

Curriculum Vitae

Appointments & Education

Chair, Department of Physics	College of the Holy Cross	2009 – 2015
Associate Professor of Physics	College of the Holy Cross	2005 – Present
Assistant Professor of Physics	College of the Holy Cross	1999 – 2005
Postdoctoral Fellow	Harvard University	1995 – 1999
Ph.D., Physics	Yale University	1990 – 1995
M.A., Physics	Brandeis University	1988 – 1990
Device Development Engineer	Lasertron, Inc. Burlington, Mass.	1984 – 1988
B.S., Physics	Massachusetts Institute of Technology	1984 – 1988

Service Activities

College

Current: Digital Signage Coordinator for the sciences; Crompton Gold Medal Committee, Science Ambassadors Advisor; co-organizer of Hogwarts campus event with Big Brothers/Big Sisters

Previous: Academic Affairs Council, Academic Standing Committee; Committee on Fellowships, Research and Publication (Chair); Committee on the Curriculum (Chair); Curricular Goals Subcommittee on Capstone Experiences.

Professional

Current: Regional Director, New England section of Advanced Lab Physics Association; Reviewer for American Journal of Physics

Previous: Reviewer - National Science Foundation grants

Other

Board of Trustees, Beth El Temple Center	2006-2008
Board of Directors, Harvard Law School Child Care Center	1996-1998

Professional Memberships

American Physical Society	1990 – present
American Association of Physics Teachers	2000 – present
Advanced Laboratory Physics Association	2015 – present

Peer-Reviewed Publications (reverse chronological order)**16. Limits of Precision in the Balmer Lines Spectroscopy Lab**

Timothy Roach

2018 BFY Proceedings, edited by Melissa Eblen-Zayas, Ernest Behringer, Marta Dark McNeese, and Elvis Geneston; 10.1119/bfy.2018.pr.013, (2018) 4pp.

15. Sequential Introduction of Data Analysis Methods in the Modern Lab

Timothy Roach

2015 BFY Proceedings, edited by Eblen-Zayas, Behringer, and Kozminski; doi:10.1119/bfy.2015.pr.022, (2015) 4pp.

14. Effect of magnetization inhomogeneity on magnetic microtraps for atomsS. Whitlock, B. V. Hall, T. Roach, R. Anderson, M. Volk, P. Hannaford, and A. I. Sidorov
Physical Review A, Volume 75, Issue 4, 043602, (2007) 6pp.**13. A novel rubidium atomic beam with an alkali dispenser source**

Timothy M. Roach and Dwayne Henclewood

Journal of Vacuum Science and Technology A, November/December (2004) pp 2384 – 2387.

12. Atom wave diffraction in an accelerating potential

Timothy M. Roach

Journal of Physics B: Atomic, Molecular and Optical Physics, Volume 37 (2004) pp 3351 – 3562.

11. First positron cooling of antiprotons

G. Gabrielse, J. Estrada, J.N. Tan, P. Yesley, N.S. Bowden, P. Oxley, T. Roach, C.H. Storry, M. Wessels, J. Tan, D. Grozonka, W. Oelert, G. Scheppers, T. Sefsick, W. Breunlich, M. Carngelli, H. Fuhrmann, R. King, R. Ursin, H. Zmeskal, H. Kalinowsky, C. Wesdorp, J. Walz, K.S.E. Eikema, and T. Haensch

Physics Letters B, Volume 507 (2001) pp 1 – 6.

10. Field Ionization of Strongly Magnetized Rydberg Positronium: A New Physical Mechanism for Positron Accumulation

J. Estrada, T. Roach, J.N. Tan, P. Yesley, and G. Gabrielse

Physical Review Letters, Volume 84 (2000) pp 859 – 862.

9. Progress Toward Cold Antihydrogen

G. Gabrielse, J. Estrada, S. Peil, T. Roach, J.N. Tan and P. Yesley

Non-Neutral Plasma Physics III (AIP Conference Proceedings 498), edited by J.J. Bollinger, R.L. Spencer, R.C. Davidson, American Institute of Physics, Melville, New York, (1999) p 29.

8. The Ingredients of Cold Antihydrogen: Simultaneous Confinement of Antiprotons and Positrons at 4 K

G. Gabrielse, D.S. Hall, T. Roach, P. Yesley, A. Khabbaz, J. Estrada, C. Heimann, and H. Kalinowsky

Physics Letters B, Volume 455 (1999) pp 311 – 315.

7. Comparing the Antiproton and Proton and Progress Toward Cold Antihydrogen

G. Gabrielse, D.S. Hall, A. Khabbaz, T. Roach, P. Yesley, C. Heimann, H. Kalinowsky, W. Jhe and B. Brown; edited by H. Koch, M. Kunze and K. Peters

Nuclear Physics B (Proc. Suppl.), Volume 56A (1997) pp 326 – 335.

