

Christopher R Monroe

Joint Quantum Institute and Department of Physics
University of Maryland
College Park, MD 20742
www.iontrap.umd.edu

Office: 301-405-8631
Labs: 301-405-4494/7617/7618/7619
Fax: 301-314-0207
monroe@umd.edu

Date of Birth: October 19, 1965 (Southfield, MI)

Family: Wife (Jane Fisher); Daughters (Katherine-1996, Mary-1999, Helen-2002)

Education

1992 Ph.D., Physics, University of Colorado, Boulder, CO (Advisor: Carl Wieman)
1987 S.B., Physics, Massachusetts Institute of Technology, Cambridge MA (Advisor: Michael Feld)
1983 Detroit Catholic Central High School, Redford MI

Positions

2007– Bice Zorn Professor of Physics, University of Maryland, College Park
2007– Fellow, Joint Quantum Institute, NIST and University of Maryland, College Park
2006–2007 Director, FOCUS (NSF Physics Frontier Center on Ultrafast Optics), University of Michigan, Ann Arbor
2006–2007 Professor, Electrical Engineering and Computer Science Dept., University of Michigan, Ann Arbor
2003–2007 Professor, Physics Dept., University of Michigan, Ann Arbor
2000–2003 Associate Professor, Physics Dept., University of Michigan, Ann Arbor
1995–2000 Adjunct Lecturer, Physics Dept., University of Colorado, Boulder
1994–2000 Staff Physicist, National Institute of Standards and Technology (NIST), Boulder
1992–1994 NRC Postdoctoral Researcher, NIST, Boulder CO (Mentor: David Wineland)

Awards and Fellowships

Fellow, American Physical Society
Fellow, Institute of Physics (U.K.)
Scientific American “50” Research Award (2006)
University of Michigan Faculty Distinguished Research Award (2005-2006)
Distinguished Traveling Lecturer, American Physical Society Division of Laser Science (2002-2008)
American Physical Society I.I. Rabi Award (2001)
International Quantum Communication Award, Tamagawa University, Japan (2000)
US Presidential Early Career Award for Scientists and Engineers (1997)
National Research Council Postdoctoral Fellowship (1992-1994)
University of Colorado Feldkamp Award for Graduate Research (1990)

Service

Chair (2010), Chair-Elect (2009), and Vice-Chair (2008), American Physical Society Div. AMO Physics (DAMOP)
Member (2009-2012), National Academy of Sciences Committee on AMO science (CAMOS)
Executive Committee (2008-2010), American Physical Society Topical Group on Quantum Information
National Academy of Sciences Committee on the future of AMO science (AMO2010 decadal report, 2005-2006)
Chair (2005) and Member (2003-2004), American Physical Society Committee on Meetings.
Chair (2007) and Vice-Chair (2005), Gordon Research Conference on Atomic Physics
DAMOP Thesis Prize Selection Committee (2005)
American Physical Society Div. Laser Science (2006) and DAMOP (2005) Nominating Committee
American Physical Society DAMOP I.I. Rabi Prize Selection Committee (2003)
Editorial Board Member (2003-2007) and Advisory Board Member (2008-2012), *Journal of Optics B*.
Editorial Advisory Board Member, *Journal of Quantum Information* (Rinton Press, 2000–)
Presenter at the Coalition of National Science Funding (CNSF) annual exhibit to U.S. Congress (2002)
Co-Director, *Enrico Fermi International School of Physics* on “Quantum Information Science” (2001)
Co-Organizer, MCTP/FOCUS Workshop on “Control of Quantum Decoherence” (2002)
Program Chair and Co-organizer, “Ann Arbor Quantum Applications Symposium” (2001)

Research Interests

I am an experimentalist in the areas of atomic, molecular, and optical physics, quantum optics, and quantum information science. My research interests include:

Cold Atomic Physics. Atoms can be localized to nanometer precision with electromagnetic fields and laser cooling techniques. My interest in this area involves the use of laser radiation to prepare, characterize, and exploit nearly-pure quantum states of internal (electronic) and external (motional) degrees of freedom of atoms in order to generate controllable interactions and quantum entanglement.

Quantum Information. Quantum information science exploits the properties of quantum superposition and quantum entanglement to store and process information in ways that are not possible classically. I have a longstanding interest in the fabrication of quantum hardware using atoms and photons, natural carriers of quantum information. This includes the design and realization of elementary entangling quantum logic gates between nearby atoms, the quantum networking of remotely-located atoms with photons, and the scaling to much larger numbers of atomic quantum bits with advanced microfabricated atom trap array structures.

Ultrafast Control of Cold Atoms. I am actively pursuing the use of ultrafast ($\sim 10^{-12}$ s) optical techniques for the manipulation and control of cold atomic systems and the generation of multi-atom entangled quantum states. Ultrafast control eliminates sensitivity to slower decoherence processes, and represents a new regime of ultracold atomic physics.

The Interface between Atomic and Condensed Matter Physics. I am interested in the development of atomic quantum simulators that emulate intractable Hamiltonians that are found in contexts such as quantum magnetism and strongly-correlated condensed matter. My group has developed the use of microfabricated semiconductor structures for confining individual atomic ions in free space, while also characterizing the electrical noise processes of semiconductor and other electrode materials using single atoms as sensitive probes. More generally, I am interested in juxtaposing atomic systems with mesoscopic condensed-matter systems, including photonic couplings between atomic ions and quantum dots and electro-mechanical couplings between high-Q mesoscopic cantilevers and charged atoms.

Foundations of quantum mechanics. I am deeply interested in the foundational aspects of quantum mechanics, from the quantum measurement problem, quantum decoherence, and alternative interpretations of quantum mechanics, to the general phenomenon of quantum entanglement and various forms of Bell's Inequalities. I am interested in quantum metrology of atomic systems and the border between quantum and classical physics as system complexity grows.

Grants

- 2009-2012, NSF Physics at the Information Frontier (\$450,000) "Photonic Networking of Trapped Ion Qubits."
- 2009-2014, MURI – Army Research Office (\$6,250,000), "Quantum-Optical Circuits of Hybrid Quantum Memories," Lead PI, with 11 co-PIs at 7 institutes.
- 2008-2011, Intelligence Community Postdoctoral Fellowship – National Geospatial Agency (\$350,000).
- 2008-2013, NSF Physics Frontier Centers (\$12,500,000) "JQI: Processing Quantum Coherence," co-PI at the Joint Quantum Institute and the University of Maryland.
- 2008-2009, Army Research Office and IARPA (\$500,000), "Trapped Ion Quantum Networks," PI with co-PI L.-M. Duan (Univ. Michigan).
- 2007-2012, DARPA Defense Science Office (\$14,000,000), "Quantum Simulation of Magnetic Spin Phases with Atoms and Ions in Optical Lattices," Lead PI, with 13 co-PIs at 9 institutes.
- 2006-2009, NSF Physics at the Information Frontier (\$450,000) "Photonic Networking of Trapped Ion Qubits."
- 2005-2006, DURIP – Army Research Office (\$115,000) "Ultrafast Photoionization Loading of Ion Traps."
- 2005-2006, DARPA (\$205,000), "MEMS fabrication of silicon ion traps."
- 2004-2008, Army Research Office and DTO (\$2,200,000) "Trapped Ion Quantum Information Processing," PI with co-PI L.-M. Duan (Univ. Michigan).
- 2003-2004, NIST SBIR and Aerophysics, Inc. (\$120,000) "Microscale Mass Spectrometer Arrays," co-PI with PIs L. B. King (Michigan Tech) and S. Satyuk (Aerophysics, Inc.)
- 2003-2006, NSF Information Technology Research (\$2,300,000) "Trapped Ion Cavity-QED," co-PI with PI M. Chapman and L. You (Georgia Tech)
- 2001-2008, NSF Physics Frontier Centers (\$21,000,000) "FOCUS: Frontiers of Optical Coherent and Ultrafast Science," PI and Director (2006-2007); co-PI with 26 others at Univ. Michigan and Univ. Texas (2001-2005).
- 2001-2004, Army Research Office and ARDA (\$1,600,000) "Trapped Ion Quantum Computing."
- 2001-2002, DURIP -- Army Research Office (\$120,000) "High-fidelity Optical Processes in Trapped Atoms."
- 2001-2004, NSF Information Technology Research (\$500,000) "Entanglement of Atomic Cadmium Ions."
- 1995-2000, Nat. Sec. Agency, "Ion Trap Quantum Computing," co-PI with PI D. Wineland (NIST).

