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BRIAN C. ODOM

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PROFESSIONAL PREPARATION

University of Chicago	Physics	Kavli Institute Postdoctoral Fellow, 2004-8
Harvard University	Physics	Ph.D., 2005
Stanford University	Physics	B.S. with Honors, 1995

APPOINTMENTS

2015 - Associate Professor, Department of Physics and Astronomy, Northwestern University
2008 - 15 Assistant Professor, Department of Physics and Astronomy, Northwestern University

AWARDS AND HONORS

2010 Sloan Research Fellow, Alfred P. Sloan Foundation
2009 Young Investigator award (YIP), Air Force Office of Scientific Research
2009 Searle Fellow, Northwestern University
2009 Packard Fellow, David and Lucile Packard Foundation
2009 CAREER Award, National Science Foundation
2008 Kavli Fellow, National Academy of Sciences
2006 Arthur H. Compton Lecturer, Enrico Fermi Institute, University of Chicago
2006 Outstanding Thesis Award, Division of Atomic, Molecular Optical Physics, APS
2004 Kavli Institute Fellowship, University of Chicago

PUBLICATIONS

1. "IP determination and 1+1 REMPI spectrum of SiO at 210-220 nm with implications for SiO+ ion trap loading," P.R. Stollenwerk, I.O. Antonov, and B.C. Odom. *J. Mol. Spectrosc.* 335, 40 (2019)
2. "Prospects for Polar Molecular Ion Optical Probe of Varying Proton-Electron Mass Ratio," M.G. Kokish, P.R. Stollenwerk, M. Kajita, and B.C. Odom. *Phys. Rev. A* 98, 052513 (2018)
3. "Optical Pumping of TeH^+: Implications for the Search for Varying m_p/m_e," P.R. Stollenwerk, M.G. Kokish, A.G.S. de Oliveira-Filho, F.R. Ornellas, and B.C. Odom. *Atoms* 6, 53 (2018)
4. "Enabling Lasing Action in Hybrid Atomic–Nanophotonic Integrated Structures," H. Alaeian, B.C. Odom, J. Bravo-Abad, *Ann. Phys. (Berlin)* 530, 1800203 (2018)
5. "Electronic spectroscopy of a cold SiO^+ sample: Implications for optical pumping," P.R. Stollenwerk, B.C. Odom, D. L. Kokkin, and T. Steimle. *J. Mol. Spectrosc.* 332, 26 (2017)
6. "Noise reduction of a Libbrecht--Hall style current driver," C.M. Seck, P.J. Martin, E.C. Cook, B.C. Odom, and D.A. Steck. *Rev. Sci. Inst.* 87, 064703 (2016)
7. "Raman sideband cooling of a $^{138}Ba^+$ ion using a Zeeman interval," C.M. Seck, M.G. Kokish, M.R. Dietrich, and B.C. Odom. *Phys. Rev. A* 93, 053415 (2016)
8. "Trapped ion chain thermometry and mass spectrometry through imaging," V. Rajagopal, J. P. Marler, M.G. Kokish, and B. C. Odom. *Eur. J. Mass Spectrom.* 22, 1 (2016)

