

David H. McIntyre

Curriculum Vitae

ADDRESS: Department of Physics
Oregon State University
Weniger Hall 301
Corvallis, OR 97331-6507
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email: mcintyre@ucs.orst.edu

PERSONAL: Born 4 July 1958
United States Citizen

EDUCATION:

1987 Ph.D. in Physics, Stanford University
Thesis: "High Resolution Laser Spectroscopy of Tellurium and Hydrogen: A
Measurement of the Rydberg Constant."
Thesis Advisor: Professor Theodor W. Hänsch

1984 M.S. in Physics, Stanford University

1980 B.S. in Physics (with Highest Distinction), University of Arizona

EMPLOYMENT:

2011-present: Professor
Department of Physics, Oregon State University

2013-2014: Interim Associate Dean for Research, Graduate Studies and Administration
College of Science, Oregon State University

1994-2011: Associate Professor
Department of Physics, Oregon State University

1999-present University Honors College Faculty
Oregon State University

1995-1996 Visiting Researcher
Department of Physics and Applied Physics, University of Strathclyde
Glasgow, Scotland

1989-1994: Assistant Professor
Department of Physics, Oregon State University

1987-1989 Scientist in Laser Spectroscopy Group
Max Planck Institute for Quantum Optics, Garching bei München, West
Germany

1983-1987 Graduate Student Research Assistant in Laser Spectroscopy Group
Department of Physics, Stanford University

1981-1982 Research Assistant in Experimental Relativity Group
Department of Physics, University of Arizona

1978-1980 Undergraduate Research Assistant in High Energy Physics Group
Department of Physics, University of Arizona

HONORS:

2011 Frederick H. Horne Award for Sustained Excellence in Teaching Science
1982-1985 National Science Foundation Graduate Fellowship
1980 Phi Beta Kappa
1980 Sigma Pi Sigma
1978 National Science Foundation Undergraduate Summer Research Grant

PROFESSIONAL SOCIETY

MEMBERSHIPS:

American Physical Society
American Association of Physics Teachers
Optical Society of America

TEACHING EXPERIENCE:

Oregon State University:
2013-2014 Physics 481, Physical Optics
2012-2013 Physics 431, Electromagnetism Capstone
Physics 481, Physical Optics
Physics 610, Geometric Optics (University of Oregon)
2011-2012 Physics 431, Electromagnetism Capstone
Physics 221H, Honors Recitation for Physics 211
Physics 451, Quantum Mechanics Capstone
Physics 426, Central Forces
Physics 585, Atomic, Molecular, and Optical Physics
Physics 610, Introduction to Optics (University of Oregon)
2010-2011 Physics 431, Electromagnetism Capstone
Physics 221H, Honors Recitation for Physics 211
Physics 451, Quantum Mechanics Capstone
Physics 222H, Honors Recitation for Physics 212
Physics 632, Electrodynamics
Physics 610, Introduction to Optics (University of Oregon)
2009-2010 Physics 431, Electromagnetism Capstone
Physics 221H, Honors Recitation for Physics 211
Physics 451, Quantum Mechanics Capstone
Physics 222H, Honors Recitation for Physics 212
Physics 435, Mechanics Capstone
Physics 223H, Honors Recitation for Physics 213
2008-2009 Physics 201H/211H General Physics (Honors)
Physics 202H/213H General Physics (Honors)
Physics 203H/213H General Physics (Honors)
Physics 610, Optical Materials (University of Oregon)
2007-2008 Physics 681, Atomic, Molecular, and Optical Physics
Physics 451, Quantum Mechanics Capstone
Physics 223H, Honors Recitation for Physics 213
Physics 415 Computer Interfacing and Instrumentation
Physics 610, Optical Materials (University of Oregon)

TEACHING EXPERIENCE: (continued)