Journal Publications (>7500 citations)

2009

93. “Quantum Logic between Distant Trapped Ions,” S. Olmschenk, D. Hayes, D. N. Matsukevich, P. Maunz, D. L. Moehring, and C. Monroe, quant-ph/0907.1702 (to appear in *Int. Journal of Quantum Information*, 2009).
92. “Private Random Numbers Certified by Bell’s Theorem,” S. Pironio, A. Acín, S. Massar, A. Boyer de la Giroday, D. N. Matsukevich, P. Maunz, S. Olmschenk, D. Hayes, L. Luo, A. Manning, and C. Monroe (submitted, 2009).
91. “Phonon-Mediated Entanglement for Trapped Ion Quantum Computing,” K.-A. Brickman and C. Monroe (submitted, 2009).
90. “Quantum Computing,” T. D. Ladd, F. Jelezko, R. Laflamme, Y. Nakamura, C. Monroe, and J. L. O’Brien (submitted, *Nature*, 2009)
89. “Protocol for Hybrid Entanglement Between a Trapped Atom and a Semiconductor Quantum Dot,” E. Waks and C. Monroe, quant-ph/0907.0444 (submitted, 2009).
88. “Protocols and Techniques for a Scalable Atom–Photon Quantum Network,” L. Luo, D. Hayes, T.A. Manning, D.N. Matsukevich, P. Maunz, S. Olmschenk, J.D. Sterk, and C. Monroe, quant-ph/0906.1032 (to appear in *Fortschritte der Physik*, 2009).
87. “Quantum Protocols with Atoms and Photons,” C. Monroe and L.-M. Duan (to appear in *Rev. Mod. Phys.*, 2009).
86. “Demonstration of a scalable, multiplexed ion trap for quantum information processing,” D. Leibbrandt, J. Labaziewicz, R. Clark, I. Chuang, R. Epstein, C. Ospelkaus, J. Wesenberg, J. Bollinger, D Leibfried, D Wineland, D Stick, J Sterk, C. Monroe, C-S Pai, Y Low, R Frahm, and R Slusher, *Quantum Inf. Comp.*, **9**, 899 (2009).
85. “Entanglement and Tunable Spin-Spin Couplings Between Trapped Ions Using Multiple Transverse Modes,” K. Kim, M.-S. Chang, R. Islam, S. Korenblit, L.-M. Duan, and C. Monroe, quant-ph/0905.0225 (to appear in *Phys. Rev. Lett.*, 2009).
84. “Precision measurement of the lifetime of the $6p\ ^2P_{1/2}$ level of Yb^+ ,” S. Olmschenk, D. Hayes, D. N. Matsukevich, P. Maunz, D. L. Moehring, K. C. Younge, C. Monroe, quant-ph/0906.0586 (to appear in *Phys. Rev. A*, 2009).
83. “Large Scale Quantum Computation in an Anharmonic Linear Ion Trap,” G.-D. Lin, S.-L. Zhu, R. Islam, K. Kim, M.-S. Chang, S. Korenblit, C. Monroe, and L.-M. Duan, *Europhysics Letters* **86**, 60004 (2009).
82. “A heralded quantum gate between remote atoms,” P. Maunz, S. Olmschenk, D. Hayes, D. N. Matsukevich, L.-M. Duan, and C. Monroe, *Phys. Rev. Lett.* **102**, 250502 (2009).
81. “Quantum Teleportation between Distant Matter Qubits,” S. Olmschenk, D. N. Matsukevich, P. Maunz, D. Hayes, L.-M. Duan, and C. Monroe, *Science* **323**, 486 (2009).

2008

80. “Remapping the Quantum Frontier,” C. Monroe and M. Lukin, *Physics World* (August, 2008), pp. 32-39.
79. “Quantum Computing with Ions,” C. Monroe and D. J. Wineland, *Scientific American* (August, 2008), 64.
78. “On the Transport of Atomic Ions in Multidimensional Ion Trap Arrays,” D. Hucul, M. Yeo, S. Olmschenk, W. K. Hensinger, J. A. Rabchuk, and C. Monroe, *Quant. Inf. Comp.* **8**, 501-578 (2008); quant-ph/0702175.
77. “Bell inequality violation with two remote atomic qubits,” D. Matsukevich, P. Maunz, D. L. Moehring, S. Olmschenk, and C. Monroe, *Phys. Rev. Lett.* **100**, 150404 (2008).
76. “Robust Quantum Information Processing with Atoms, Photons, and Atomic Ensembles,” L.-M. Duan and C. Monroe, *Advances in Atomic, Molecular, and Optical Physics*, vol. 55, E. Arimondo, P.R. Berman and C.C. Lin, eds. (Elsevier, 2007), pp. 419-464.

2007

75. “Manipulation and detection of a trapped Yb^+ hyperfine qubit,” S. Olmschenk, K. C. Younge, D. L. Moehring, D. Matsukevich, P. Maunz, and C. Monroe, *Phys. Rev. A* **76**, 052314.
74. “Magneto-optical trapping of cadmium,” K.-A. Brickman, M.-S. Chang, M. Acton, A. Chew, D. Matsukevich, P. C. Haljan, V. S. Bagnato, and C. Monroe, *Phys. Rev. A* **76**, 043411 (2007).
73. “Entanglement of single-atom quantum bits at a distance,” D. L. Moehring, P. Maunz, S. Olmschenk, K. C. Younge, D. N. Matsukevich, L.-M. Duan, and C. Monroe, *Nature* **449**, 68 (2007).

72. "Quantum interference of photon pairs from two remote trapped atomic (Yb) ions," P. Maunz, D. L. Moehring, S. Olmschenk, K. C. Younge, D. N. Matsukevich and C. Monroe, **Nature Physics** **3**, 538 (2007).

71 "The Trap Technique: Toward a Chip-Based Quantum Computer," D. Stick, J. D. Sterk, and C. Monroe, **IEEE Spectrum** (August, 2007), p. 5378.

70. "Quantum Networking with Photons and Trapped Atoms," D. L. Moehring, M. J. Madsen, K. Younge, R. N. Kohn, Jr., P. Maunz, L.-M. Duan, and C. Monroe, **J. Opt. Soc. Amer.** **24**, 300 (2007).

2006

69. "Quantum Interference of Photon Pairs from Two Trapped Atomic (Cd) Ions," P. Maunz, D. L. Moehring, M. J. Madsen, R. N. Kohn, Jr., K. Younge, and C. Monroe, **quant-ph/0608047**.

68. "Efficient Photoionization-Loading of Trapped Ions with Ultrafast Pulses," L. Deslauriers, M. Acton, B. B. Blinov, K.-A. Brickman, P. C. Haljan, W. K. Hensinger, D. Hucul, S. Katnik, R. N. Kohn, P. J. Lee, M. A. Madsen, P. Maunz, D. L. Moehring, S. Olmschenk, D. Stick, and C. Monroe, **Phys. Rev. A** **74**, 063421 (2006).

67. "Scaling and Suppression of Anomalous Quantum Decoherence in Ion Traps," L. Deslauriers, S. Olmschenk, D. Stick, and C. Monroe, **Phys. Rev. Lett.** **97**, 103007 (2006).

66. "Trapped ion quantum computation with transverse phonon modes," Shi-Liang Zhu, C. Monroe, and L.-M. Duan **Phys. Rev. Lett.** **97**, 050505 (2006).

65. "Semiconductor Traps for Laser-Cooled Atomic Ions and Scalable Quantum Computing," D. Stick, W. K. Hensinger, S. Olmschenk, and C. Monroe, **IEEE Lasers and Electro-Optic Society Newsletter** **20** (3), 13 (June, 2006)

64. "Probabilistic Quantum Gates between Remote Atoms through Interference of Optical Frequency Qubits," L.-M. Duan, M. J. Madsen, D. L. Moehring, P. Maunz, R. N. Kohn, and C. Monroe, **Phys. Rev. A** **73**, 062324 (2006).