9. "Simple and Compact Nozzle Design for Laser Vaporization Sources," M.G. Kokish, M.R. Dietrich, and B. C. Odom. *J. Phys. B: At. Mol. Opt. Phys*. 49, 035301 (2016)
10. "Doppler Amplification of Motion of a Trapped Three-Level Ion," X. Chen, Y.-W. Lin, and B.C. Odom, *New J. Phys*. 17, 043037 (2015)
11. "Note: High Density Pulsed Molecular Beam for Cold Ion Chemistry," M.G. Kokish, V. Rajagopal, J.P. Marler, and B.C. Odom, *Rev. Sci. Instrum.* 85, 08611 (2014)
12. "Broadband Optical Cooling of Molecular Rotors from Room Temperature to the Ground State," C.-Y. Lien, C.M. Seck, Y.-W. Lin, J.H.V. Nguyen, D.A. Tabor, B.C. Odom, *Nat. Commun.* 5, 4783 (2014)
13. "Rotational State Analysis of AlH^+ by Two-Photon Dissociation," C.M. Seck, E.G. Hohenstein, C.-Y. Lien, P.R. Stollenwerk, B.C. Odom, *J. Mol. Spectrosc.* 300, 108 (2014)
14. "Resonant Few-Photon Excitation of a Single-Ion Oscillator," Y.-W. Lin, S. Williams, and B.C. Odom. *Phys. Rev. A* 87, 011402(R) (2013)
15. "Suitability of linear quadrupole ion traps for large Coulomb crystals," D. Tabor, V. Rajagopal, Y.-W. Lin, and B. Odom. *Appl. Phys. B.* 107, 1097 (2012)
16. "Optical pulse-shaping for internal cooling of molecules," C.-Y. Lien, S. Williams, and B. Odom. *Phys. Chem. Chem. Phys*., 13, 18825 (2011)
17. "Challenges of laser-cooling molecular ions," J.H.V. Nguyen, C.R. Viteri, E.G. Hohenstein, C.D. Sherrill, K.R. Brown, and B. Odom. *New J. Phys.* 13, 063023 (2011)
18. "Prospects for Doppler cooling of three-electronic-level molecules," J.H.V. Nguyen, and B. Odom. *Phys. Rev. A* 83, 053404 (2011)
19. "Spin-Dependent WIMP Limits from a Bubble Chamber," E. Behnke, J.I. Collar, P.S. Cooper, K. Crum, M. Crisler, M. Hu, I. Levine, D. Nakazawa, H. Nguyen, B. Odom, E. Ramberg, J. Rasmussen, N. Riley, A. Sonnenschein, M. Szydagis, and R. Tschirhart. *Science* 319, 933 (2008)
20. "Identification of Weakly Interacting Massive Particles Through a Combined Measurement of Axial and Scalar Couplings," G. Bertone, D.G. Cerdeno, J.I. Collar, and B. Odom. *Phys. Rev. Lett.* 99, 151301 (2007)
21. "Development of Bubble Chambers With Enhanced Stability and Sensitivity to Low-Energy Nuclear Recoils," W.J. Bolte, J.I. Collar, M. Crisler, J. Hall, D. Holmgren, D. Nakazawa, B. Odom, K. O'Sullivan, R. Plunkett, E. Ramberg, A. Raskin, A. Sonnenschein, and J.D. Vieira. *Nucl. Instrum. Meth. A* 577, 569 (2007)
22. "New Measurement of the Electron Magnetic Moment Using a One-Electron Quantum Cyclotron," B. Odom, D. Hanneke, B. D'Urso, and G. Gabrielse. *Phys. Rev. Lett.* 97, 030801 (2006)
23. "New Determination of the Fine Structure Constant from the Electron g Value and QED," G. Gabrielse, D. Hanneke, T. Kinoshita, M. Nio, and B. Odom. *Phys. Rev. Lett.* 97 030802 (2006)
24. "A Bubble Chamber for Dark Matter Detection (the COUPP Project Status)," W.J. Bolte, J.I. Collar, M. Crisler, J. Hall, J. Krider, K. Crum, D. Holmgren, C.M. Lei, D. Nakazawa, H. Nguyen, B. Odom, K. O'Sullivan, R. Plunkett, E. Ramberg, A. Raskin, J. Rasmussen, R. Schmit, A. Sonnenschein, M. Szydagis, and J.D. Vieira. *Journal of Physics: Conference Series* 39 126 (2006)
25. "Single-Particle Self-excited Oscillator," B. D'Urso, R. Van Handel, B. Odom, and G. Gabrielse. *Phys. Rev. Lett.* 94, 113002 (2005)

26. "COUPP, A Heavy-Liquid Bubble Chamber for WIMP Detection," J. Bolte, J.I. Collar, M. Crisler, D. Holmgren, D. Nakazawa, B. Odom, K. O'Sullivan, R. Plunkett, E. Ramberg, A. Raskin, A. Sonnenschein, J.D. Vieira. *Proceedings from IDM2004,* Edinburgh, Scotland (2004)

