supervisor: Prof. Mark R. Freeman

Education

2005 - 2010 **Doctor of Philosophy**
Department of Physics, University of Toronto
Thesis: Exploring many-body with ultracold atoms
Supervisor: Prof. Joseph H. Thywissen

2004 - 2005 **Master of Science**
Department of Physics, University of Toronto
Thesis: Evaporative Cooling in a Strongly Confining Microchip Trap
Supervisor: Prof. Joseph H. Thywissen

1999 - 2003 **Bachelor of Science, Engineering** *with distinction*
Engineering Physics, Department of Electrical and Computer Engineering, University of Alberta

Teaching experience

2010 **Teaching Assistant, Tutorial leader** (University of Toronto)
PHYS 205: The Physics of Everyday Life

2007 - 2009 **Teaching Assistant, Tutorial leader** (University of Toronto)
PHYS 291: Quantum Mechanics

2004 - 2006 **Teaching Assistant, Laboratory demonstrator** (University of Toronto)
ESC101/102: Praxis Physics Laboratory

Other experience

2003 - 2004 **Project Coordinator**, Women in Scholarship, Engineering, Science and Technology (WISEST), University of Alberta
Organized two interactive science conferences for female elementary and high school students

Service

Referee: Physical Review Letters, Physical Review A, New Journal of Physics, Optics Express, Physical Review X

Selected Awards

2011 - 2013 NSERC (Natural Sciences and Engineering Research Council) Canada Post-doctoral Fellowship
Federal scholarship, for post-doctoral research, $40 000/year

2012 Participant, 62nd Lindau Nobel Laureate Meeting (Lindau, Germany)
Selected in global competition as one of the participating young researchers

2011	DAMPhi Thesis Prize (Canadian Association of Physicists, Division of Atomic and Molecular Physics and Photon Interactions) *Awarded every two years for the best doctoral thesis in atomic and molecular physics in Canada*
2008 - 2010	Walter C. Sumner Memorial Fellowship *Academic scholarship for doctoral studies, $6000 / year*
2006 - 2008	NSERC Canada Graduate Scholarship D *Federal scholarship, doctoral level, $35 000/year*
2004 - 2006	NSERC Canada Graduate Scholarship M *Federal scholarship, masters level, $17 500/year*
2003	Governor General's Silver Medal (University of Alberta) *For top academic standing, to two graduating undergraduate students*
2003	Rt. Honourable C.D. Howe Memorial Fellowship (University of Alberta) *For top academic standing among undergraduates upon graduation, $15 000*
1999 - 2003	Presidents Citation (University of Alberta) *Top-tier undergraduate scholarship, $25 000, awarded to 7 students each year.*
1999	Governor Generals Bronze Medal (Bishop Grandin High School, Calgary AB) *Awarded for top academic standing at high school*

Publications

Papers

10. R. A. Williams, M. C. Beeler, L. J. LeBlanc, K. Jiménez-García, and I. B. Spielman. A Raman-induced Feshbach resonance in an effectively single-component Fermi gas, Physical Review Letters (accepted) (2013).

9. L. J. LeBlanc, M. C. Beeler, K. Jiménez-García, A. R. Perry, S. Sugawa, R. A. Williams, and I. B. Spielman. Direct observation of Zitterbewegung in a BEC, New Journal of Physics, **15**, 073011 (2013).

8. M. C. Beeler, R. A. Williams, K. Jiménez-García, L. J. LeBlanc, A. R. Perry, and I. B. Spielman. The spin Hall effect in a quantum gas, Nature, **498**, 201-204 (2013).

7. L. J. LeBlanc, K. Jiménez-García, R. A. Williams, M. C. Beeler, A. R. Perry, W. D. Phillips, and I. B. Spielman. Observation of a superfluid Hall effect, Proceedings of the National Academy of Sciences of the United States of America, **109**, 10811 (2012).

6. K. Jiménez-García, L. J. LeBlanc, R. A. Williams, M. C. Beeler, A. R. Perry, and I. B. Spielman. Peierls substitution in an Engineered Lattice Potential, Physical Review Letters **108**, 225303 (2012).

5. R. A. Williams, L. J. LeBlanc, K. Jiménez-García, M. C. Beeler, A. R. Perry, W. D. Phillips, and I. B. Spielman. Synthetic Partial Waves in Ultracold Atomic Collisions, Science **335**, 314 (2012).

4. L. J. LeBlanc, A.B. Bardon, J. McKeever, M. H. T. Extavour, J. H. Thywissen, F. Piazza, and A. Smerzi. Dynamics of a tunable superfluid junction, Physical Review Letters **106**, 025302 (2011).

3. M. H. T. Extavour, L. J. LeBlanc, J. McKeever, A. B. Bardon, S. Aubin, S. Myrskog, T. Schumm, and J. H. Thywissen. Fermions on atom chips, in Atom Chips, J. Reichel, V. Vuletic, eds., (Wiley-VCH, Weinheim, Germany) pp. 365-394 (Ch. 12) (2011).

