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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

2015– Distinguished University Professor, University of Maryland, College Park
2015– Percussionist, Columbia Orchestra (Columbia, MD)
2014– Fellow, Center for Quantum Information and Computer Science (QuICS), Univ. Maryland, College Park
2007– Bice Zorn Professor of Physics, University of Maryland, College Park
2007– Fellow, Joint Quantum Institute (JQI), NIST and University of Maryland, College Park
2006–2007 Director, FOCUS (NSF Physics Frontier Center on Ultrafast Science),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)

Fellowships and Awards

Member, National Academy of Sciences (2016)
American Physical Society Arthur Schawlow Prize for Laser Science (2015)
University of Maryland College of Science Distinguished Faculty Award (2014)
Fellow, American Association for the Advancement of Science (2012)
Scientific American "50" Research Award (2006)
University of Michigan Faculty Distinguished Research Award (2005-2006)
Fellow, American Physical Society (2005)
Fellow, UK Institute of Physics (2002)
Distinguished Traveling Lecturer, American Physical Society Division of Laser Science (2002–)
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)

Selected Service

National Academies of Sciences Intelligence Science and Technology Experts Group (ISTEG) (2015–)
DoD Advisory Board for Quantum Sciences and Engineering at ARL, AFRL, and NRL (2015—).
American Physical Society Div. AMO Physics (DAMOP): **Chair** (2010), Chair-Elect (2009), Vice-Chair (2008).
American Physical Society Committee on Meetings: **Chair** (2005), Member (2003-2004).
National Academy of Sciences Committee on AMO science (CAMOS): **Chair** (2012-2015), Member (2009-2011).
National Academy of Sciences Committee on AMO science (AMO2010 decadal report, 2005-2006).
National Science Foundation Physics Frontier Center, JILA and Univ. of Colorado: External Advisory Board (2014–).
Center for Quantum Information, Tsinghua University, Beijing, China: International Advisory Board (2012–).
Institute for Quantum Computing, University of Waterloo, Canada: Scientific Advisory Committee (2010–).
Physics and Engineering Physics Department, Stevens Institute of Technology: External Advisory Board (2009–).
Gordon Research Conference on Atomic Physics: **Chair** (2007), Vice-Chair (2005).
Enrico Fermi International School of Physics on "Quantum Information Science": Co-Director (2001).

Research Interests

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

Quantum Information and Entanglement. 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 and photonic structures.

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 cold atoms and ions in order to generate controllable interactions and quantum entanglement for studies of quantum many-body systems.

The Interface between Atomic and Condensed Matter Physics. My group has led the development of atomic quantum simulators that can emulate intractable Hamiltonians that are found in contexts such as quantum magnetism and strongly-correlated condensed matter. We have also 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 mesoscopic oscillators and atoms.

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.

Foundations of quantum mechanics. I have a longstanding interest in foundational aspects of quantum mechanics, from quantum measurement, 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 and the border between quantum and classical physics as system complexity grows. I enjoy conveying quantum tenets to younger students and the public, with heavy reliance on analogies from the visual and musical arts.

Invited Presentations

400 invited presentations/colloquia/seminars at conferences and workshops, including 25 sets of lectures at academic summer/winter schools on Quantum Science and Atomic/Optical Physics, and 15 public lectures on Quantum Physics, Quantum Information Science, and the Physics of Music

Mentoring

5 research science faculty
32 postdoctoral researchers
40 graduate students
16 undergraduate students
2 high school students

Journal Publications (>30,000 citations, h=69)

137. "Non-thermalization in trapped atomic ion spin chains," P. W. Hess, P. Becker, H. B. Kaplan, A. Kyprianidis, A. C. Lee, B. Neyenhuis, G. Pagano, P. Richerme, C. Senko, J. Smith, W. L. Tan, J. Zhang, C. Monroe, arXiv 1704.02439 (2017).

136. "Complete 3-Qubit Grover Search on a Programmable Quantum Computer," C. Figgatt, D. Maslov, K. A. Landsman, N. M. Linke, S. Debnath, C. Monroe, arXiv: 1703.10535 (2017).

135. "*Multi-Species Trapped Ion Node for Quantum Networking*," I. V. Inlek, C. Crocker, M. Lichtman, K. Sosnova, and C. Monroe, arXiv: 1702.01062 (2017).