- 2006-2007 Physics 265, Introductory Scientific Computing
 Physics 451, Quantum Mechanics Capstone
 Physics 223H, Honors Recitation for Physics 213
 Physics 415 Computer Interfacing and Instrumentation
 Physics 435, Mechanics Capstone
 Physics 610, Optical Materials (University of Oregon)
- 2005-2006 Physics 681, Atomic, Molecular, and Optical Physics
 Physics 222H, Honors Recitation for Physics 212
 Physics 451, Quantum Mechanics Capstone
 Physics 222H, Honors Recitation for Physics 212
 Physics 429, Reference Frames
 Physics 435, Mechanics Capstone
- 2004-2005 Physics 265, Introductory Scientific Computing
 Physics 222H, Honors Recitation for Physics 212
 Physics 451, Quantum Mechanics Capstone
 Physics 222H, Honors Recitation for Physics 212
 Physics 428, Rigid Bodies
 Physics 485, Atomic, Molecular, and Optical Physics
- 2003-2004 Physics 211, General Physics with Calculus
 Physics 431, Electromagnetism Capstone
 Physics 265, Introductory Scientific Computing
 Physics 211, General Physics with Calculus
 Physics 223H Honors Recitation for Physics 213
- 2002-2003 Physics 211, General Physics with Calculus
 Physics 421, Oscillations
 Physics 212, General Physics with Calculus
 Physics 265, Introductory Scientific Computing
 Physics 211, General Physics with Calculus
- 2001-2002 Physics 421, Oscillations
 Physics 221H, Honors Recitation for Physics 211
 Physics 265, Introductory Scientific Computing
 Physics 223H, Honors Recitation for Physics 213
 Physics 435, Mechanics Capstone
 Physics 429, Reference Frames
- 2000-2001 Physics 212, General Physics with Calculus
 Physics 421, Oscillations
 Physics 425, Quantum Measurement and Spin
 Physics 435, Capstones in Physics: Classical Mechanics
 Physics 221H, Honors Recitation for Physics 211
- 1999-2000 Physics 212, General Physics with Calculus
 Physics 425, Quantum Measurement and Spin
 Physics 212, General Physics with Calculus
 Physics 223H, Honors Recitation for Physics 213
 Physics 435, Capstones in Physics: Classical Mechanics

TEACHING EXPERIENCE: (continued)

- 1998-1999 Physics 211, General Physics with Calculus
 Physics 425, Quantum Measurement and Spin
 Physics 223H, Honors Recitation for Physics 213
 Physics 211, General Physics with Calculus
- 1997-1998 Physics 211, General Physics with Calculus
 Physics 425, Quantum Measurement and Spin
 Physics 211, General Physics with Calculus
- 1996-1997 Physics 481, Physical Optics
 Physics 422, Classical Dynamics
 Physics 211, General Physics with Calculus
- 1994-1995 Physics 481, Physical Optics
 Physics 683, Atomic, Molecular, and Optical Physics
 Physics 482, Optical Electronics
 Physics 211, General Physics with Calculus
- 1993-1994 Physics 481, Physical Optics
 Physics 681, Atomic, Molecular, and Optical Physics
 Physics 415, Computer Interfacing and Instrumentation
- 1992-1993 Physics 481, Physical Optics
 Physics 415, Computer Interfacing and Instrumentation
- 1991-1992 Physics 651, 652, 653, Graduate Quantum Mechanics
- 1990-1991 Physics 651, 652, 653, Graduate Quantum Mechanics
- 1989-1990 Physics 517, 518, 519, Graduate Quantum Mechanics

GRANT SUPPORT:

- 2013 Oregon State University, Summer Undergraduate Research Experience in
 Science (SURE Science), \$5000
 "Holographic Optical Tweezers", Student support for Emma Krnacik
 P.I.: D. H. McIntyre
- 2013 Oregon State University Technology Resource Fee Fund, \$9,871
 Grant Repair and Capacity Expansion Program
 "Upgrade of Physical Optics Laboratory at Physics Department"
 P.I.: O. Ostroverkhova, co P.I.'s: D. H. McIntyre, W. M. Hetherington, A. Wang
- 2010-2013 Office of Naval Research, \$3,500,000
 "ONAMI ONR Nanoelectronics, Nanobiotechnology, and Nanometrology
 Initiative" (FY10)
 P.I.: J. R. Carruthers, co-P.I.'s: D. H. McIntyre, R. Taylor, T. Vu
- 2010-2013 Office of Naval Research, \$259,798
 "Enhanced biochemical imaging enabled by holographic optical
 tweezers"
 Subgrant of above FY10 ONAMI ONR Nanoelectronics,
 Nanobiotechnology, and Nanometrology Initiative
 P.I.: D. H. McIntyre, co-P.I.'s: O. Ostroverkhova, V. T. Remcho,
 S. Prasad, S. M. Reed