27. "Feedback Cooling of a One-Electron Oscillator," B. D'Urso, B. Odom, and G. Gabrielse. *Phys. Rev. Lett.* 90, 043001 (2003)

28. "One-Electron Cyclotron (and Implications for Cold Antihydrogen)," G. Gabrielse, S. Peil, B. Odom, and B. D'Urso. In *Atomic Physics 17*, Vol. 551, edited by E. Arimondo, P. DeNatale, and M. Inguscio. American Institute of Physics, Melville, New York, pp. 108-120 (2001)

29. "Spectroscopy of Buffer-Gas Cooled Vanadium Monoxide in a Magnetic Trapping Field," J.D. Weinstein, R. deCarvalho, K. Amar, A. Boca, B.C. Odom, B. Friedrich, J.M. Doyle. *J. Chem. Phys.* 109, 2656 (1998)

30. "Quantum Interference in Electron Collision," R. Liu, B. Odom, Y. Yamamoto, and S. Tarucha. *Nature* 391, 6664 (1998)

INVITED PRESENTATIONS

2018	European Conference on Trapped Ions, Rehovot, Israel
2018	Midwest Cold Atoms Workshop, Champaign, IL
2017	BSM in Direct, Indirect and Tabletop Experiments, Rehovot, Israel
2017	Midwest Cold Atoms Conference, Ann Arbor, MI
2017	Cold Molecular Ions Workshop, Les Houches, France
2017	Georgia State University, Colloquium, Atlanta, GA
2017	University of Michigan, AMO Seminar, Ann Arbor, MI
2016	American Chemical Society conference, Philadelphia, PA
2016	Michigan State University, Condensed Matter Seminar, East Lansing, MI
2015	Purdue University, AMO Seminar, West Lafayette, IN
2015	12th US-Japan Seminar on Many Body Quantum Systems, Madison, WI
2015	Fermilab, Colloquium, Batavia, IL
2015	Gordon Research Conference, Newport, RI
2015	APS March Meeting, San Antonio, TX
2014	Midwest Cold Atoms Conference, Argonne National Lab, Argonne, IL
2014	Center for Ultracold Atoms at MIT/Harvard, Seminar, Cambridge, MA
2014	DAMOP conference, Madison, WI
2014	UC Berkeley, AMO Seminar, Berkeley, CA
2014	Indiana University, Colloquium, Bloomington, IN
2014	Argonne National Laboratory, AMO Seminar, Argonne, IL
2013	Midwest Cold Atoms Workshop, Purdue, IN
2013	ITAMP Ion Trapping Workshop, Cambridge, MA
2013	IOTA Molecular Ions Workshop, Arosa, Switzerland
2013	Stanford University, Applied Physics Seminar, Stanford, CA
2013	Georgia Tech, AMO Seminar, Atlanta, GA
2013	Rice University, AMO Seminar, Houston, TX
2013	Duke University, EECS Seminar, Durham, NC
2013	University of Michigan, AMO Seminar, Ann Arbor, MI

