

Carl P. Adams
Associate Professor and Chair
Department of Physics
St. Francis Xavier University
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Personal Data

Born: June 12, 1972, Truro, Nova Scotia
Nationality: Canadian

Education

1993 B.Sc. (Physics) Dalhousie University
1994 M.Sc. (Physics) Dalhousie University (David Tindall, supervisor)
1998 Ph.D. (Physics) University of Toronto (Thom Mason, supervisor)

Professional Employment

2008- Chair, Dept. of Physics, St. Francis Xavier University
2006- Associate Professor, St. Francis Xavier University
2007-2008 Sabbatical Leave, McMaster University (hosted by Bruce Gaulin)
2001-2006 Assistant Professor, St. Francis Xavier University
2001-2001 Postdoctoral Researcher, Dalhousie University (supervisor J.R. Dahn)
1998-2001 Research Associate, University of Maryland/ NIST Center for Neutron Research (supervisor J.W. Lynn)

Honours

Named Chair of Department (2008)
Granted Tenure and Promotion to Associate Professor (2006)
Invited Talk and Session Chair American Physical Society March Meeting (2001)
2nd Place in Lumonics Student Presentation Competition Held at Canadian Association of Physicists Annual Congress (Ottawa 1996)
Natural Sciences and Engineering Research Council PGS-B Scholarship (1995)
Natural Sciences and Engineering Research Council PGS-A Scholarship (1993)
Governor General's Silver Medal Dalhousie University for Highest Academic Average (1993)
Department of Physics Guptill Prize (1993)
3rd Place Finish on Canadian Association of Physicists University Prize Exam (1993)
5th Place Finish on Canadian Association of Physicists University Prize Exam (1992)

Selected Professional Activities

Member of Subcommittee for First Draft Canadian Institute for Neutron Scattering (CINS) *Planning to 2050 for Materials Research with Neutron Beams in Canada.* (2006-2007).

Member of the CINS Oversight Committee for NSERC MRS Grant (2006-)

Contributor to 2005 Canadian Association of Physicists Prize Exam

Co-organizer of workshop “Frontiers of Synchrotron X-Ray Scattering” (McMaster Dec. 2004)

Treasurer, CINS (2004-2008)

Project Leader and Network Investigator of The Advanced Foods and Materials Network (PL 2003-2006)

Member of Instrument Development Team for SEQUOIA to be built at the Spallation Neutron Source (2003-)

Referee for Physical Review B and Physical Review Letters (2000-)

Frequent Referee for NCNR Beam Time Proposals (2000-)

Member of Monochromator Development Team, NIST Center for Neutron Research (2000-2001)

Member, CINS (1993-)

Other Service to the University and Community

1. Member of University Committee on Nominations (2005-2007, served as Chair from Jan. 2007- June 2007)
2. Member of Chairs Selection Committee, Faculty of Science (2005-2007)
3. Member of Sumner Scholarship Evaluation Committee (2006-2007)
4. Department Seminar Coordinator (Fall 2006 - Winter 2007)
5. Member of Dept. of Physics Evaluation Committee for P. Poole (2006)
6. Member of Dept. of Physics Evaluation Committee for R. Wickham (2005)
7. Science Fair Judge for Chignecto East Regional Science Fair (2005)
8. Dept. of Physics World Year of Physics Rep. (2005)
9. Participant in Science and Innovators in the Schools Program (2005-2007)
10. Secretary of St. FX Association of University Teachers (2002-03)
11. Secretary of St. FX Faculty of Science (2002-03)
12. Member of Dept. of Physics Curriculum Review Committee (2002-2007)
13. Frequent Presenter at High School Physics Teachers Workshops (2002-2006)
14. Secretary of Physics Faculty (2001-02)