GRANT SUPPORT: (continued)

- 2010 Oregon State University Research Equipment Reserve Fund, \$32,034
"Olympus Research Grade Microscope"
P.I.: D. H. McIntyre
- 2010 Oregon State University, Undergraduate Research, Innovation, Scholarship and Creativity (URISC), \$1500
"Optical Trapping and Fluorescence Spectroscopy of Nanoparticle Sensors in Microfluidic Devices"
Student support for Jessica Gifford
P.I.: D. H. McIntyre
- 2009-2011 Office of Naval Research, \$3,583,485
"ONAMI ONR Nanoelectronics, Nanobiotechnology and Nanometrology Initiative" (FY09)
P.I.: J. R. Carruthers, co-P.I.'s: D. H. McIntyre, R. Taylor, and T. Vu
- 2009-2011 Office of Naval Research, \$290,080
"Chemical imaging of the bionano interface and thin film nanostructures by micro-Raman/photoluminescence spectroscopy"
Subgrant of above FY09 ONAMI ONR Nanoelectronics, Nanobiotechnology and Nanometrology Initiative
P.I.: G. Rorrer, co-P.I.'s: E. Minot, D. H. McIntyre, O. Ostroverkhova, J. Tate, P. Dhagat, A. Jander
- 2009-2011 Office of Naval Research, \$81,000
"Quantum Dots as Ion-Selective Optical Nanosensors"
Subgrant of above FY09 ONAMI ONR Nanoelectronics, Nanobiotechnology and Nanometrology Initiative
P.I.: D. H. McIntyre, co-P.I.'s: A. Shvarev, O. Ostroverkhova
- 2009-2010 Oregon State University Technology Resource Fee Fund, \$58,769
"Upgrade of Physical Optics Laboratory at Physics Department "
P.I.: O. Ostroverkhova, co P.I.'s: D. H. McIntyre, W. M. Hetherington, T. K. Plant
- 2008-2010 Office of Naval Research, \$1,815,903
"ONAMI ONR Nanometrology/Nanoelectronics Initiative" (FY08)
P.I.: J. R. Carruthers, co-P.I.'s: D. H. McIntyre and R. Taylor
- 2008-2010 Office of Naval Research, \$240,682
" Biochemical Sensors and Integrated Measurement Platform Controlled by Optical Tweezers and Microfluidics "
Subgrant of above FY08 ONAMI ONR Nanometrology/Nanoelectronics Initiative
P.I.: D. H. McIntyre, co-P.I.'s: O. Ostroverkhova, A. Shvarev, V. T. Remcho, S. Prasad, S. M. Reed

GRANT SUPPORT: (continued)