63. "Ultrafast Coherent Coupling of Atomic Hyperfine and Photon Frequency Qubits," M. J. Madsen, D. L. Moehring, P. Maunz, R. N. Kohn, L.-M. Duan, and C. Monroe, **Phys. Rev. Lett.** **97**, 040505 (2006).

62. "Near-Perfect Simultaneous Detection of a Qubit Register," M. Acton, L. Deslauriers, K.-A. Brickman, P. C. Haljan, P. J. Lee, S. Olmschenk, and C. Monroe, **Quant. Inf. Comp.** **6**, 465 (2006); **quant-ph/0511257**.

61. "Precision Lifetime Measurement of a Single Trapped Ion with Ultrafast Laser Pulses," D. L. Moehring, B. B. Blinov, D. W. Gidley, R. N. Kohn, M. J. Madsen, T. B. Sanderson, R. S. Vallery, and C. Monroe, **Phys. Rev. A** **73**, 023413 (2006).

60. "T-junction ion trap array for two dimensional ion shuttling, storage and manipulation" W. K. Hensinger, S. Olmschenk, D. Stick, D. Hucul, M. Yeo, M. Acton, L. Deslauriers, J. Rabchuk, and C. Monroe, **Appl. Phys. Lett.** **88**, 034101 (2006).

59. "Arbitrary-speed quantum gates within large ion crystals through minimum control of laser beams," Shi-Liang Zhu, C. Monroe, L.-M. Duan, **Europhys. Lett.** **73** (4), 1 (2006); **quant-ph/0508037**.

58. "Ion Trap in a Semiconductor Chip," D. Stick, W. K. Hensinger, S. Olmschenk, M. J. Madsen, K. Schwab, and C. Monroe, **Nature Physics** **2**, 36 (2006).

57. "Broadband Laser Cooling of Trapped Atoms with Ultrafast Laser Pulses," B. B. Blinov, R. N. Kohn, M. J. Madsen, D. L. Moehring, and C. Monroe, **J. Opt. Soc. Am. B** **23**, 1170 (2006); **quant-ph/0505111**.

2005

56. "Entanglement of Trapped-Ion Clock States," P. C. Haljan, P. J. Lee, K.-A. Brickman, M. Acton, L. Deslauriers, and C. Monroe, **Phys. Rev. A** **72**, 062316 (2005).

55. "Implementation of Grover's Quantum Search Algorithm in a Scalable System," K.-A. Brickman, P. C. Haljan, P. J. Lee, M. Acton, L. Deslauriers, and C. Monroe, **Phys. Rev. A** **72**, 050306 (2005).

54. "Phase Control of Trapped Ion Quantum Gates," P. J. Lee, K.-A. Brickman, L. Deslauriers, P. C. Haljan, L.-M. Duan, and C. Monroe, **Journal of Optics B** **7**, S371 (2005).

53. "Ion trap transducers for quantum electromechanical oscillators", W. K. Hensinger, D. W. Utami, H.-S. Goan, K. Schwab, C. Monroe, and G. J. Milburn, **Phys. Rev. A** (2005).

52. "Spin-dependent Forces on Trapped Ions for Phase-Stable Quantum Gates and Motional Schrödinger Cat States," P. C. Haljan, K.-A. Brickman, L. Deslauriers, P. J. Lee, and C. Monroe, **Phys. Rev. Lett.** **94**, 153602 (2005).

2004

51. “*Experimental measurement of a Bell inequality violation between an atom and a photon*,” D.L. Moehring, M.J. Madsen, B.B. Blinov, and C. Monroe, ***Phys. Rev. Lett.*** **93**, 090410 (2004).
50. “*Zero-point cooling and heating of Trapped Cd^+ ions*,” L. Deslauriers, P. Haljan, P. Lee, K.-A. Brickman, M. Madsen, B. B. Blinov, and C. Monroe, ***Phys. Rev. A*** **70**, 043408 (2004).
49. “*Quantum computing with trapped ion hyperfine qubits*,” B. B. Blinov, D. Leibfried, C. Monroe, and D. J. Wineland, ***Quantum Inf. Proc.*** **3**, 45 (2004).
48. “*Control of trapped-ion quantum states with optical pulses*,” C. Rangan, A.M. Bloch, C. Monroe, P.H. Bucksbaum, ***Phys. Rev. Lett.*** **92**, 113004 (2004).
47. “*Scalable trapped ion quantum computation with a probabilistic ion-photon mapping*,” L.-M. Duan, B. B. Blinov, D. L. Moehring, and C. Monroe, ***Quantum Inf. Comp.***, **4**, 165 (2004); *quant-ph/0401185*.
46. “*Observation of entanglement between a single trapped atom and a single photon*,” B. B. Blinov, D. L. Moehring, L.-M. Duan, and C. Monroe, ***Nature*** **428**, 153 (2004).
45. “*Planar ion trap geometry for microfabrication*,” M.J. Madsen, W. Hensinger, D. Stick, J. Rabchuk, and C. Monroe, ***Applied Physics B: Laser and Optics*** **78**, 639 (2004); *quant-ph/0401047*.

2002-2003

44. “*Atomic qubit manipulations with an electro-optic modulator*,” P.J. Lee, B.B. Blinov, K. Brickman, L. Deslauriers, M.J. Madsen, R. Miller, D.L. Moehring, D. Stick, and C. Monroe, ***Optics Letters*** **28**, 1582 (2003).
43. “*Quantum dynamics of single trapped ions*,” D. Leibfried, R. Blatt, C. Monroe, and D. Wineland, ***Rev. Mod. Phys.*** **75**, 281 (2003).
42. “*Decoherence of motional superpositions of a trapped ion*,” C. A. Sackett, C. Monroe, and D. J. Wineland, ***Chaos, Solitons, and Fractals*** **16**, 431 (2003).
41. “*Sympathetic cooling of trapped Cd^+ isotopes*,” B. Blinov, L. Deslauriers, M. P. Lee, M. Madsen, R. Miller, and C. Monroe, ***Phys. Rev. A***, 040304 (2002).
40. “*Quantum information processing with atoms and photons*,” C. Monroe, ***Nature*** **416**, 238 (2002).
39. “*Architecture for a large scale ion-trap quantum computer*,” D. Kielpinski, C. Monroe, and D. Wineland, ***Nature*** **417**, 709 (2002).

2000-2001

38. “*Experimental demonstration of entanglement-enhanced rotation angle estimation using trapped ions*,” V. Meyer, M. Rowe, D. Kielpinski, C. Sackett, W. Itano, C. Monroe, and D. Wineland, ***Phys. Rev. Lett.*** **86**, 5870 (2001).
37. “*A Decoherence-Free Quantum Memory Using Trapped Ions*,” D. Kielpinski, V. Meyer, M. A. Rowe, C. A. Sackett, W. Itano, C. Monroe, and D. Wineland, ***Science*** **291**, 1013 (2001).
36. “*Experimental Violation of a Bell’s Inequality with Efficient Detection*,” M. A. Rowe, D. Kielpinski, V. Meyer, C. A. Sackett, W. Itano, C. Monroe, and D. Wineland, ***Nature*** **409**, 791 (2001).
35. “*Computing with atoms and molecules?*” C. Monroe and D. Wineland, ***Science Spectra***, Issue 23, 17 (2000).
34. “*Experimental Entanglement of Four Particles*,” C. Sackett, D. Kielpinski, Q. Turchette, V. Meyer, M. Rowe, C. Langer, C. Myatt, B. King, W. Itano, D. Wineland, and C. Monroe, ***Nature*** **404**, 256 (2000).
33. “*Decoherence and Decay of Motional Quantum States of a Trapped Atom Coupled to Engineered Reservoirs*,” Q. Turchette, C. Myatt, D. Kielpinski, B. King, C. Sackett, W. Itano, C. Monroe, and D. Wineland, ***Phys. Rev. A*** **62**, 053807 (2000).
32. “*Heating of Trapped Ions From the Quantum Ground State*,” Q. Turchette, D. Kielpinski, B. King, C. Myatt, C. Sackett, W. Itano, C. Monroe, and D. Wineland, ***Phys. Rev. A*** **61**, 063418 (2000).
31. “*Decoherence of Quantum Superpositions Coupled to Engineered Reservoirs*,” C. Myatt, D. Kielpinski, B. King, C. Sackett, Q. Turchette, W. Itano, C. Monroe, and D. Wineland, ***Nature*** **403**, 269 (2000).
30. “*Quantum Logic Using Sympathetically Cooled Ions*,” D. Kielpinski, B. King, Q. Turchette, C. Myatt, C. Sackett, D. Kielpinski, W. Itano, C. Monroe, D. Wineland, and W. Zurek, ***Phys. Rev. A*** **61**, 032310 (2000).
29. “*Superposition and quantum measurement of trapped atoms*,” D.J. Wineland, C.R. Monroe, C. Sackett, D. Kielpinski, M. Rowe, V. Meyer, and W. Itano, ***Ann. der Physik*** **9**, 851 (2000).