Training of Highly Qualified Personnel

Individual	Type of HQP	Project	Period
Bethany Loewen	Undergrad	NSERC Summer Research Assistant	Summer 2008
Mark Thibodeau	Undergrad	Summer Research and Adv Major Project	Summer 2006 and Academic Year 2006-2007
Amanda MacDonald	Undergrad	Summer Research and Adv Major Project	Summer 2006 and Academic Year 2006-2007
Colin Douglas	Undergrad	Summer Research Assistant	Summer 2006
Meghan Campbell	Undergrad	Summer Research and Honour's Thesis <i>Magnetic Phase Diagram of Cobalt-Doped FeGe₂</i>	April 2005-April 2006
Dan McNeil	Undergrad	NSERC Summer Research Assistant	Summer 2005 and 2006
Jeremy Pencer	Co-supervised Post-Doc	<i>Studying Nanoscale Bio-structure using Neutron Scattering</i>	Sept. 2004- Sept. 2006
David Hoffman	Undergrad	Summer Research Assistant	Summer 2004
Bruce Stevens	Undergrad	Summer Research Assistant	Half-Summer 2003
Shauna Kennedy	Undergrad	NSERC Summer Research Assistant	Summer 2002

Recent Presentations

1. Poster at the Canadian Institute for Neutron Scattering Annual General Meeting "Spin Waves in the Ferromagnetic Ground State of the Kagome Staircase System $\text{Co}_3\text{V}_2\text{O}_8$ " (Royal Military College, Kingston, Oct. 2008)
2. Contributed Talk at the American Physical Society March Meeting "Induced Magnetic Order in $\text{Yb}_2\text{Ti}_2\text{O}_7$ " (New Orleans, March 2008)
3. Poster at the AFMNet Annual Scientific Conference (Calgary, May 2006)
4. Poster at the Canadian Institute for Neutron Scattering Annual General Meeting (National Research Council, Ottawa, Oct. 2005)
5. Poster at the AFMNet Annual Scientific Conference (Delta Toronto Airport West, Toronto, May 2005)
6. Invited Seminar at the Canadian Neutron Beam Centre (Chalk River, Dec. 2004)
7. Contributed Presentation at Synchrotron X-Ray Workshop (McMaster University, Dec. 2004)
8. Research Seminar (St. Francis Xavier University, Jan. 2003)

9. Contributed Oral Presentation at the Canadian Association of Physicists Annual Congress (Quebec City, June 2002)
10. Invited Talk American Physical Society March Meeting (Indianapolis, March 2002)

Research Funding

Principal Investigator	Title	Agency/ Program	Initial Year	Amount/ Duration
Carl Adams	High Magnetic Field and Neutron Scattering Measurements of Magnetic Materials	Natural Sciences and Engineering Research Council (NSERC) Discovery Grants-Individual	2006	20,000 for each of 5 years
Carl Adams	Studying Nanoscale Bio-structure using Neutron Scattering; Application to CAPs	Advanced Foods and Materials Network, part of Network of Centres of Excellence	2004	45,000 per year for 2 years (26,000 individual)
Carl Adams	Cryogen Free Superconducting Magnet Facility	Nova Scotia Research and Innovation Trust	2003	76,000 for 1 year
Carl Adams	Cryogen Free Superconducting Magnet Facility	Canada Foundation for Innovation (CFI) On-going New Opportunities Fund	2003	76,000 for 1 year
Bruce Gaulin and 15 others	Canadian Participation at the Spallation Neutron Source (SNS)	CFI International Access Fund	2003	15,000,000 over 5 years (not individual)
Carl Adams	Neutron Scattering and Transport Properties of Magnetic Materials	NSERC Research Grants-Individual	2002	20,000 for each of 3 years
Carl Adams	Closed Cycle Refrigerator for Resistivity Measurements	NSERC Equipment Grant	2002	62,461 for 1 year
Carl Adams	Neutron Scattering and Transport Measurements of Magnetic Materials	St. FX Start Up Fund	2001	20,000 for 1 year

Courses Taught

1. Physics 201 (was 301): *Modern Physics: Introduction to Relativity and Quantum Physics*, Winter 2005, Winter 2006, Winter 2007, includes 3 hour per week experimental lab
2. Physics 224 (now 325): *Optics*, Winter 2002, Winter 2003, includes 3 hour per week experimental lab
3. Physics 301 (now 201): *Modern Physics: Introduction to Relativity and Quantum Physics*, Fall 2001, Fall 2002, includes 3 hour per week experimental lab
4. Physics 322: *Electromagnetic Theory I*, Winter 2002, Fall 2002, Fall 2003, Winter 2005, Fall 2005, Fall 2006