- 2007-2009 Office of Naval Research, \$2,341,443
"ONAMI ONR Nanometrology/Nanoelectronics Initiative" (FY07)
P.I.: J. R. Carruthers, co-P.I.'s: D. H. McIntyre and H. Linke
- 2007-2009 Office of Naval Research, \$116,318
"Micro- and nanoscale building blocks for optoelectronics: solution-based fabrication of high-performance nanophotonic and nanoelectronic devices"
Subgrant of above FY07 ONAMI ONR Nanometrology/Nanoelectronics Initiative
P.I.: J. Tate, co-P.I.'s: D. H. McIntyre, D. A. Keszler
- 2007-2009 Office of Naval Research, \$107,311
"Beyond Sensing under Equilibrium: Photoresponsive Nanoprobes for Rapid Localized Acid-Base Titration"
Subgrant of above FY07 ONAMI ONR Nanometrology/Nanoelectronics Initiative
P.I.: A. Shvarev, co-P.I.'s: O. Ostroverkhova, D. H. McIntyre
- 2007-2009 Office of Naval Research, \$98,144
"Optically controlled DNA sequencing through nanoscale funnels"
Subgrant of above FY07 ONAMI ONR Nanometrology/Nanoelectronics Initiative
P.I.: D. H. McIntyre, co-P.I.: S. Prasad
- 2007-2009 Office of Naval Research, \$102,632
"Identification, imaging and manipulation of charged states in organic semiconductors: from macroscopic to microscopic optoelectronic devices"
Subgrant of above FY07 ONAMI ONR Nanometrology/Nanoelectronics Initiative
P.I.: O. Ostroverkhova, co-P.I.'s: G. Schneider, E. Minot, D. H. McIntyre
- 2007-2008 Oregon State University Research Equipment Reserve Fund, \$43,255
"Ocean Optics UV-Visible-NIR Spectrometer"
P.I.: J. Tate, co-P.I.: D. H. McIntyre
- 2006-2009 Office of Naval Research, \$93,430
"Optical Field Enhancement in Tweezer Trapping and Single-Molecule Spectroscopy"
P.I.: D. H. McIntyre, co-P.I.: O. Ostroverkhova
- 2006-2009 Office of Naval Research, \$130,098
"Micro- and nanoscale building blocks for optoelectronics: Solution-based writing with inorganic inks"
P.I.: J. Tate, co-P.I.'s: D. H. McIntyre, D. A. Keszler

GRANT SUPPORT: (continued)

- 2006-2011 National Science Foundation, \$498,124
"Paradigms in Physics: Multiple Entry Points"
P.I.: C. A. Manogue, co-P.I.'s: T. Dray, B. S. Edwards, D. H. McIntyre, E. H. van Zee
- 2006-2008 Oregon State University Technology Resource Fee Fund, \$51,153
"Equipment Upgrade in Computer Interfacing Classroom"
- 2005 Oregon State University, Undergraduate Research, Innovation, Scholarship and Creativity (URISC), \$2993
"Optical Tweezers"
Student support for Mark Blanding
P.I.: D. H. McIntyre
- 2004-2005 Oregon State University General Research Fund, \$10,000
"Spectroscopic Detection of Trace Gases"
- 2003-2007 National Science Foundation, \$99,940
"Paradigms in Physics -- Faculty Materials"
P.I.: C. A. Manogue, co-P.I.'s: D. H. McIntyre, A. L. Wasserman
- 2001 Oregon State University, Undergraduate Research, Innovation, Scholarship and Creativity (URISC), \$2993
"Diode Laser Cavity Absorption Spectroscopy"
Student support for Jonathon Gillen
P.I.: D. H. McIntyre
- 2001-2002 Oregon State University Foundation, \$2195
Mr. & Mrs. L. L. Stewart Faculty Development Fund
"Quantum Mechanics Simulation Software"
- 2000-2005 National Science Foundation, \$399,636
"Developing a Research-Rich Undergraduate Degree Program in Computational Physics"
P.I.: R. H. Landau, co-P.I.: H. J. F. Jansen
Senior personnel: D. H. McIntyre, A. W. Stetz, M. Paez
- 1997-2002 National Science Foundation, \$497,063
"Paradigms in Physics"
P.I.: C. A. Manogue; co-P.I.'s: P. J. Siemens, J. Tate
Senior personnel: A. L. Wasserman, D. H. McIntyre, T. Dray, M. Niess
- 1996-1997 Office of Naval Research, \$95,069
"Matter-Wave Interferometry with Laser Cooled Atoms"

GRANT SUPPORT: (continued)