2012 University of Wisconsin, AMO Seminar, Madison, WI
2012 European Conference on Trapped Ions (ECTI), Obergurgl, Austria
2012 Georgia Tech, Molecular Ion Workshop, Atlanta, GA
2012 Les Houches School, "Physics with Trapped Charged Particles," Les Houches, France
2012 AFOSR Program Review, Washington, D.C.
2011 Fermilab, Center for Particle Astrophysics Seminar, Batavia, IL
2011 University of Colorado Boulder, Special AMO Seminar, Boulder, CO
2011 Northwestern University, Special AMO Seminar. Evanston, IL
2011 Fermilab, Laboratory Tests of Dark Energy Workshop, Batavia, IL
2011 Midwest Cold Atoms Conference, Evanston, IL
2011 Northwestern University, Heilborn Lecture, Evanston, IL
2011 Argonne National Laboratory, High Energy Seminar, Argonne, IL
2010 NICT, AMO Seminar, Tokyo, Japan
2010 University of Illinois at Urbana-Champaign, AMO Seminar, Urbana, IL
2010 Midwest Cold Atoms Workshop, Ann Arbor, MI
2010 University of Washington, Colloquium. Seattle, WA
2010 Argonne National Laboratory, Heavy Ion Seminar, Argonne, IL
2010 Future Frontiers in Fundamental Physics Conference, Abu Dhabi
2009 Midwest Cold Atoms Conference, Chicago, IL
2008 National Academy of Sciences, Japanese-American Frontiers of Science Symposium. Irvine, CA
2008 Ulm University, AMO Seminar, Ulm, Germany
2008 University of Provence, AMO Seminar, Marseille, France
2008 University of California, Santa Barbara, HEP Seminar, Santa Barbara, CA
2008 University of California, Berkeley, AMO Seminar, Berkeley, CA
2008 Massachusetts Institute of Technology, Nuclear and Particle Colloquium, Boston, MA
2008 University of Michigan, CM/AMO Seminar, Ann Arbor, MI
2008 New York University, Physics Colloquium. New York, NY
2008 New York University, CCPP Seminar. New York, NY
2008 University of Chicago, James Franck Institute Seminar, Chicago, IL
2007 Stanford Linear Accelerator Center, Experimental Seminar, Menlo Park, CA
2006 Argonne National Laboratory, Medium Energy Physics Seminar, Argonne, IL
2006 Yale University, Weak Interactions Seminar, New Haven, CT
2006 University of Maryland, Combined Nuclear/HEP Seminar, College Park, MD
2006 Northwestern University, Physics Colloquium, Evanston, IL
2006 Division of Nuclear Physics, Dark Matter Mini-Symposium, Nashville, TN
2006 Arthur H. Compton Lecturer, Enrico Fermi Institute, University of Chicago, IL http://kicp.uchicago.edu/~odom/compton
2006 6th International Workshop on The Identification of Dark Matter, Rhodes, Greece
2006 APS Division of Atomic Molecular Physics, Thesis Prize presentation, Knoxville, TN
2005 SNOLAB 2005 Workshop, Lively, Canada
2005 Northwestern University, HEP seminar, Evanston, IL

2004 University of Chicago, Kavli Institute seminar, Chicago, IL
2004 Argonne National Laboratory, AMO seminar, Argonne, IL
2004 Third Meeting on CPT and Lorentz Symmetry, Bloomington, IN
2003 University of Chicago, HEP seminar, Chicago, IL
2002 Fermilab, Special seminar, Batavia, IL
1999 Smithsonian Institute for Astrophysics, AMO seminar, Cambridge, MA

GRANTS FUNDED

2017-22 Air Force Office of Scientific Research, $950K
"Molecular Ion Quantum Control"

2017-20 Office of Naval Research, $493K
"Blackbody Thermometry with Quantum-State-Prepared Molecular Ions"

2014-19 Army Office of Sponsored Research, $977K (Co-I portion)
"MURI: Precision Chemical Dynamics and Quantum Control of Ultracold Molecular Ion Reactions"
Co-Investigators: Eric Hudson (PI, UCLA), Ken Brown, Robin Cote, Michael Heaven, Svetlana Kotochigova, Arthur Suits

2014-18 National Science Foundation, $510K
"Single-Molecule Fluorescence Imaging and Entanglement"

2014-17 National Science Foundation, $200K (Co-I portion)
"CEMRI: Multifunctional Nanoscale Material Structures"
PI: Mark Hersam

2013-16 Air Force Office of Scientific Research, $748K
"Logic-Enabled Spectroscopy of Single Trapped Molecular Ions"

2013-14 National Science Foundation, $35K
"Foundations for Trapped Molecular Ion Parity-Violation Studies"

2011-14 National Science Foundation, $200K (Co-I portion)
CEMRI: Multifunctional Nanoscale Material Structures