5. Physics 422: *Electromagnetic Theory II*, Winter 2003, Fall 2003, Fall 2004
6. Physics 475: *Atomic and Molecular Physics*, Winter 2006, Winter 2007, includes 3 hour per week experimental lab
7. Physics 476: *Solid-State Physics*, Fall 2004, Fall 2005, Fall 2006, Fall 2008 includes 3 hour per week experimental lab

Contributions/Publications

Articles in Refereed Publications

1. M. Ramazanoglu, C.P. Adams, J.P. Clancy, A.J. Berlinsky, Z. Yamani, R. Szymczak, H. Szymczak, J. Fink-Finowicki, and B.D. Gaulin, *Spin Waves in the Ferromagnetic Ground State of the Kagome Staircase System $Co_3V_2O_8$* , accepted for publication in Phys. Rev. B (2008).
2. Jeremy Pencer, Susan Krueger, Carl P. Adams and John Katsaras, *Method of separated form factors for polydisperse vesicles* J. Appl. Cryst. **39**, 293 (2006).
3. Jeremy Pencer, Mu-Ping Nieh, Thad Harroun, Susan Krueger, Carl Adams, and John Katsaras, *Bilayer Thickness and Thermal Response of Dimyristoylphosphatidylcholine Unilamellar Vesicles Containing Cholesterol, Ergosterol and Lanosterol: A Small-Angle Neutron Scattering Study*, Biochimica et Biophysica Acta -Biomembranes **1720**, 84 (2005).
4. D.N. Argyriou, U. Ruett, C.P. Adams, J.W. Lynn, and J.F. Mitchell, *Phase Separation in $Pr_{0.7}Ca_{0.3}MnO_3$: a case of weak quenched disorder*, New Journal of Physics **6**, 195 (2004).
5. C.P. Adams, J.W. Lynn, V.N. Smolyaninova, A. Biswas, R.L. Greene, W. Ratcliff II, S-W. Cheong, Y.M. Mukovskii, and D.A. Shulyatev, *First-order nature of the ferromagnetic phase transition in $(La-Ca)MnO_3$ near optimal doping*, Physical Review B **70**, 134414 (2004).
6. C.E.H. Mattoni, C.P. Adams, K.J. Alvine, J.M. Doyle, S.N. Dzhosyuk, R. Golub, E. Korobkina, D.N. McKinsey, A.K. Thompson, L. Yang, H. Zabel, P.R. Huffman, *A long wavelength neutron monochromator for superthermal production of ultracold neutrons*, Physica B **344**, 343 (2004).
7. A.A. Arsenov, N.G. Bebenin, V.S. Gaviko, V.V. Mashkautsan, Ya.M. Mukovskii, D.A. Shulyatev, V.V. Ustinov, R.I. Zainullina, C.P. Adams, and J.W. Lynn, *Absence of Polaron Conductivity in $La_{0.8}Ba_{0.2}MnO_3$* , Physica Status Solidi A-Applied Research **189**, 673 (2002).
8. J.W. Lynn, C.P. Adams, Y.M. Mukovskii, A.A. Arsenov, and D.A. Shulyatev, *Charge correlations in the magnetoresistive oxide $La_{0.7}Ca_{0.3}MnO_3$ (invited)*, Journal of Applied Physics **89**, 6846 (2001).
9. C.P. Adams, J.W. Lynn, Y.M. Mukovskii, A.A. Arsenov, and D.A. Shulyatev, *Charge ordering and polaron formation in $La_{0.7}Ca_{0.3}MnO_3$* , Physical Review Letters **85**, 3954 (2000).
10. C.P. Adams, T.E. Mason, E. Fawcett, A.Z. Menshikov, C.D. Frost, J.B. Forsyth, T.G. Perring, and T.M. Holden, *High-energy magnetic excitations and anomalous spin-wave damping in $FeGe_2$* , Journal of Physics: Condensed Matter **12**, 8487 (2000).