- 1995-1996 Engineering and Physical Sciences Research Council (Great Britain), £11,900
"High Resolution Spectroscopy of Laser Cooled Atoms"
Visiting Fellowship support obtained through E. Riis and A. I. Ferguson
- 1995-1998 National Science Foundation, \$50,000
"Physics Laboratory Enhancement in Computer Interfacing and
Instrumentation"
P.I.: C. A. Kocher, co-P.I.'s: C. E. Fairchild, J. A. Gardner, D. H. McIntyre
- 1993-1996 Office of Naval Research, \$260,201
"Matter-Wave Interferometry with Laser Cooled Atoms"
- 1993-1994 Research Corporation: Partners in Science, \$14,000
"Diode Lasers for Atomic Physics"
- 1991 M. J. Murdock Charitable Trust, \$326,000
"Instructional Laboratories in Optical Science and Materials"
P.I.: K. S. Krane, co-P.I.'s: C. E. Fairchild, W. M. Hetherington, D. H. McIntyre
- 1991-1993 Office of Naval Research, \$235,593
"Matter-Wave Interferometry with Laser Cooled Atoms"

GRADUATE THESIS SUPERVISION

As Major Professor:

Holger Delfs	M.S. 1992	"A Magneto-Optic Trap for Rubidium"
Chris Cuneo	M.S. 1994	"Optically Stabilized Diode Laser using High-Contrast Saturated Absorption"
Tom Swanson	Ph.D. 1995	"A Rubidium Atomic Funnel"
Nancy Silva	Ph.D. 1996	"Laser Cooling and Trapping with Electronically Stabilized Grating-Feedback Diode Lasers"
Peggy Lopez	M.S. 1997	"Stabilization of a Three-Grating Interferometer"
Shannon Mayer	Ph.D. 1997	"Low-Velocity Matter-Wave Source for Atom Interferometry Produced by Zeeman-Tuned Laser Cooling and Magneto-Optic Trapping"
Joshua Russell	M.S. 2011	"Optical Properties of Transparent Semiconductors"
Ali Almaqwashi	M.S. 2012	"Optical Trapping and Acoustical probing of Ultrasound Contrast Agent Microbubbles Confined in Capillaries"

Joint supervision:

Robert Kykyneshi	Ph.D. 2007	"Pulsed laser deposition and thin film properties of p-type BaCuSF, BaCuSeF, BaCuTeF and n-type Zn ₂ In ₂ O ₅ wide band-gap semiconductors" (Major Prof: J. Tate)
Paul Newhouse	Ph.D. 2008	"Growth and characterization of wide-gap semiconducting oxide and chalcogenide thin films by pulsed laser deposition" (Major Prof: J. Tate)
Andriy Zakutayev	Ph.D. 2010	"BaCuChF (Ch = S, Se, Te) p-type transparent conductors" (Major Prof: J. Tate)
Kai Jiang	Ph.D. 2010	"New luminescent materials and high-performance solution-processed oxide thin films" (Major Prof: D. A. Keszler)
Mark Kendrick	Ph.D. 2012	"Light-Matter Interactions: From the Photophysics of Organic Semiconductors to High Spatial Resolution Optical Tweezer-Controlled Nanoprobes" (Major Prof: O. Ostroverkhova)

PATENTS:

"Solid state laser operating with frequency doubling and stabilized by an external resonator" (A. Hemmerich, D. McIntyre, C. Zimmermann, and T. Haensch), U.S. Patent 5,068,546, Nov. 26, 1991.

OSU INVENTION DISCLOSURES:

"Semiconductor laser system with digitally controllable frequency-offset locking" (D. H. McIntyre, J. J. Maki, and R. P. Knorpp), March 19, 1993.

"Semiconductor diode laser with optical feedback stabilization from saturated absorption in an optically thick atomic vapor" (D. H. McIntyre, C. J. Cuneo, and J. J. Maki), December 16, 1993.

"Simultaneous line center and linewidth measurement using dual frequency modulation" (D. H. McIntyre and J. I. Gillen), April 17, 2003.