1998-1999

28. "Deterministic Entanglement of Two Trapped Ions," Q. Turchette, C. Wood, C. Myatt, B. King, D. Leibfried, W. Itano, C. Monroe, and D. Wineland, *Phys. Rev. Lett.* **81**, 17 (1998).
27. "Initializing the Collective Motion of Trapped Ions for Quantum Logic," B. King, C. Wood, C. Myatt, Q. Turchette, D. Leibfried, W. Itano, C. Monroe, and D. Wineland, *Phys. Rev. Lett.* **81**, 1525 (1998).
26. "Trapped-Ion Quantum Simulator," D. Wineland, C. Monroe, W. Itano, B. King, D. Leibfried, C. Myatt, and C. Wood, *Physica Scripta* **T76**, 147 (1998).
25. "Shadows and Mirrors: Reconstructing the Quantum State of Atom Motion," D. Leibfried, T. Pfau, and C. Monroe, *Physics Today* **51**, 22 (April, 1998).
24. "Experimental Primer on the Trapped Ion Quantum Computer," D. Wineland, C. Monroe, W. Itano, B. King, D. Leibfried, D. Meekhof, C. Myatt, and C. Wood, *Fortschritte der Physik* **46**, 363 (1998).
23. "Quantum Computing," G. Brassard, I. Chuang, S. Lloyd, and C. Monroe, *Proc. Nat. Acad. Science* **95**, 11032 (1998).
22. "Quantum State Manipulation of Trapped Atomic Ions," D. Wineland, C. Monroe, D. Meekhof, B. King, D. Leibfried, W. Itano, J. Bergquist, D. Berkeland, J. Bollinger, and J. Miller, *Proc. R. Soc. A* **454**, 411 (1998).
21. "Coherent Quantum State Manipulation of Trapped Ions," D. Wineland, C. Monroe, D. Meekhof, B. King, D. Leibfried, W. Itano, J. Bergquist, D. Berkeland, J. Bollinger, J. Miller, *Adv. in Quantum Chemistry* **30**, 41 (1998).
20. "Issues in Coherent Quantum Manipulation of Trapped Atomic Ions," D. Wineland, C. Monroe, W. Itano, D. Leibfried, B. King, and D. Meekhof, *NIST Journal of Research* **103**, 259 (1998).

1995-1997

19. "Experimental Creation and Measurement of Motional Quantum States of a Trapped Ion," D. Meekhof, D. Leibfried, C. Monroe, B. King, W. Itano, and D. Wineland, *Brazilian Journal of Physics* **27**, 178 (1997).
18. "Atomic Physics in Ion Traps," C. Monroe and J. Bollinger, *Physics World* **10**, 37 (March 1997).
17. "News and Views: Shaping Atoms in Optical Lattices," C. Monroe, *Nature* **338**, 719 (1997).
16. "Experimental Preparation and Measurement of the State of Motion of a Trapped Atom," D. Leibfried, D. Meekhof, B. King, C. Monroe, W. Itano, and D. Wineland, *Journal of Modern Optics* **44**, 2485 (1997).
15. "Simplified Quantum Logic with Trapped Ions," C. Monroe, D. Leibfried, B. King, D. Meekhof, W. Itano, and D. Wineland, *Phys. Rev. A* **55**, R2489 (1997).
14. "Experimental Determination of the Motional Quantum State of a Trapped Atom," D. Leibfried, D. Meekhof, B. King, C. Monroe, W. Itano, and D. Wineland, *Phys. Rev. Lett.* **77**, 4281 (1996).
13. "A Schrödinger Cat Superposition State of an Atom," C. Monroe, D. Meekhof, B. King, D. Wineland, *Science* **272**, 1131 (1996).
12. "Manipulating the Motion of a Single Trapped Atom," C. Monroe, D. Meekhof, B. King, D. Leibfried, W. Itano, and D. Wineland, *Accounts of Chemical Research* **29**, 585 (1996).
11. "Generation of nonclassical motional states of a trapped atom," D. Meekhof, C. Monroe, B. King, W. Itano, and D. Wineland, *Phys. Rev. Lett.* **76**, 1796 (1996).
10. "Demonstration of a Universal Quantum Logic Gate," C. Monroe, D. Meekhof, B. King, W. Itano, and D. Wineland, *Phys. Rev. Lett.* **75**, 4714 (1995).
9. "Resolved-Sideband Raman Cooling of a Bound Atom to the 3D Zero-Point Energy," C. Monroe, D. Meekhof, B. King, S. Jefferts, W. Itano, D. Wineland, and P. Gould, *Phys. Rev. Lett.* **75**, 4011 (1995).
8. "Paul Trap for Optical Frequency Standards," S. Jefferts, C. Monroe, A. Barton, and D. Wineland, *IEEE Trans. on Instrum. and Measur.* **44**, 148 (1995).
7. "A Coaxial-Resonator Driven rf (Paul) Ion Trap for Strong Confinement," S. Jefferts, C. Monroe, E. Bell, D. Wineland, *Phys. Rev. A* **51**, 1235 (1995).

1989-1994

6. "A New Magnetic Suspension System for Atoms and Bar Magnets," C. Sackett, E. Cornell, C. Monroe and C. Wieman, *Amer. Jour. Phys.* **61**, 304 (1993).
5. "Measurement of Cs-Cs Elastic Scattering at $T=30 \mu\text{Kelvin}$," C. Monroe, E. Cornell, C. Sackett, C. Myatt, and C. Wieman, *Phys. Rev. Lett.* **70**, 414 (1993).
4. "Multiply Loaded, AC Magnetic Trap for Neutral Atoms," E. Cornell, C. Monroe and C. Wieman, *Phys. Rev. Lett.* **67**, 2439 (1991).
3. "Observation of the Cesium Clock Transition using Laser-Cooled Atoms in a Vapor Cell," C. Monroe, H. Robinson and C. Wieman, *Opt. Lett.* **16**, 50 (1991).
2. "Very Cold Trapped Atoms in a Vapor Cell," C. Monroe, W. Swann, H. Robinson and C. Wieman, *Phys. Rev. Lett.* **65**, 1571 (1990).
1. "Collisional Losses from a Light Force Atom Trap," D. Sesko, T. Walker, C. Monroe, A. Gallagher and C. Wieman, *Phys. Rev. Lett.* **63**, 961 (1989).