6. Atom Optics with Magnetic Surfaces: II. Microscopic Analysis of the 'Floppy Disk' Mirror

I.G. Hughes, P.A. Barton, T.M. Roach, and E.A. Hinds
Journal of Physics B, Volume 30 (1997) pp 2119 – 2132.

5. Atom Optics with Magnetic Surfaces: I. Storage of Cold Atoms in a Curved 'Floppy Disk'

I.G. Hughes, P.A. Barton, T.M. Roach, M.G. Boshier, and E.A. Hinds
Journal of Physics B, Volume 30 (1997) pp 647 – 658.

4. Cold Atom Reflection from Flat and Curved Magnetic Mirrors

T.M. Roach, H. Abele, M.G. Boshier, F. Gahbauer, H.L. Grossman, K.P. Zetie, and E.A. Hinds
Laser Spectroscopy, XIIth International Conference, edited by M. Inguscio, M. Allegrini, and A. Sasso, World Scientific (1995) pp 113-116.

3. Realization of a Magnetic Mirror for Cold Atoms

T. Roach, H. Abele, M.G. Boshier, H.L. Grossman, K.P. Zetie, and E.A. Hinds
Physical Review Letters, Volume 75 (1995) pp 629 – 632.

2. Electrostatic Microfocussing Limits for Positron Beams

T. Roach, A. Bakshi and K. F. Canter
Measurement Science and Technology, Volume 6 (1995) pp 496 – 501.

1. Positron Annihilation Microprobe Resolution Limits

K. F. Canter, G. R. Brandes, T. M. Roach and A. P. Mills, Jr.
Solid State Phenomena, Vols. 28 & 29 (1993) pp 341 – 346.

Talks & Presentations (*partial*)***Density variations with mm-scale periodicity in optical molasses***

Oral presentation at the Annual Meeting of the APS Division of Atomic, Molecular, and Optical Physics, Ft. Lauderdale, Florida.
May 30, 2018

Periodic density variations in clouds of laser-cooled atoms

Poster presentation at the New England Section Spring Meeting of the American Physical Society, Boston, Massachusetts.
March 16, 2018

Compact spectrometer for precision studies of multimode behavior in an extended-cavity diode laser

Poster presentation at the Annual Meeting of the APS Division of Atomic, Molecular, and Optical Physics, Providence, Rhode Island.
May 25, 2016

Sequential Introduction of Data Analysis Methods in the Modern Lab

Poster presentation at BFYII (Conference on Lab Instruction Beyond the 1st Year of College), College Park, Maryland.
July 23, 2015

Interactions of cold rubidium atoms with a magnetic reflector

Poster presentation at the 45th Annual Meeting of the APS Division of Atomic, Molecular, and Optical Physics, Madison, Wisconsin.
June 3, 2014

Slow atom scattering from magnetic media

Poster presentation at the annual meeting of the Division of Atomic, Molecular and Optical Physics of the American Physical Society, Quebec City, Quebec, Canada.
June 6, 2013.

Current tuning behavior of an extended-cavity diode laser: experiment and model

Poster presentation at the 42nd Annual Meeting of the Division of Atomic, Molecular and Optical Physics of the American Physical Society, Atlanta, Georgia.
June 14, 2011.

Variation of optical sideband intensity with current tuning in an extended cavity diode laser

Poster presentation at annual meeting of the Division of Atomic, Molecular and Optical Physics of the American Physical Society, Houston, Texas.
May 26, 2010.

Optical Sidebands in Extended Cavity Diode Lasers

Poster presentation at annual meeting of the Division of Atomic, Molecular and Optical Physics of the American Physical Society, Charlottesville, Virginia.
May 20, 2009.

Modeling gravitational distortion in atom optics experiments

Optics Seminar, University of Melbourne, Melbourne, Australia
Tuesday, May 2, 2006

Manipulation of cold atom clouds: gravitational effects & magnetic media

CAOUS Seminar, Swinburne University, Melbourne, Australia
Thursday 23 February 2006

Magnetic Media for Atomic Diffraction

Poster presentation at annual meeting of the Division of Atomic, Molecular and Optical Physics of the American Physical Society, Lincoln, Nebraska.
May 18, 2005.

Atom optics in the presence of gravity

Worcester Polytechnic Institute Physics Colloquium
January 24, 2005.

Simple Rubidium Atomic Beam Apparatus

Poster presentation at the Annual Meeting of the American Physical Society DAMOP Section, Boulder, CO.
May 2003

Extracting the 'wave' of wave-particle-duality using laser-cooled atoms

Wesleyan University Physics Colloquium
April 10, 2003.