INVITED TALKS:

- "The Rydberg Constant," October 2, 1986, Yale University, New Haven, Connecticut.
- "High Resolution Laser Spectroscopy of Atomic Hydrogen," November 1986, University of Munich, Munich, Germany.
- "High Resolution Spectroscopy of Tellurium and Hydrogen," April 7, 1987, IBM Almaden Research Laboratories, San Jose, California.
- "Precision Measurement of the 1S Lamb Shift in Atomic Hydrogen," April 28, 1987, XV International Quantum Electronics Conference, Baltimore, Maryland.
- "High Resolution Laser Spectroscopy of Atomic Hydrogen," August 1987, JILA, Boulder, Colorado.
- "The Determination of the Rydberg Constant," September 2, 1987, XXIInd General Assembly of the International Union of Radio Science, Tel Aviv, Israel.
- "High Resolution Laser Spectroscopy of Atomic Hydrogen," November 10, 1987, Dutch Atomic Physics Conference, Lunten, Netherlands.
- "High Resolution Spectroscopy of Atomic Hydrogen," September 2, 1988, Adriatico Research Conference on Coherent Sources for Frontier Spectroscopy, Trieste, Italy.
- "High Resolution Laser Spectroscopy of Atomic Hydrogen,"
November 1, 1988, San Jose State University, San Jose, California.
November 3, 1988, University of California at Davis, Davis, California.
November 8, 1988, University of Washington, Seattle, Washington.
January 23, 1989, Texas A&M University, College Station, Texas.
January 27, 1989, Sandia National Laboratories, Albuquerque, New Mexico.
January 27, 1989, University of New Mexico, Albuquerque, New Mexico.
February 1, 1989, Harvard University, Cambridge, Massachusetts.
April 3, 1989, University of Texas at Austin, Austin, Texas.
April 5, 1989, Oregon State University, Corvallis, Oregon.
- "Laser Cooling of Atomic Rubidium," April 6, 1989, Oregon State University, Corvallis, Oregon.
- "Tests of QED with High Resolution Laser Spectroscopy of Atomic Hydrogen," August 21, 1989, NATO Advanced Study Institute on New Frontiers in Quantum Electrodynamics and Quantum Optics, Istanbul, Turkey.
- "Laser Spectroscopy and Laser Cooling with Diode Lasers," November 13, 1989, Oregon State University, Corvallis, Oregon.
- "Laser Cooling and Trapping with Diode Lasers," April 26, 1990, University of Oregon, Eugene, Oregon.

INVITED TALKS (continued):

- "Laser Cooling with Diode Lasers," May 19, 1990, Oregon Materials Science Symposium, Oregon State University, Corvallis, Oregon.
- "Laser Cooling and Atomic Interferometry,"
September 19, 1991, Eleventh Annual University of Oregon Chemical Physics Institute Retreat, Charleston, Oregon.
September 24, 1991, Washington State University, Pullman, Washington.
October 12, 1992, Portland State University, Portland, Oregon.
November 1, 1993, Oregon State University, Corvallis, Oregon.
November 10, 1993, Reed College, Portland, Oregon.
- "Atom Interferometry with Cold Atoms," November 22, 1995, University of Strathclyde, Glasgow, Scotland.
- "Donuts in Scotland: A Kinder, Gentler Trap," September 19, 1996, Sixteenth Annual University of Oregon Chemical Physics Institute Retreat, Charleston, Oregon.
- "Jelly Donuts in Scotland: A Kinder, Gentler Trap," October 7, 1996, Oregon State University, Corvallis, Oregon.
- "Atom Interferometry with Cold Atoms," March 2, 1998, Lewis and Clark College, Portland, Oregon.
- "Jelly Donuts in Scotland: A Kinder, Gentler Trap," March 4, 1998, Reed College, Portland, Oregon.
- "Atom Interferometry with Cold Atoms," April 9, 1998, Linfield College, McMinnville, Oregon.
- "1997 Nobel Prize in Physics - The Recipients and Their Work," April 20, 1998, Oregon State University, Corvallis, Oregon.
- "A Doughnut Mode Magneto-Optical Trap," May 5, 1999, Portland State University, Portland, Oregon.
- "Great Circles and Motion on a Rotating Sphere," May 24, 1999, Oregon State University, Corvallis, Oregon.
- "Using Great Circles to Understand Motion on a Rotating Sphere", March 1, 2000, Reed College, Portland, Oregon.
- "Laser Cooling and Trapping of Atomic Rubidium", October 25, 2001, Willamette University, Salem, Oregon.
- "2001 Nobel Prize in Physics - Bose-Einstein Condensation," February 25, 2002, Oregon State University, Corvallis, Oregon.
- "Zeeman-Tuned Slowing of Rubidium Using Circularly Polarized Light," February 24, 2003, Oregon State University, Corvallis, Oregon.