2. L. J. LeBlanc, J. H. Thywissen, A. Burkov, and A. Paramekanti. Repulsive Fermi gas in a harmonic trap: Ferromagnetism and spin textures, Physical Review A **80**, 013607 (2009).

1. L. J. LeBlanc and J. H. Thywissen. Species-specific optical lattices, Physical Review A **75**, 053612 (2007).

0. S. Aubin, S. Myrskog, M.H.T. Extavour, L. J. LeBlanc, D. McKay, A. Stummer, J. H. Thywissen. Rapid sympathetic cooling to Fermi degeneracy on a chip, Nature Physics **2**, 384-387 (2006).

-1. M. H. T. Extavour, L. J. LeBlanc, T. Schumm, B. Cieslak, S. Myrskog, A. Stummer, S. Aubin, and J. H. Thywissen. Dual-species quantum degeneracy of 40K and 87Rb on an atom chip. Atomic Physics **20**, 241-249 (2006).

-2. S. Aubin, M.H.T. Extavour, S. Myrskog, L.J. LeBlanc, J. Esteve, S. Singh, P. Scrutton, D. McKay, R. McKenzie, I. Leroux, A. Stummer, and J.H. Thywissen. Trapping Fermionic ^{40}K and Bosonic ^{87}Rb on a Chip. J. Low Temp. Phys. **140**, 377-396 (2005).

Invited presentations

17. Department of Physics, College of William and Mary, (Williamsburg, VA) Engineered dispersion relationships using atom-light interactions (27 June 2013).

16. Department of Physics, University of Nevada, Reno (Reno, NV) Artificial gauge fields for quantum simulation with ultracold atoms (15 March 2013).

15. Focus workshop on Flat Bands: Design, Topology, and Correlations, Max Planck Institute for the Physics of Complex Systems (Dresden, Germany) Engineering dispersion relationships for ultracold atoms with Raman transitions (08 March 2013).

14. Department of Physics, University of Illinois, Urbana-Champaign (Champaign, IL) Engineering dispersion relationships for ultracold atoms (04 March 2013).

13. Department of Physics, University of Alberta (Edmonton, AB) Quantum emulation with ultracold atomic gases (28 February 2013).

12. Department of Physics, Wellesley College (Wellesley, MA) Simulating magnetic fields with ultracold atoms (25 February 2013).

11. Department of Physics, Temple University (Philadelphia, PA) Ultracold atomic gases and quantum simulation (22 February 2013).

10. Department of Physics, Brown University (Providence, RI) Using ultracold atoms for quantum simulation (19 February 2013).

9. Department of Physics, California State University, East Bay (Hayward, CA) Using artificial fields for quantum simulation with ultracold atoms (08 February 2013).

8. Department of Physics, Washington University in St. Louis (St. Louis, MO) Quantum simulation with ultracold atoms and artificial fields (04 February 2013).

7. School of Physics, Astronomy and Computational Sciences Colloquium, George Mason University (Fairfax, VA) Exploring atom-light interactions for quantum simulation (31 January 2013).

6. Institute for Quantum Computing Colloquium, University of Waterloo (Waterloo, ON) Quantum simulation and artificial fields with ultracold neutral atoms (24 January 2013).

5. Department of Physics, Florida International University (Miami, FL) Simulating magnetic fields with ultracold atoms (09 January 2013).

4. Department of Physics, Smith College (Northampton, MA) (28 November 2012).

3. Joint Quantum Institute Seminar, University of Maryland (College Park, MD) Measuring the superfluid Hall effect in a Bose-Einstein condensate (09 April 2012).

2. Quantum Optics Seminar, University of Toronto (Toronto, ON) Superfluid Hall effect for a BEC in a synthetic magnetic field (25 March 2012).

1. Frontiers of quantum condensed matter physics: light, matter and unusual devices out of equilibrium workshop, Graduate Centre of the City University, New York (New York, NY) The superfluid Hall effect, and other recent experiments with synthetic fields (07 March 2012).

0. Institute for Quantum Information Science seminar, University of Calgary (Calgary, AB) Measuring the Hall effect for ultracold atoms in a synthetic magnetic field (26 October 2011).

-1. Quantum information and BEC seminar, National Institute of Standards and Technology (Gaithersburg, MD) Exploring the Hall effect in a BEC of 87Rb atoms (03 August 2011).

-2. Ludwig-Maximilians-Universität München (Munich, Germany) The Hall effect and other consequences of artificial gauge fields among ultracold atoms (30 June 2011).

-3. Technische Universität Kaiserslautern (Kaiserslautern, Germany) Studying the Hall effect and other manifestations of artificial gauge fields in ultracold atoms (28 June 2011).