134. "*Ultrafast Creation of Large Schrödinger Cat States of an Atom*," K. G. Johnson, J. D. Wong-Campos, B. Neyenhuis, J. Mizrahi, C. Monroe, arXiv: 1612.05854v2 (2017).

133. "*Experimental Comparison of Two Quantum Computing Architectures*," N. M. Linke, D. Maslov, M. Roetteler, S. Debnath, C. Figgatt, K. A. Landsman, K. Wright, C. Monroe, ***Proc. Nat'l Acad. Sci.*** **114**, 13 (2017).

132. "*Observation of a Discrete Time Crystal*," J. Zhang, P.W. Hess, A. Kyprianidis, P. Becker, A. Lee, J. Smith, G. Pagano, I.-D. Potirniche, A.C. Potter, A. Vishwanath, N.Y. Yao, C. Monroe, ***Nature* 543**, 217–220 (2017).

131. "*Experimental Demonstration of Quantum Fault Tolerance*," N. M. Linke, M. Gutierrez, K. A. Landsman, C. Figgatt, S. Debnath, K. R. Brown, C. Monroe, arXiv: 1609.06946 (2016).

130. "*Observation of Prethermalization in Long-Range Interacting Spin Chains*," B. Neyenhuis, J. Smith, A. Lee, P. Richerme, P. Hess, J. Zhang, Z. Gong, A. Gorshkov, and C. Monroe, arXiv 160800681 (2016).

129. "*Engineering Large Stark Shifts for Control of Individual Clock-State Qubits*," A. C. Lee, J. Smith, P. Richerme, B. Neyenhuis, P. W. Hess, J. Zhang, and C. Monroe, ***Phys. Rev. A*** 94, 042308 (2016).

128. "*Co-Designing a Scalable Quantum Computer with Trapped Atomic Ions*," K. R. Brown, J. Kim, and C. Monroe, ***Nature Quantum Information* 2**, 16034 (2016).

127. "*Demonstration of a programmable general purpose quantum computer*," S. Debnath, N. M. Linke, C. Figgatt, K. A. Landsman, K. Wright, and C. Monroe, ***Nature* 536**, 63 (2016).

126. "*Many-body localization in a quantum simulator with programmable random disorder*," J. Smith, A. Lee, P. Richerme, B. Neyenhuis, P. W. Hess, P. Hauke, M. Heyl, D. A. Huse, and C. Monroe, ***Nature Physics*** doi:10.1038/nphys3783 (2016)..

125. "*High resolution adaptive imaging of a single atom*," J. D. Wong-Campos, K. Johnson, B. Neyenhuis, J. Mizrahi, and C. Monroe, ***Nature Photonics*** 10, 606 (2016).

124. "Kaleidoscope of quantum phases in a long-range interacting spin-1 chain," Z.-X. Gong, M. F. Maghrebi, A. Hu, M. Foss-Feig, P. Richerme, C. Monroe, and A. V. Gorshkov, Phys. Rev. B 93, 205115 (2016).

123. "*Quantum Connections*," C. Monroe, M. Lukin, and R. Schoelkopf, ***Scientific American*** (May, 2016), p50.

122. "*Active Stabilization of Ion Trap Radiofrequency Potentials*," K. G. Johnson, J. D. Wong-Campos, B. Neyenhuis, J. Mizrahi, and C. Monroe, ***Rev. Sci. Instrum.* 87**, 053110 (2016).

121. "*Simulating the Haldane Phase in Trapped Ion Spins Using Optical Fields*," I. Cohen, P. Richerme, Z.-X. Gong, C. Monroe, A. Retzker, ***Phys. Rev. A*** 92, 012334 (2015)..

120. "*Sensing Atomic Motion from the Zero Point to Room Temperature with Ultrafast Atom Interferometry*," K. G. Johnson, B. Neyenhuis, J. Mizrahi, J. D. Wong-Campos, C. Monroe, ***Phys. Rev. Lett.*** 115, 213001 (2015).

119. "*Realization of a Quantum Integer-Spin Chain with Controllable Interactions*," C. Senko, P. Richerme, J. Smith, A. Lee, I. Cohen, A. Retzker, and C. Monroe, ***Phys. Rev. X*** 5, 021026 (2015).

118. "*Modular Entanglement of Atomic Qubits using both Photons and Phonons*," D. Hucul, I. V. Inlek, G. Vittorini, C. Crocker, S. Debnath, S. M. Clark, and C. Monroe, ***Nature Physics***, 11, 37 (2015).