INVITED TALKS (continued):

"Zeeman-Tuned Slowing of Rubidium Using Circularly Polarized Light," January 12, 2004, University of Oregon, Eugene, Oregon.

"2005 Nobel Prize in Physics – Precision Laser Spectroscopy," November 28, 2005, Oregon State University, Corvallis, Oregon.

"Computation in the Paradigms Curriculum at Oregon State University," July 30, 2007, 2007 American Association of Physics Teachers Summer Meeting, Greensboro, North Carolina.

"Computation in the Paradigms Curriculum at Oregon State University," October 15, 2007, Oregon State University, Corvallis, Oregon.

"Optical Trapping and Manipulation of Atoms and Particles", October 22, 2007, Lewis and Clark College, Portland, Oregon..

"Computation in the Paradigms Curriculum at Oregon State University," June 12, 2008, Gordon Research Conference on Physics Research and Education: Computation and Computer-Based Instruction, Bryant University, Smithfield, Rhode Island

"Using matter to control light and light to control matter," November 16, 2008, Oregon State University, Corvallis, Oregon.

"Quantum Mechanics in the Paradigms in Physics Curriculum," July 20, 2010, 2010 American Association of Physics Teachers Summer Meeting, Portland, Oregon.

"Optical Trapping and Manipulation of Particles," October 15, 2010, Willamette University, Salem, Oregon.

"Optical Tweezers Trapping for Biochemical Imaging," November 8, 2010, Oregon State University, Corvallis, Oregon.

"Quantum Mechanics in the Paradigms in Physics Curriculum," April 1, 2011, Pacific Northwest Association for College Physics (PNACP) Spring 2011 conference, University of Idaho, Moscow, ID.

"Teaching Quantum Mechanics in the Paradigms in Physics Curriculum," July 30, 2011, 2011 American Association of Physics Teachers Summer Meeting, Omaha, Nebraska.

"Nobel Prize in Physics 2012: Measuring and Manipulating Individual Quantum Systems," November 26, 2012, Oregon State University, Corvallis, Oregon.

"Optics in the lab and Quantum Mechanics in the classroom," May 6, 2013, Portland State University, Portland, Oregon.

"Modern Quantum Mechanics in the Paradigms in Physics Curriculum," July 17, 2013, 2013 American Association of Physics Teachers Summer Meeting, Portland, Oregon.

WEB SITES:

Coriolis Force and Noninertial Effects

<http://www.physics.orst.edu/~mcintyre/coriolis/>

Explanations and animations demonstrating Coriolis effects

50000 visitors since 2000

SPINS Java software

<http://www.physics.orst.edu/~mcintyre/ph425/spins/>

Free Java software to simulate Stern-Gerlach quantum mechanics experiments

Computational Physics for Undergraduates (CPUG)

<http://www.physics.orst.edu/~mcintyre/cpug/>

Instructional materials for OSU CPUG program

Balance and Center of Mass

<http://www.physics.orst.edu/~mcintyre/smile/>

Instructional workshop material for SMILE teachers

PUBLICATIONS: attached

Publications by David H. McIntyre

• Books

1. **Quantum Mechanics: A Paradigms Approach** (D. H. McIntyre), Pearson Addison Wesley, 2012. ISBN-10: 0321765796, ISBN-13: 978-0321765796.