Book Chapters and Conference Proceedings

17. "Ion Trap Networking: Cold, Fast, and Small," D. L. Moehring, M. Acton, B. B. Blinov, K.-A. Brickman, L. Deslauriers, P. C. Haljan, W. K. Hensinger, D. Hucul, R. N. Kohn, P. J. Lee, M. J. Madsen, P. Maunz, S. Olmschenck, D. Stick, M. Yeo, and C. Monroe, *Laser Spectroscopy XVII*, E. Hinds, A. Ferguson, and E. Riis, eds. (World Scientific, 2005) pg. 421.
16. "What Quantum Computers Tell Us About Quantum Mechanics," Chapter 17 of *Science and Ultimate Reality: Quantum Theory, Cosmology, and Complexity* (Cambridge University Press, 2003).
15. *Experimental Quantum Computation and Information. Proceedings of the International School of Physics Enrico Fermi*, F. DeMartini and C. Monroe, eds. (North Holland, Amsterdam, 2002).
14. "Scalable Entanglement of Trapped Ions," C. Monroe, C. Sackett, D. Kielpinski, B. King, C. Langer, V. Meyer, C. Myatt, M. Rowe, Q. Turchette, W. Itano, and D. Wineland, in *Atomic Physics 17* (AIP, N.Y., 2001), pg 173.
13. "From Microscopic Towards Mesoscopic: Quantum State Engineering with Cold Trapped Ions," B. King, Q. Turchette, C. Myatt, C. Wood, D. Leibfried, D. Kielpinski, W. Itano, C. Monroe, and D. Wineland, in *Mesoscopic and Macroscopic Quantum Phenomena*, ed. by J.R. Friedman and S. Han (Nova, New York, 2000).
12. "Searches for anomalous interactions using trapped ions," D. J. Wineland, J. J. Bollinger, W. M. Itano, J. C. Bergquist, and C. Monroe, in *CPT and Lorentz Symmetry*, proc. of the First Meeting, Indiana University, Bloomington, November 1998, edited by V. A. Kostelecky (World Scientific, Singapore, 1999), p. 87-93.
11. "Quantum Logic with a Few Trapped Ions," C. Monroe, W. Itano, D. Kielpinski, B. King, D. Leibfried, C. Myatt, Q. Turchette, D. Wineland, and C. Wood, *Trapped Charged Particles and Fundamental Physics*, eds. D. Dubin and D. Schneider (American Inst. Phys., 1999), p. 378.
10. "Trapped ions, Entanglement, and Quantum Computing," C. Myatt, B. King, D. Kielpinski, D. Leibfried, Q. Turchette, C. Wood, W. Itano, C. Monroe, and D. Wineland, in *Methods of Ultrasensitive Detection*, SPIE conf. proc. 3270, p. 131 (1998).
9. "Entangled States of Atomic Ions for Quantum Metrology and Computation," D. Wineland, C. Monroe, D. Meekhof, B. King, D. Leibfried, W. Itano, J. Bergquist, D. Berkeland, J. Bollinger, J. Miller, in *Atomic Physics XV* (World Scientific, Singapore, 1997), pg 31.
8. "Quantum Harmonic Oscillator State Synthesis and Analysis," W. Itano, C. Monroe, D. Meekhof, D. Leibfried, B. King, and D. Wineland, in *Atom Optics*, SPIE vol. 2995 (1997).
7. "Experiments at NIST with Trapped Ions: 3-D Zero-Point Cooling, Quantum Gates, Bragg Scattering, and Atomic Clocks," C. Monroe, A. Barton, J. Bergquist, D. Berkeland, J. Bollinger, F. Cruz, W. Itano, S. Jefferts, B. Jelenkovic, B. King, D. Meekhof, J. Miller, M. Poitzsch, J. Tan, and D. Wineland, in *Laser Spectroscopy XII* (World Scientific, 1996), pg. 179.
6. "Quantum-Mechanically Correlated States and Atomic Clocks," C. Monroe, D. Meekhof, B. King, W. Itano, J. Bollinger, and D. Wineland, in *Dark Matter, Clocks, and Tests of Fundamental Laws*, (Editions Frontières, Gif-sur-Yvette, 1995), pg. 391.
5. "The Low Temperature Road toward Bose-Einstein Condensation in Optically and Magnetically Trapped Cesium Atoms," C. Monroe, E. Cornell and C. Wieman, in *Laser Manipulation of Atoms and Ions. Proceedings of the International School of Physics Enrico Fermi* (North Holland, Amsterdam, 1992), pg. 361.

4. “Fundamental Physics with Optically Trapped Atoms,” C. Wieman, C. Monroe and E. Cornell, in *Laser Spectroscopy X* (World Scientific, Singapore, 1992), pg. 37.
3. “Curious Behavior of Optically Trapped Atoms,” C. Wieman, T. Walker, D. Sesko and C. Monroe, in *Atomic Physics XII* (Am. Instit. Phys., N.Y., 1991), pg 58.
2. “Collisional Loss Mechanisms in Light-Force Atom Traps,” T. Walker, D. Sesko, C. Monroe and C. Wieman, in *The Physics of Electronic and Atomic Collisions XVI* (Am. Instit. Phys., N.Y., 1990), pg. 593.
1. “Enhanced and Suppressed Visible Spontaneous Emission by Atoms in a Concentric Optical Resonator,” D. Heinzen, J. Childs, C. Monroe, and M.S. Feld, in *Laser Spectroscopy VIII* (Springer, Heidelberg, 1987), pg. 36.

Popular accounts of research covered by *Associated Press, Byte, CBS Evening News, CNN, the Christian Science Monitor, Tom Clancy, Discover, the Economist, FOX News, IEEE Spectrum, MSNBC, National Public Radio, Nature, New Scientist, New York Times, Optics and Photonics News, Photonics Spectra, Physics Today, Physical Review Focus, Physics World, Popular Mechanics, Popular Science, Reuters, Science, Science News, Scientific American, Scientific Computing World, Scripps-Howard, Technology Review, Time, and Wired.*

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Colloquia and Seminars

Jul-09 “Quantum Information with Individual Atoms,” Northrup-Grumman (Linthicum, MD)	Feb-08 “Quantum Networks with Atoms,” Univ. New Mexico (Albuquerque, NM)
Apr-09 “Atomic Teleportation and Quantum Networks,” Univ. Illinois (Champaign, IL)	Dec-07 “Quantum Networks and Atomic action-at-a-distance,” Univ. Maryland (College Park, MD)
Mar-09 “Trapped Ion Quantum Networks,” Inst. for Quant. Comp, Univ. Waterloo (Waterloo, Ont.)	Dec-07 “Quantum Networks and Atomic action-at-a-distance,” Penn. State Univ. (State College, PA)
Mar-09 “Trapped Ion Quantum Networks,” York University (York, Ont.)	Mar-07, “The Physics of Music,” University of Michigan Saturday Morning Physics Public Lecture
Feb-08 “Quantum Networks with Atoms and Photons,” Univ. California (Berkeley, CA)	Mar-07, “The Music of Quantum Physics,” University of Michigan Saturday Morning Physics Public Lecture
Feb-08 “Trapped Ion Quantum Networks,” LANL Quantum Seminar (Los Alamos, NM)	Mar-07 “Quantum Computing with Atoms and Photons,” York University (Toronto, Ontario)
Oct-08 “Trapped Ion Quantum Networks,” University of Delaware (Newark, DE)	Mar-07 “Quantum Information and Quantum Control,” Princeton University (Princeton, NJ)
Oct-08 “Quantum Information,” NSF Distinguished Lecture Series (Arlington, VA)	Feb-07 “Quantum Computing with Atoms and Photons,” Drexel University (Philadelphia, PA)
Sept-08 “Trapped Ion Quantum Networks,” Army Research Laboratory (Adelphi, MD)	Feb-07 “Quantum Computing with Atoms and Photons,” Miami University (Miami, OH)
Sept-08 “The Physics of Music,” NIST Staff Colloquium (Gaithersburg, MD)	Dec-06 “Quantum Computing with Atoms and Photons,” Kansas State University (Manhattan, KA)
Sept-08 “Quantum Computing with Trapped Ions,” Stevens Inst. of Tech. (Hoboken, NJ)	Nov-06 “Quantum Computing with Atoms and Photons,” Iowa State University (Ames, IA)
July-08 “Trapped Ion Quantum Networks,” Max Planck Inst. for Quantum Optics (Garching, Germany)	Nov-06 “Quantum Computers,” Albion College (Albion, MI)
July-08 “Trapped Ion Quantum Networks,” University of Innsbruck and IQOQI (Innsbruck, Austria)	Sept-06 “Quantum Information Networking with Atoms and Photons,” Williams College (Williamstown, MA)
Apr-08 “Quantum Networks and Atomic action-at-a-distance,” Michigan Tech. Univ. (Houghton, MI)	Sept-06 “Quantum Computing” Hamilton College (Clinton, NY)
Mar-08 “Quantum Computing with Atoms and Photons,” Univ. Central Florida (Orlando, FL)	Sept-06 “Quantum Information Networking with Atoms and Photons,” SUNY-Stonybrook (Stonybrook, NY)
Feb-08 “Quantum Networks with Atoms,” Purdue Univ. (Lafayette, IN)	June-06, “Quantum Computing with Atoms,” University of Chicago (Chicago, IL)
Feb-08 “Integrated Atomic Quantum Networks,” Sandia National Laboratory (Albuquerque, NM)	May-06, “Quantum Networking with Trapped Atomic Qubits,” Stanford University (Palo Alto, CA)