117. "*Entanglement of distinguishable quantum memories*," G. Vittorini, D. Hucul, I.V. Inlek, C. Crocker, and C. Monroe, ***Phys. Rev. A*** 90, 040302(R) (2014).

116. "*Quantum gates with phase stability over space and time*," I.V. Inlek, G. Vittorini, D. Hucul, C. Crocker, and C. Monroe, ***Phys. Rev. A*** 90, 042316 (2014).

115. "*Coherent Imaging Spectroscopy of a Quantum Many-Body Spin System*," C. Senko, J. Smith, P. Richerme, A. Lee, W.C. Campbell, and C. Monroe, ***Science*** 345, 430 (2014).

114. "*Non-local propagation of correlations in long-range interacting quantum systems*," P. Richerme, Z.-X. Gong, A. Lee, C. Senko, J. Smith, M. Foss-Feig, S. Michalakis, A. V. Gorshkov, and C. Monroe, ***Nature*** 511, 198 (2014).

113. "*Large Scale Modular Quantum Computer Architecture with Atomic Memory and Photonic Interconnects*," C. Monroe, R. Raussendorf, A. Ruthven, K. R. Brown, P. Maunz, L.-M. Duan, J. Kim, ***Phys. Rev. A*** 89, 022317 (2014).

112. "*Optimal quantum control of multi-mode couplings between trapped ion qubits for scalable entanglement*," T. Choi, S. Debnath, T. A. Manning, C. Figgatt, Z.-X. Gong, L.-M. Duan, and C. Monroe, ***Phys. Rev. Lett.*** 112, 19502 (2014).

111. "*Beat note stabilization of mode-locked lasers for quantum information processing*," R. Islam, W. C. Campbell, T. Choi, S. M. Clark, S. Debnath, E. E. Edwards, B. Fields, D. Hayes, D. Hucul, I. V. Inlek, K. G. Johnson, S. Korenblit, A. Lee, K. W. Lee, T. A. Manning, D. N. Matsukevich, J. Mizrahi, Q. Quraishi, C. Senko, J. Smith, and C. Monroe, ***Optics Letters*** 39, 3238 (2013).

110. "*Quantum Catalysis of Magnetic Phase Transitions in a Quantum Simulator*," P. Richerme, C. Senko, S. Korenblit, J. Smith, A. Lee, R. Islam, W. C. Campbell, and C. Monroe, ***Phys. Rev. Lett.*** 111, 100506 (2013).

109. "*Quantum Control of Qubits and Atomic Motion Using Ultrafast Laser Pulses*," J. Mizrahi, B. Neyenhuis, K. G. Johnson, W. C. Campbell, C. Senko, D. Hayes, D. Hucul, and C. Monroe, submitted to ***Appl. Phys. B*** (2013).

108. "*Experimental Performance of a Quantum Simulator: Optimizing Adiabatic Evolution and Identifying Many-body Ground States*," P. Richerme, C. Senko, J. Smith, A. Lee, S. Korenblit, and C. Monroe, ***Phys. Rev. A*** 88, 012334 (2013).

107. "*Emergence and Frustration of Magnetism with Variable-Range Interactions in a Quantum Simulator*" R. Islam, C. Senko, W. C. Campbell, S. Korenblit, J. Smith, A. Lee, E. E. Edwards, C.-C. Wang, J. K. Freericks and C. Monroe, ***Science*** 340, 583 (2013).

106. "*Scaling the Ion Trap Quantum Processor*" C. Monroe and J. Kim, ***Science*** 339, 1164 (2013).

105. "*Ultrafast Spin-Motion Entanglement and Interferometry with a Single Atom*," J. Mizrahi, C. Senko, W. C. Campbell, K. G. Johnson, C. W. S. Conover, C. Monroe, ***Phys. Rev. Lett.*** 203001 (2013).

104. "*Quantum Simulation of Spin Models on an Arbitrary Lattice with Trapped Ions*," S. Korenblit, W. C. Campbell, R. Islam, E. E. Edwards, Z. Gong, G.-D. Lin, L.-M. Duan, J. Kim, K. Kim, and C. Monroe, ***New J. Phys.*** 14, 095024 (2012).

103. "*Coherent Error Suppression in Spin-Dependent Force Quantum Gates*," D. Hayes, S. M. Clark, S. Debnath, D. Hucul, Q. Quraishi, and C. Monroe, ***Phys. Rev. Lett.*** **109**, 020503 (2012).