-4. Universität Stuttgart (Stuttgart, Germany) Two experiments in the dynamics of ultracold ^{87}Rb: a tunable double well and artificial gauge fields. (27 June 2011).

-5. DFG Research Unit - FOR 801 International Workshop, Strong Correlations in Multiflavor Ultracold Quantum Gases, Universität Hamburg Center for Optical Quantum Technologies (Hamburg-Bahrenfeld, Germany) Transport phenomena of ultracold atoms in artificial gauge fields (23 June 2011).

-6. Canadian Association of Physicists Congress (St. Johns, NL) Using ultracold atoms to study many-body physics (13 June 2011).

-7. Workshop on Topological Matter, Princeton Center for Theoretical Sciences (Princeton, NJ) Implementing synthetic gauge fields for ultracold atoms (22 April 2011).

-8. University of Chicago (Chicago, IL) Population dynamics in a double-well BEC (19 May 2010).

-9. National Instiute for Standards and Technology (Gaithersburg, MD) Transport dynamics of a ^{87}Rb BEC in a double well potential (11 May 2010).

-10. Vienna University of Technology (Vienna, Austria). Schmiedmayer group seminar. Searching for many-body physics on an atom chip. (10 June 2009)

-11. Universität Innsbruck (Innsbruck, Austria). Grimm group seminar. Ferromagnetism and ultracold Fermi gases. (28 May 2009)

-12. Simon Fraser University (Burnaby, BC), Condensed matter seminar. Understanding many-body phenomena with ultracold bosons and fermions. (15 October 2007)

-13. York University (Toronto, ON) Student seminar. Finding Fermi: Progress towards a degenerate Fermi gas. (18 March 2005)

Contributed presentations

8. Joint Meeting of Division of Atomic Molecular and Optical Physics (DAMOP) Meeting of the American Physical Society (APS) and Division of Atomic Molecular and Optical Physics, Canada (DAMOPC) (Québec, Qc) A direct measurement of zitterbewegung in a BEC. (04 June 2013)

7. Canadian Association of Physicists (CAP) Congress (Calgary, AB) A superfluid Hall effect measured in a Bose-Einstein condensate. (14 June 2012)

6. Division of Atomic Molecular and Optical Physics (DAMOP) Meeting of the American Physical Society (APS) (Anaheim, CA) Observing a superfluid Hall effect in a Bose-Einstein condensate. (06 June 2012)

5. DAMOP Meeting (Atlanta, GA) Transport dynamics of a 87Rb BEC in an artificial gauge field. (17 June 2011)

4. DAMOP Meeting (Houston, TX) Two-frequency population dynamics in a low-barrier double-well BEC. (28 May 2010)

3. APS March Meeting (Portland, OR) Hydrodynamic to Josephson transition in a double-well BEC. (15 March 2010)

2. DAMOP Meeting (State College, PA) Ferromagnetic coherence in ultracold fermions. (30 May 2008)

1. CAP Congress (Saskatoon, SK) Exploring quantum statistics with ultracold neutral atoms. (19 June 2007)

0. DAMOP Meeting (Calgary, AB) Species-specific optical lattices. (8 June 2007)

Posters

11. Sigma Xi (NIST chapter) Postdoctoral Poster Session (Gaithersburg, MD) Observing a superfluid Hall effect in a Bose-Einstein condensate. (Feb. 2012)

10. CIFAR Ultracold Atoms Workshop (Halifax, NS) Ferromagnetism in trapped ultracold fermions / Quantum transport of a BEC in an RF dressed double well. (Aug. 2009)

9. ICAP (Storrs, CT) Many-body physics with ultracold atomic fermions. (July 2008)

8. Ultracold Nanomatter Conference (Toronto, ON) Ferromagnetism in ultracold fermions. (Feb. 2008)

7. CIAR Meeting on Quantum Simulation (Vancouver, BC) Optical and radio-frequency manipulation of 87Rb and 40K. (Mar. 2007)

6. International School of Physics Enrico Fermi (Varenna, Italy) Strong confinement of a degenerate Fermi gas in a microchip trap. (July 2006)

5. DAMOP (Knoxville, TN) Cooling Bose-Fermi mixtures to quantum degeneracy on a chip. (May 2006)

4. CIFAR Ultracold Matter Meeting (Banff, AB) Progress with ultra-cold fermions: new chips and optical traps. (Feb. 2006)

3. CIAR Ultracold Matter Meeting (Toronto, ON) Quantum degenerate fermions on a chip. (Oct. 2005)

2. Gordon Conference in Atomic Physics (Tilton, NH) Cooling efficiency in a microelectromagnetic chip trap. (July 2005)

1. Banff Cold Atoms Meeting (Banff, AB) Bose-Fermi mixture in a microchip trap. (Feb. 2005)

Essay

1. Physics is beauty, The Globe and Mail (11 June 2009)
Available at: www.theglobeandmail.com/life/physics-is-beauty/article1177308