- Feb-06, "Quantum Networking with Trapped Ions," Michigan State University (East Lansing, MI)
- Jan-06, "Quantum Networking with Trapped Ions," MPQ Director's Seminar (Garching, Germany).
- Dec-05, "The 2nd Quantum Revolution: Einstein in the 21st Century," Univ. Michigan (Ann Arbor, MI)
- Nov-05, "Advanced Ion Traps and Ultrafast Quantum Gates" Harvard/MIT CUA (Cambridge, MA)
- Sept-05, "Quantum Computing with Individual Atoms," Grinnell College (Grinnell, IA)
- Apr-05, "Quantum Computing with Atoms & Photons," Univ. Maryland (College Park, MD)
- Apr-05, "Quantum Networks with Atoms and Photons," Univ. Windsor (Windsor, Ont, Canada)
- Feb-05, "Microscale Ion Traps for Quantum Information," Sandia Nat'l Lab. (Albuquerque, NM)
- Oct-04, "Quantum Computing and Communication with Atoms& Photons," Washington Univ. (St. Louis, MO)
- Apr-04, "Atom-photon entanglement: the best of both quantum worlds," Univ. Michigan (Ann Arbor, MI)
- Nov-03, "Entanglement between a single atom and photon," University of Illinois (Champaign, IL)
- Nov-03, "Quantum Computing with Individual Atoms," University of Buffalo (Buffalo, NY)
- Oct-03, "Quantum Computing and Schrodinger's Cat," St. Cloud State (St. Cloud, MN)
- Apr-03, "Quantum Computing with Trapped Ions," University of Connecticut (Storrs, CT)
- Apr-03, "Quantum Computation and Schrodinger's Cat," University of North Carolina (Wilmington, NC)
- Dec-02, "Quantum Information and the Individual Atom," University of Michigan (Ann Arbor, MI)
- Nov-02, "Quantum Computation and Schrodinger's Cat," Georgia Tech (Atlanta, GA)
- Nov-02, "Quantum Computing with individual atoms," Rhodes College (Memphis, TN)
- Sept-02, "Quantum Computing with individual atoms," Wayne State University (Detroit, MI)
- May-02, "Control of Trapped Ions for Quantum Information Science," MIT (Cambridge, MA)
- May-02, "Quantum Computers," St. Olaf College Annual Science Symposium (Northfield, MN)
- Apr-02, "Quantum Computing with individual atoms," Western Illinois University (Macomb, IL)
- Mar-02, "Storing quantum information in individual atoms," Lucent Dist. Lect. Series (Ann Arbor, MI)
- Nov-01, "Quantum Computers and Schrodinger's Cat," University of Virginia (Charlottesville, VA)
- Nov-01, "Quantum Computing with Individual Atoms," William and Mary (Williamsburg, VA)
- Apr-01, "Quantum Computers," University of Toledo (Toledo, OH)
- Mar-01, "Bell Inequality Violations with Perfect Detectors," Harvard University (Cambridge, MA)
- Feb-01, "Quantum information Science," Calvin College (Grand Rapids, MI)
- Nov-00, "Quantum Computing with Trapped Ions," University of Texas (Austin, TX)
- Oct-00, "Negative Probabilities and the Wigner Function," University of Michigan (Ann Arbor, MI)
- Oct-00, "Quantum Computing with individual atoms," Argonne National Laboratory (Argonne, IL)
- Apr-00, "Quantum Computing with Trapped Ions," Univ. of New Mexico (Albuquerque, NM)
- Apr-00, "Entanglement of Four Particles," Santa Fe Institute (Santa Fe, NM)
- Mar-00, "Quantum Information Science," Florida Atlantic Univ. (Boca Raton, FL)
- Mar-00, "Entanglement of Trapped ions and Quantum Computing," Univ. of Michigan (Ann Arbor, MI)
- Feb-00, "Quantum Computation," Amherst College "What's New in Physics" colloquium (Amherst, MA)
- Feb-00, "Entanglement and Quantum Information Science," Yale University (New Haven, CT)
- Jan-00, "Trapped Ion Quantum Computing," University of Rochester (Rochester, NY)
- Oct-99, "Control of Trapped Ions for Quantum Computing," Univ. California (Berkeley, CA)
- May-99, "The Ion Trap Quantum Computer," National Security Agency (Fort Meade, MD)
- Apr-99, "Negative Probabilities, Quantum Entanglement, Schrodinger's Cat," Univ. California (San Diego, CA)
- Feb-99, "Quantum Logic Gates with Individual Atoms," Colorado State University (Fort Collins, CO)
- Dec-98, "Quantum Computing and Schrodinger's Cat," Rice University (Houston, TX)
- Oct-98, "Negative Probabilities, Quantum Entanglement, Schrodinger's Cat," Indiana Univ. (Bloomington, IN)
- Sept-98, "Nonclassical States of the Harmonic Oscillator," Stanford University, Stanford, CA
- Jul-98, "On-demand Entanglement for Quantum Info. Science," Ecole Normal Supérieure (Paris, France)
- Mar-98, "Negative Probabilities," Photonics Research Ontario (Toronto, ONT)
- Mar-98, "Quantum Computing and Schrodinger's Cat," University of Toronto (Toronto, ONT)
- Dec-97, "Quantum Entanglement and its Uses," University of Rochester (Rochester, NY)
- Nov-97, "Quantum Computing," University of Washington (Seattle, WA)
- Nov-97, "Negative Probabilities and Wigner Functions," University of Colorado, JILA (Boulder, CO)
- Mar-97, "Quantum Computing," Michigan State University (East Lansing, MI)

- Jan-97, “Quantum Computing with Trapped Atoms,” University of Michigan (Ann Arbor, MI)
- Jan-97, “Negative Probabilities, Quantum Entanglement, Schrodinger’s Cat,” Univ. of Wisc. (Madison, WI)
- Nov-96, “Quantum Information Science,” Northwestern University (Evanston, IL)
- Oct-96, “Quantum Computing with Individual Atoms,” University of Illinois (Champaign, IL)
- Oct-96, “Quantum Information, Schrodinger’s Cat, and All That,” MIT Dept. of Physics (Cambridge, MA)
- Oct-96, “Quantum Information Science,” University of Florida (Gainesville, FL)
- Sept-96, “Quantum Computing,” University of Wyoming (Laramie, WY)
- Aug-96, “Quantum Gates with Trapped Atomic Ions,” University of California (Santa Barbara, CA)
- May-96, “Quantum Entanglement and Quantum Optics,” Rocky Mountain Optical Soc. (Boulder, CO)
- Feb-96, “Quantum Computing with Individual Atoms,” University of Colorado (Boulder, CO)
- Nov-95, “The Ion Trap Quantum Computer,” IBM Almaden Labs (San Jose, CA)
- Jul-95, “Trapped Ion Tricks,” Los Alamos National Lab. (Los Alamos, NM)
- Mar-95, “Demonstration of a Quantum Logic Gate,” California Institute of Tech. (Pasadena, CA)
- Feb-95, “Entangling Quantum Logic Gates with Trapped Ions,” University of Connecticut (Storrs, CT)
- Feb-95, “Demonstration of a Quantum Logic Gate,” IBM Watson Laboratory (Yorktown Hts, NY)
- Feb-94, “Interactions between Cold Ions and Atoms,” University of Illinois at Chicago (Chicago, IL)

Invited Presentations at Meetings (including presentations by group members)