11. N.P. Raju, J.E. Greeden, M.A. Subramanian, C.P. Adams, and T.E. Mason, *Magnetic and specific heat studies of the cation ordered pyrochlore NH_4CoAlF_6* , Physical Review B **58**, 5550 (1998).
12. C.P. Adams, T.E. Mason, D.P. Young, J. Sarrao, I.P. Swainson, W.J.L. Buyers, Z. Fisk, and G. Aeppli, *Magnetic ordering in $Tb_3Sb_4Au_3$* , Physica B **241-243**, 786 (1998).
13. T.E. Mason, C.P. Adams, S.A.M. Mentink, E. Fawcett, A.Z. Menshikov, C.D. Frost, J.B. Forsyth, T.G. Perring, and T.M. Holden, *Itinerant Magnetism in $FeGe_2$* , Physica B **241**, 449 (1997).
14. M.O. Steinitz, D.A. Pink, C.P. Adams, and D.A. Tindall, *A model for the occurrence of lock-ins in holmium in c-axis magnetic fields*, Canadian Journal of Physics **75**, 433 (1997).
15. C.P. Adams, T.E. Mason, S.A.M. Mentink, and E. Fawcett, *The magnetic phase diagram and transport properties of $FeGe_2$* , Journal of Physics: Condensed Matter **9**, 1347 (1997).
16. M.O. Steinitz, D.A. Tindall, and C.P. Adams, *Finite size effects and the devils's staircase in holmium*, Journal of Magnetism and Magnetic Materials **140**, 759 (1995).
17. D.A. Tindall, C.P. Adams, M.O. Steinitz, and T.M. Holden, *Discovery of $\tau = 2/9$ lock-in in holmium*, Journal of Applied Physics **76**, 6229 (1994).
18. D.A. Tindall, C.P. Adams, M.O. Steinitz, and T.M. Holden, *Details of the magnetic phase diagram of holmium from neutron diffraction in b-axis fields*, Journal of Applied Physics **75**, 6318 (1994).

Refereed Conference Proceedings

19. E. Fawcett, C.P. Adams, and A.Z. Menshikov, *$FeGe_2$ and Cr: A strong contrast in itinerant antiferromagnets*, invited talk, proceedings of the Moscow International Symposium on Magnetism (1999).

Non-refereed

20. Canadian Institute for Neutron Scattering, *Planning to 2050 for Materials Research with Neutron Beams in Canada*, (Carl Adams was one of five subcommittee members to finalize the first draft) (2008).
21. Carl Adams, Jeremy Pencer, Bonnie Quinn, Sarah Schooling, David Pink, Terry Beveridge, Mu-Ping Nieh, John Katsaras and Charles Hanna *Lipopolysaccharide Vesicles: SANS Experiments and Theory*, poster at the Advanced Foods and Materials Network 2006 Scientific Conference (Calgary).
22. J. Pencer, S.R. Schooling, B.E. Quinn, F.R. Hallett, M.-P. Nieh, T. Harroun, D.A. Pink, T.J. Beveridge, C. Adams, and J. Katsaras, *Small-angle Neutron Scattering Characterization of Unilamellar Vesicles of Lipopolysaccharides derived from Pseudomonas aeruginosa*, poster at the Advanced Foods and Materials Network 2005 Scientific Conference (Toronto).
23. C.P. Adams, J.W. Lynn, Y.M. Mukovskii, A.A. Arsenov, and D.A. Shulyatev, *Charge ordering in $La_{0.7}Ca_{0.3}MnO_3$* , NIST Annual Report (2001).

24. C.P. Adams, S.H. Lee, Y.S. Lee, and J.W. Lynn *Triple-axis neutron scattering at NIST*, Neutron News (2001).
25. C.P. Adams, A.Z. Menshikov, T.E. Mason, and T.M. Holden, *Magnetic Structure and phase diagram of $Fe(Ge_{.96}Ga_{.04})_2$* , featured report, DUALSPEC Annual Report, Steacie Institute for Molecular Sciences (1997).

Contributions to Research and Development

26. C.P. Adams, J.W. Lynn, P. Brand, S. Trevino, D. Clem, T. Forshner, and D. Mildner, development of focusing copper monochromators for neutron research, NIST Center for Neutron Research (2001).