• Chapters In Books

1. The Rydberg Constant (T. W. Hänsch and D. H. McIntyre), **Units and Fundamental Constants in Physics and Chemistry**, Landolt-Börnstein Series, edited by J. Bortfeldt and B. Kramer (Springer-Verlag, Berlin, 1992), chapter 3.2.10, pp. 3-132 - 3-139.
2. **Physics: HITS. on the Web**, Carol Lea Clark and David McIntyre (Harcourt College Publishers, Fort Worth, 2001) ISBN: 0-03-047927-4. (DM responsible for Part III - Physics Websites, pp. 69-85.)
3. Zeeman-Tuned Slowing: Surfing the Resonance Wave (D. H. McIntyre, S. K. Mayer, N. S. Minarik, and M. H. Shroyer), in **Laser Physics at the Limits**, edited by H. Figger, D. Meschede, and C. Zimmermann (Springer-Verlag, Berlin 2002), pp. 313-327.
4. **Physics: HITS. on the Web**, Carol Lea Clark and David H. McIntyre (Thomson Learning, Mason, Ohio, 2002) ISBN: 0-75930-727-x. (DHM responsible for Part III - Physics Websites, pp. 69-85.)

• Refereed Publications:

1. Measurement of the $1S$ - $2S$ Frequency in Atomic Hydrogen (E. A. Hildum, U. Boesl, D. H. McIntyre, R. G. Beausoleil, and T. W. Hänsch), *Phys. Rev. Lett.* **56**, 576-579 (1986).
2. Absolute Calibration of the $^{130}\text{Te}_2$ Reference Line for Positronium 1^3S_1 - 2^3S_1 Spectroscopy (D. H. McIntyre and T. W. Hänsch), *Phys. Rev. A* **34**, 4504-4507 (1986).
3. Continuous-Wave Measurement of the $1S$ Lamb Shift in Atomic Hydrogen (R. G. Beausoleil, D. H. McIntyre, C. J. Foot, E. A. Hildum, B. Couillaud, and T. W. Hänsch), *Phys. Rev. A* **35**, 4878-4881 (1987).
4. Interferometric Frequency Measurement of a $^{130}\text{Te}_2$ Reference Line for Muonium $1S$ - $2S$ Spectroscopy (D. H. McIntyre and T. W. Hänsch), *Phys. Rev. A* **36**, 4115-4118 (1987).
5. Precision Measurements of the Rydberg Constant (D. H. McIntyre and T. W. Hänsch), *Metrologia* **25**, 61-66 (1988).

6. Laser Spectroscopy of Very Simple Atoms (D. H. McIntyre), *Comments At. Mol. Phys.* **21**, 295-305 (1988).
7. Continuous-Wave Measurement of the Hydrogen $1S$ - $2S$ Transition Frequency (D. H. McIntyre, R. G. Beausoleil, C. J. Foot, E. A. Hildum, B. Couillaud, and T. W. Hänsch), *Phys. Rev. A* **39**, 4591-4598 (1989).
8. A Blue Dye Laser with Sub-KiloHertz Stability (R. Kallenbach, C. Zimmermann, D. H. McIntyre, T. W. Hänsch, and R. G. DeVoe), *Opt. Commun.* **70**, 56-60 (1989).
9. Absolute Measurement of the Diameter of a Fused Quartz Hemisphere at 6K (J. Tate, D. H. McIntyre, and B. Cabrera) *Rev. Sci. Instrum.* **60**, 985-992 (1989).
10. Optically Stabilized Narrow Linewidth Semiconductor Laser for High Resolution Spectroscopy (A. Hemmerich, D. H. McIntyre, D. Schropp, Jr., D. Meschede, and T. W. Hänsch), *Opt. Commun.* **75**, 118-122 (1990).
11. Second Harmonic Generation and Optical Stabilization of a Diode Laser in an External Ring Resonator (A. Hemmerich, D. H. McIntyre, C. Zimmermann, and T. W. Hänsch), *Opt. Lett.* **15**, 372-374 (1990).
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