- Oct-09 Workshop on the Physical Implementation of Quantum Information, Montreal, Quebec
- Oct-09 OSA Annual Meeting – Frontiers in Optics, San Jose, CA (**P. Maunz**)
- Sep-09 Quantum Information Processing and Computing (QIPC), Rome, Italy
- Aug-09 Conference on Quantum Information, Toronto, Ontario
- July-09 Atomic Physics Gordon Conf., Tilton, NH
- May-09 CLEO/IQEC, Baltimore, MD (**D. Hayes**)
- May-09 CLEO/IQEC, Baltimore, MD (**K. Kim**)
- May-09 APS Division of AMO Physics annual meeting, Charlottesville, VA (**D. Matsukevich**)
- Mar-09 German Physical Society annual meeting (**P. Maunz**)
- Feb-09, Southwestern Quantum Information Network, Seattle, WA
- Feb-09, 2nd Workshop on Integrated Atomic Systems (IAS II), Seattle, WA (**S. Olmschchenk**)
- Feb-09, Quantum Information with Atoms, Ions and Photons (EU Network Workshop), Cortina, Italy
- Nov-08, ITAMP Workshop on Open Quantum Systems, Cambridge, MA
- Aug-08, Gordon Conference on Quantum Information Science, Big Sky, MT (**D. Matsukevich**)
- May-08, APS Division of AMO Physics Annual Meeting, State College, PA (**D. Moehring, Thesis Prize**)
- May-08, Quantum Electronics and Laser Science (QELS), San Jose, CA (**D. Matsukevich**)
- Feb-08, Ultrafast and Ultracold Processes, Kibbutz Ein Gedi, Israel (**P. Maunz**)
- Nov-07, Workshop on Integrated Atomic Systems, Georgia Tech (Atlanta, GA)
- Sept-07, NEC Workshop on Quantum Communication (Princeton, NJ)
- Aug-07, Quantum Enabled Science and Technology (QUEST), Santa Fe, NM (**D. Stick**)
- Jul-07, Gordon Conference on Quantum Control, Salve Regina College, RI
- Jun-07, APS Division of AMO Physics Annual Meeting, Calgary, Alberta
- Jun-07, Workshop on Quantum Engineering with Neutral Atoms and Light, Herrsching, Germany (**P. Maunz**)
- Jun-07, Workshop on Fault-Tolerant Quantum Error Correction, Perimeter Institute, Waterloo, Ont.
- Jun-07, International Conference on Quantum Information, Rochester, NY
- May-07, Harvard-Smithsonian ITAMP Workshop of Hybrid Quantum Information, Cambridge, MA
- May-07, Plenary Speaker, US-Canada Cross Border Workshop, Toronto, Ontario
- Apr-07, Gordon Conference on Quantum Information Science, Pisa, Italy
- Mar-07 “Quantum Networking with Atoms & Photons,” JQI Symposium, College Park, MD
- Mar-07, APS March Meeting, Denver, CO
- Mar-07, Int’l Workshop on Measurement-Based Quantum Computing, Oxford, UK (**D. Moehring**)
- Feb-07, CIAR Conference on Quantum Simulations, Vancouver, BC
- Nov-06, IEEE-LEOS Annual Meeting, Montreal, Canada (**P. Maunz**)
- Aug-06, Quantum Enabled Science and Technology (QUEST), Santa Fe, NM (**D. Moehring**)
- Aug-06, “The Principles and Applications of Control in Quantum Systems,” Harvard Univ., Cambridge, MA

July-06, IEEE-LEOS Topical on Quantum Communication Networks, Quebec City, Canada

Feb-06, Workshop on “Decoherence at the Crossroads,” Vancouver, BC Canada (**L. Deslauriers**)

Feb-06, 2nd Int’l Workshop on Trapped Ion Quantum Computing, Boulder., CO

Feb-06, Southwestern Quantum Information Technology Annual Meeting, Albuquerque, NM (**P. Maunz**)

Nov-05, Hereaus Workshop: “The Photon–Generation, Detection and Application,” Cologne, Germany

Nov-05, Midwestern Cold Atom Workshop, Champaign, IL (**Kathy-Anne Brickman**)

Nov-05, ARO-Harvard Workshop on Quantum Repeaters, Cambridge, MA

Oct-05, Optical Society of America Annual Meeting, Tucson, AZ (**M. Madsen, P. Lee**)

Aug-05, Quantum Enabled Science and Technology (QUEST), Santa Fe, NM (**L. Deslauriers**)

Jun-05, Gordon Conference on Atomic Physics, Tilton, NH (**P. Haljan**)

Jul-05, Hereaus Workshop: “Control of quantum correlations in tailored matter,” Germany (**W. Hensinger**)

May-05, Quantum Physics of Nature: Theory, Experiment, and Interpretation, Vienna, Austria

May-05, APS Division of AMO Physics Annual Meeting, Lincoln, NE

Mar-05, Gordon Conference on Quantum Information Science, Ventura, CA (**P. Lee**)

Dec-04, National Academy of Sciences Frontiers of Science, “Quantum Metrology,” Irvine, CA

Sept-04, Isaac Newton Programme on Quantum Information Theory, Cambridge, UK

Aug-04, Neils Bohr Symposium on Quantum Optics, Copenhagen, DK

Aug-04, Quantum Enabled Science and Technology (QUEST), Santa Fe, NM (**P. Haljan**)

Aug-04, 2nd Feynman Festival, College Park, MD (**W. Hensinger**)

Jun-04, FOCUS Workshop on Coherent Control Comp. Devices, Ann Arbor, MI

May-04, 1st Int’l Workshop on Trapped Ion Quantum Computing, Ann Arbor, MI

May-04, APS Division of AMO Physics annual meeting, Tucson, AZ (**B. Blinov**)

May-04, Harvard-Smithsonian ITAMP Mesoscopic Physics Workshop, Cambridge, MA

Apr-04, NIST Quantum Information Science and Emerging Technologies, Boulder, CO

Mar-04, QUEST European Network on Atoms/Ions as Qubits, Torino, Italy (**P. Haljan**)

Dec-03, European Union Focus Meeting on Few-Qubit Applications, Budmerice, Slovakia

Oct-03, Optical Society of America Annual Meeting, Tucson, AZ (**P. Haljan**)

Aug-03, Quantum Enabled Science and Technology (QUEST), Santa Fe, NM (**B. Blinov**)

Jul-03, European Network Meeting: Quantum Information Processing and Communication (QUIPC), Oxford, UK

Jun-03, Discussion Leader, Gordon Conference on Atomic Physics, Tilton School, NH

Jun-03, THINQC – NSA/ARDA Workshop on Theory in Quantum Computing, Harper’s Ferry, WV

May-03, Quantum and Reversible Computation, Stony Brook, NY

May-03, Quantum Electronics and Laser Science, Baltimore, MD

Apr-03, APS Ohio Section Meeting, East Lansing, MI

Mar-03, Discussion Leader, Inaugural Gordon Conference on Quantum Information, Ventura, CA

Oct-02, External Invited Speaker, DOE Basic Energy Sciences Annual Meeting, Washington, DC

Oct-02, Optical Society of America Annual Meeting, Orlando, FL (**B. Blinov**)

Aug-02, Michigan Center for Theoretical Physics Wkshop on Quantum Decoherence, Ann Arbor, MI

Aug-02, Trapped Particles and Fundamental Interactions, Munich, Germany (**B. Blinov**)

Aug-02, Decoherence Control and Quantum Computing Workshop, Ann Arbor, MI

Jun-02, Neutral Atom Quantum Computing Workshop, NIST, Gaithersburg, MD

May-02, US-Canadian Cross-Border Workshop on Laser Science, Rochester, NY

Apr-02, Quantum Institute Inaugural, Michigan State University, East Lansing, MI

Mar-02, “Science and Ultimate Reality” symposium in honor of John A. Wheeler, Princeton, NJ

Nov-01, APS Southeastern Section Meeting, Charlottesville, VA

Jul-01, Quantum Applications Symposium, Ann Arbor, MI

Jul-01, Quantum Communication Measurement & Computing, Capri, Italy

Jun-01, National Academy of Sciences “Frontiers of Science,” Bad Homburg, Germany