2010-13 Air Force Office of Scientific Research, YIP, $360K
"On-Demand Rotational State Preparation and Molecular Quantum Logic Spectroscopy"

2010-12 Alfred P. Sloan Foundation, $50K

2009-14 David and Lucile Packard Foundation, $875K
"Probing Broken Symmetries Using Single-Molecule Quantum Logic Spectroscopy"

2009-14 National Science Foundation, CAREER, $600K
"Precision Spectroscopy of milliKelvin Trapped Molecular Ions"

2009-10 Illinois Space Grant Consortium, seed grant, $10K
"Laboratory Investigations of Space Chemistry"

PROFESSIONAL ACTIVITY AND SERVICE

- Member; American Physical Society
- Grant Reviewer; National Science Foundation, Air Force Office of Scientific Research, Army Office of Research, Department of Energy, Research Corporation
- Manuscript Reviewer; Nano Letters, Nature, New Journal of Physics, Physical Review A, Physical Review Letters, Reviews of Scientific Instruments
- Member; DAMOP Program Subcommittee on Precision Measurements, 2016-17
- Session Chair; DAMOP 2016, Providence, RI
- Sorter; DAMOP Sorter's Meeting, 2016
- Chair; DAMOP Program Subcommittee on Cold Gases, 2015-16

- Member at Large; APS Topical Group on Precision Measurement & Fundamental Constants, 2014-16
- Session Chair; DAMOP 2015, Columbus, OH
- Sorter; DAMOP Sorter's Meeting, 2015
- Panelist; National Science Foundation AMO grant proposal review, 2015
- Member; DAMOP Program Subcommittee on Quantum Information Processing, 2014-15
- Session Chair; International Conference on Atomic Physics (ICAP), 2014
- Executive Committee Member-At-Large (elected); Topical Group on Precision Measurements and Fundamental Constants, APS, 2014-2017
- Program Committee; APS Division of Atomic, Molecular, Optical and Physics, 2014-2017
- Session Chair; Midwest Cold Atoms Workshop, Purdue University, 2013
- Co-Organizer; Molecular Ions Workshop, Georgia Tech, 2012
- Session Chair; Midwest Cold Atoms Workshop, University of Illinois, 2012
- Conference Chair; Midwest Cold Atoms Workshop, Northwestern University, 2011
- Session Chair; Midwest Cold Atoms Workshop, University of Michigan, 2010
- Panelist; National Science Foundation AMO grant proposal review, 2009

DEPARTMENTAL AND UNIVERSITY SERVICE

2017-	Member; Center for Fundamental Physics Faculty Search Committee
2017-	Co-chair; Department Tenure Committee
2016-	Faculty Director; Northwestern University Research Shops
2016-	Member; MAKE Northwestern Committee
2015-	Chair; Graduate Curriculum Committee, Physics & Astronomy Department
2015-	Director of Graduate Studies; Physics & Astronomy Department
2014-	Member; Thesis Committee, Wenchao Xu, UIUC
2016-17	Member; Center for Fundamental Physics Faculty Search Committee
2015-16	Member; Junior Faculty Search Committee, IIN/MSE Department
2015-16	Member; Thesis Committee, Dan Baxter
2014	Member; Vision Committee, Physics & Astronomy Department
2014-15	Member; Heilborn Lecture Committee, Physics & Astronomy Department
2014-15	Member; Graduate Curriculum Committee, Physics & Astronomy Department
2013-14	Member; Alumni Relations Committee
2013-14	Member; Heilborn Lecture Committee
2013-14	Member; Thesis Committee, Laszlo Frazer
2012-13	Member; Heilborn Lecture Committee
2012-16	Organizer; Atomic, Molecular and Optical Physics Seminar Series
2012-16	Member; Thesis Committee, Resham Sarkar
2011-15	Member; Thesis Committee, May Kim
2011-15	Member; Thesis Committee, Joseph Sklenar
2011-12	Chair; Admissions Committee
2011-12	Member; Goldwater Fellows (University) Committee
2010-11	Chair; Admissions Committee
2010-11	Member; Graduate Curriculum Committee