102. "*Photon collection from a trapped ion + cavity system*," J. D. Sterk, L. Luo, T. A. Manning, P. Maunz, and C. Monroe, arXiv 1112.4489, ***Phys. Rev. A*** **85**, 062308 (2012).

101. "*Quantum simulation of the transverse Ising model with trapped ions*," K. Kim, S. Korenblit, R Islam, E. E. Edwards, M-S Chang, C. Noh, H. Carmichael, G-D Lin, L-M Duan, C. C. Joseph Wang, J. K. Freericks and C. Monroe, ***New J. Phys.*** 13, 1050031 (2011).

100. "*Onset of a Quantum Phase Transition with a Trapped Ion Quantum Simulator*," R. Islam, E. E. Edwards, K. Kim, S. Korenblit, C. Noh, H. Carmichael, G.-D.Lin, L.-M. Duan, C.-C. Joseph Wang, J. K. Freericks, C. Monroe, ***Nature Communications*** **2**, 377 (2011).

99. *"Sharp Phase Transitions in a Small Frustrated Network of Trapped Ion Spins,"* G.-D. Lin, C. Monroe, and L.-M. Duan, ***Phys. Rev. Lett.*** **106**, 230402 (2011).

98. "*Demolishing Quantum Nondemolition*," C. Monroe, ***Physics Today***, 8 (Jan 2011).

97. *"Quantum Simulation and Phase Diagram of the Transverse Field Ising Model with Three Atomic Spins,"* E. E. Edwards, S. Korenblit, K. Kim, R. Islam, M. Chang, J. Freericks, G. Lin, L.-M. Duan, C. Monroe, ***Phys. Rev. B*** **82**, 060412 (2010).

96. *"Ultrafast Gates for Single Atomic Qubits,"* W. C. Campbell, J. Mizrahi, Q. Quraishi, C. Senko, D. Hayes, D. Hucul, D. N. Matsukevich, P. Maunz, C. Monroe, ***Phys. Rev. Lett.*** **105**, 090502 (2010).

95. "*Quantum Logic between Distant Trapped Ions*," S. Olmschenk, D. Hayes, D. N. Matsukevich, P. Maunz, D. L. Moehring, and C. Monroe, ***Int. Jour. Quant. Info.*** 8, 337 (2010).

94. "*Quantum Simulation of Frustrated Ising Spins with Trapped Ions*," K. Kim, M.-S. Chang, S. Korenblit, R. Islam, E. E. Edwards, J. K. Freericks, G.-D. Lin, L.-M. Duan, and C. Monroe ***Nature*** **465**, 590 (2010).

93. "*Quantum Networks with Trapped Ions,*" C. Monroe and L.-M. Duan, ***Rev. Mod. Phys.*** **82**, 1209 (2010).

92. "*Random Numbers Certified by Bell's Theorem*," S. Pironio, A. Acın, S. Massar, A. Boyer de la Giroday, D. N. Matsukevich, P. Maunz, S. Olmschenk, D. Hayes, L. Luo, T. A. Manning, and C. Monroe, ***Nature*** **464**, 1021 (2010).

91. "*Quantum Computers*," T. D. Ladd, F. Jelezko, R. Laflamme, Y. Nakamura, C. Monroe, and J. L. O'Brien, ***Nature*** **464**, 45 (2010).

90. "*Entanglement of Atomic Qubits using an Optical Frequency Comb*," D. Hayes, D. N. Matsukevich, P. Maunz, D. Hucul, Q. Quraishi, S. Olmschenk, W. Campbell, J. Mizrahi, C. Senko, and C. Monroe ***Phys. Rev. Lett.***, 104, 140501 (2010).

89. "*Phonon-mediated entanglement for trapped ion quantum computing*," K.-A. Brickman and C. Monroe, ***Rep. Prog. Phys.*** **73** 036401 (2010).

88. "*Protocol for Hybrid Entanglement Between a Trapped Atom and a Semiconductor Quantum Dot*," E. Waks and C. Monroe, ***Phys. Rev. A*** 80, 062330 (2009).

87. "*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, ***Fortschritte der Physik* 57**, 1133-1152 (2009).

86. "*Demonstration of a scalable, multiplexed ion trap for quantum information processing*," D. Leibrandt, 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, ***Phys. Rev. Lett.* 102**, 250502 (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, ***Phys. Rev. A* 80**, 022502 (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).

80. "R*emapping 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. "R*obust 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.

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).

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).

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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)

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