Jun-01, APS Division of AMO Physics Annual Meeting, London, ONT

Jun-00, International Conference on Atomic Physics, Florence, Italy

Sept-99, NIST Director’s Workshop on Cryptography, Gaithersburg, MD

Jul-99, Gordon Conference on Atomic Physics, Plymouth, NH
 May-99, Quantum Electronics and Laser Science, Baltimore, MD
 Sept-98, Trapped Charged Particles and Fundamental Physics, Monterey, CA
 Jul-98, Wkshp on Quantum Computing, Benasque, Spain
 Jun-98, Workshop on Quantum Control, Albuquerque, NM
 May-98, SPIE Aerosense meeting, Orlando, FL
 Nov-97, National Academy of Science "Frontiers of Science", Irvine, CA
 Oct-97, Optical Society of America Annual Meeting, Long Beach, CA
 Aug-97, Harvard University Dept. of Physics and Smithsonian ITAMP, Cambridge, MA
 Jul-97, Gordon Conference on Nonlinear Optics, Colby-Sawyer, NH
 May-97, German Science Foundation (DFG) "Schwerpunktprogramm", Bonn, Germany
 May-97, Quantum Control Workshop, Albuquerque, NM
 Mar-97, SPIE Optics in Computing, Incline Village, NV
 Feb-97, AAAS Annual Meeting, Seattle, WA
 Sept-96, European Science Foundation Quantum Optics Meeting, Castelvecchio, Italy
 Jun-96, Quantum Electronics and Laser Science, Anaheim, CA
 May-96, APS Division of AMO Physics Annual Meeting, Ann Arbor, MI
 Oct-95, DARPA "ULTRA" Electronics Meeting, Boulder, CO
 Sept-95, Optical Society of America Annual Meeting, Portland, OR
 Jun-95, Twelfth International Conference on Laser Spectroscopy, Capri, Italy
 Apr-95, American Chemical Society Annual Meeting, Anaheim, CA
 Jan-95, Rencontres de Moriond, Villars, Switzerland
 Apr-92, Quantum Electronics and Laser Science, Anaheim, CA

Lecture Series, Tutorials, Physics Schools

Jun-08, Univ. Michigan Summer School on Quantum Physics, Ann Arbor, MI
 May-08, Les Houches International School of Physics, Chamoix, France
 Feb-06, 2nd Workshop on Trapped Ion Quantum Computing, Boulder, CO
 Jan-05, Ohio State University, Frontiers of Spectroscopy Lecture Series, Columbus, OH
 Aug-04, Neils Bohr Institute, Quantum Optics Summer School, Copenhagen, Denmark
 Jul-04, Perimeter Institute Summer School on Quantum Information, Waterloo, Ont, Canada
 May-02, APS Division of AMO Physics Annual Meeting Tutorial, Williamsburg, VA
 May-02, Cross Border Workshop on Laser Science, Rochester, NY
 Jul-01, Co-Director, Enrico Fermi School of Physics, "Quantum Information," Varenna, Italy
 Mar-01, Les Houches International School of Physics, Chamoix, France
 Nov-99, Sweden Autumn Physics School, Stockholm, Sweden
 Aug-99, Co-Director, Southwestern Quantum Inf. Network (SQUINT) Summer School, Santa Barbara, CA
 Mar-98, APS March Meeting Tutorial, Los Angeles, CA
 Jan-96, Jorge Andre Swieca Summer School for Quantum Optics, Rio de Janeiro, Brazil

University Teaching

2009 Fall: Physics 273: Waves and Light (University of Maryland)
 2008 Fall: Physics 273: Waves and Light (University of Maryland)
 2006 Spring: Physics 340: Heat, Waves, and Relativity (University of Michigan)
 2005 Fall: Physics 140: General Physics I: Calculus-Based mechanics (University of Michigan)
 2005 Spring: Physics 340: Heat, Waves, and Relativity (University of Michigan)
 2004 Fall: Physics 288/489: The Physics of Music (University of Michigan)
 2004 Spring: Physics 340: Heat, Waves, and Relativity (University of Michigan)
 2003 Fall: Physics 522/644: Advanced Atomic Physics and Quantum Information Science (University of Michigan)
 2003 Spring: Physics 340: Heat, Waves, and Relativity (University of Michigan)
 2002 Fall: Physics 125: General Physics I: Mechanics (University of Michigan)
 2002 Spring: Physics 340: Heat, Waves, and Relativity (University of Michigan)
 2001 Fall: Physics 522/644: Advanced Atomic Physics and Quantum Information Science (University of Michigan)

Student and Postdoctoral Advisees

Postdoctoral Researchers

Emily Edwards, JQI and Univ. Maryland (2009—)
Qudsia Quraishi, JQI and Univ. Maryland (2008—)
Le Luo, JQI and Univ. Maryland (2008—)
Wesley Campbell, JQI and Univ. Maryland (2008—)
Kihwan Kim, JQI and Univ. Maryland (2008—)
Dzmitry Matsukevich, Univ. Michigan/Maryland (2006—)
Ming-Shien Chang, Univ. Michigan/Maryland (2006-2009)
Peter Maunz, Univ. Michigan/Maryland (Postdoc: 2005-2008; Research Scientist: 2009)
Paul Haljan, Univ. Michigan (2003-2005) – Asst. Prof., Simon Fraser Univ. (Canada)
Winfried Hensinger, Univ. Michigan (2003-2005) – Asst. Prof., Univ. Sussex (U.K.)
Boris Blinov, Univ. Michigan (2001-2005) – Asst. Prof., Univ. Washington
Mary Rowe, NIST (1999-2000) – Staff physicist, NIST
 Quentin Turchette, NIST (1997-2000) – Physicist, Research Electrooptics (Boulder, CO)
Cass Sackett, NIST (1997-2000) – Assoc. Prof, Univ. Virginia
Christopher Wood, NIST (1996-1998) – Optical Physicist, Network Photonics (Boulder, CO)
Christopher Myatt, NIST (1996-1998) – CEO and Founder, Precision Photonics Inc. (Boulder, CO)
Dietrich Leibfried, NIST (1995-1997) – Staff physicist, NIST (Boulder, CO)
Dawn Meekhof, NIST (1994-1997) – Physicist (Seattle, WA)

Graduate Students

Crystal Senko, Univ. Maryland (2009—)
David Hucul, Univ. Maryland (2009—)
Jonathan Mizrahi, Univ. Maryland (2008—)
Rajibul Islam, Univ. Maryland (2007—)
Andrew Manning, Univ. Maryland (2007—)
David Hayes, Univ. Maryland (2007—)
Simcha Korenblit, Univ. Michigan/Maryland (2006—)
Yisa Rumala, Univ. Michigan (2006-2007) – grad. student with A. Leanhardt (U. Michigan)
Kelly Younge, Univ. Michigan (2005-2007) – grad. student with G. Raithel (U. Michigan)
Jon Sterk, Univ. Michigan/Maryland (2005—)
Steven Olmschenk, Univ. Michigan/Maryland (2004-2009) – NRC postdoc with W. Phillips (NIST)
Mark Acton, Univ. Michigan (2003-2007) – science teacher at Deerfield Academy, MA
Daniel Stuck, Univ. Michigan (2002-2007) – physicist at Sandia National Laboratory
Kathy-Anne Brickman, Univ. Michigan (2002-2007) – postdoc with C. Chin (Univ. Chicago)
David Mochring, Univ. Michigan (2002-2007) – postdoc with G. Rempe (Max Planck Inst. for Quantum Optics)
Martin Madsen, Ph.D., Univ. Michigan (2002-2006) – Asst. Prof., Wabash College, IN
Louis Deslauriers, Ph.D., Univ. Michigan (2001-2005) – researcher with Carl Wieman Science Education Initiative
Patricia Lee, Ph.D., Univ. Michigan (2000-2005) – NRC postdoc with W. Phillips, NIST
David Kielpinski, Ph.D., Univ. Colorado (1994-1999; with D. Wineland) – Asst. Prof., Griffith Univ. (Australia)
Brian King, Ph.D., Univ. Colorado (1994-1999; with D. Wineland) – Asst. Prof., McMaster Univ. (Canada)

Undergraduate Students

Kenny Lee, Univ. Maryland (2009—)
Brian Fields, Univ. Maryland (2009—)
Guillermo Silva, Univ. Maryland (2008—)
Andrew Chew, Univ. Michigan/Maryland (2006-2008)
Dan Cook, Univ. Michigan (2006-2007)
Elizabeth Otto, Univ. Michigan (2005-2007) – graduate student at Stanford
Mark Yeo, Univ. Michigan (2004-2006) – graduate student with J. Ye (U. Colorado)
Rudolf Kohn, Univ. Michigan (2003-2006) – graduate student with D. Heinzen (U. Texas)
David Hucul, Univ. Michigan (2003-2006) – graduate student with W. Ketterle (MIT)
Russell Miller, Univ. Michigan (2001-2003) – graduate student with J. Kimble (CalTech)