2010-11	Member; Faculty Search Committee, Optical Condensed Matter
2009-10	Faculty Fellow; Public Affairs Residential College
2009-10	Member; Admissions Committee
2009-10	Member; Faculty Search Committee, Theoretical Quantum Manipulation
2009-10	Editor; Departmental Newsletter
2009-10	Member; Heilborn Lecture Committee
2009-10	Member; Thesis Committee, Monica Patel
2009	Judge; Undergraduate Research Symposium
2009-	Initiator; Departmental champagne toast for faculty awards, a continuing tradition
2008-9	Producer; Departmental Newsletter
2008-9	Member; Admissions Committee
2008-9	Member; Heilborn Lecture Committee

TEACHING

2017	Graduate Quantum Mechanics 1st quarter, 412-1
2016	Graduate Quantum Mechanics 1st quarter, 412-1
2016	Light and Modern Physics, 125-3, Freshman Integrated Science Program series
2015	Atomic and Molecular Trapping and Cooling, 460-0, Graduate
2014	Space, Time, and Matter, 110-6, Freshman Seminar
2014	Graduate Quantum Mechanics 3rd quarter, 412-3
2013	Space, Time, and Matter, 110-6, Freshman Seminar
2013	Light and Modern Physics, 125-3, Freshman Integrated Science Program series
2012	The Science of Time, 110-6, Freshman Seminar
2012	Light and Modern Physics, 125-3, Freshman Integrated Science Program series
2011	Light and Modern Physics, 125-3, Freshman Integrated Science Program series
2010	Light and Modern Physics, 125-3, Freshman Integrated Science Program series
2010	Atom Trapping and Applications, 460-0, Graduate
2009	Atom Trapping and Applications, 450-0, Graduate

OUTREACH

2017	Volunteer Speaker: High Jump's Career Show & Tell, for Chicago area middle schools s
2016	Host: School of the Art Institute class tour of laser laboratory
2014	Undergraduate quantum mechanics guest lecture, Northwestern University
2014	Society of Physics Students evening seminar, Northwestern University
2013	DAMOP outreach lecture, Quebec City
2012	Production of Doppler cooling outreach video by undergrad Lauren Ruth
2010	Society of Physics Students evening seminar, Northwestern University
2009	Society of Physics Students evening seminar, Northwestern University

RESEARCH PERSONNEL SUPERVISED

2015-	Joseph Cordero-Mercado, PhD Student
2015-	Panpan Huang, PhD Student
2015-16	Pinrui Shen, Masters Student
2013-16	

2013-15	Zeke Tung, Postdoc
	Matthew Dietrich, Research Assistant Professor
2013-	Immediate placement: Tenure track Assistant Physicist position, Argonne National Lab
2013-	Mark Kokish, PhD Student (co-supervised with Tamar Seideman, Chemistry)
2010-16	Patrick Stollenwerk, PhD Student
2009-16	Ming-Feng Tu, PhD Student
2009-	Chris Seck, PhD Student
2009-14	Yen-Wei Lin, PhD Student
2009-14	David Tabor, PhD Student
	Chien-Yu Lien, PhD Student
2009-12	Immediate placement: Systems Engineer, Intel
	Joan Marler, Postdoc
2009-12	Immediate placement: Assistant Professor at Clemson University
	Jason Nguyen, Postdoc
2008-14	Immediate placement: Postdoc with Randy Hulet, Rice University
	Vaishnavi Rajagopal, PhD Student
	Immediate placement: Postdoc with Alessandra Ferzoco, Rowland Institute, Harvard

CURRENT COLLABORATORS

1. Tim Steimle, Arizona State University
2. Ken Brown, Duke University
3. Robin Cote, University of Connecticut
4. Michael Heaven, Emory University
5. Eric Hudson, University of California Los Angeles
6. Svetlana Kotochigova, Temple University/NIST
7. Arthur Suits, University of Missouri-Columbia