Publications in Refereed Journals

Thad G. Walker
Professor of Physics
University of Wisconsin–Madison

1. J. Huennekens, Z. Wu, and T. G. Walker, "Ionization, excitation of high-lying atomic states, and molecular flourescence in Cs vapor excited at $\lambda = 455.7$ and 459.4nm," *Phys. Rev. A* **31**, 196 (1985).

2. Z. Wu, T. G. Walker, and W. Happer, "Spin-Rotation Interaction of Noble-Gas Alkali-Metal Atom Pairs," *Phys. Rev. Lett.* **54**, 1921 (1985).

3. A. Mokhtari, W. J. Briscoe, A. D. Eichon, D. H. Fitzgerald, G. J. Kim, B. M. K. Nefkens, J. A. Wightman, S. D. Adrian, M. E. Sadler, and T. Walker, "Analyzing Powers in $\pi^+ p$ Elastic Scattering at Intermediate Energies," *Phys. Rev. Lett.* **55**, 359 (1985).

4. J. Huennekens, T. G. Walker, and S. C. McClain, "Near-infrared spectra of the NaK molecule," *J. Chem. Phys.* **83**, 4949 (1985).

5. W. Happer, K. D. Bonin, and T. G. Walker, "The Spin-Rotation Interaction of Atoms with Half-Filled Electron Shells," *Phys. Letters* **120**, 293 (1987).

6. T. G. Walker, K. Bonin, and W. Happer, "Electron-Noble-Gas Spin-Flip Scattering at Low Energy," *Phys. Rev. A* **35**, 3749 (1987).

7. W. Happer, K. D. Bonin, and T. G. Walker, "The Stability of Spin-Polarized Nitrogen Crystals," *Chem. Phys. Lett.* **135**, 451 (1987).

8. T. G. Walker, K. D. Bonin, and W. Happer, "Modulation Technique for Measuring Diffusion Constants of Ba in Noble Gases," *J. Chem. Phys.* **87**, 660 (1987).

9. K. D. Bonin, T. G. Walker, and W. Happer, "Relaxation of Gaseous Spin-Polarized ^{3}He Targets Due to Ionizing Radiation," *Phys. Rev. A* **37**, 3270 (1988).

10. T. G. Walker and K. D. Bonin, "Deexcitation of Metastable Ba^+," *J. Chem. Phys.* **89**, 1358 (1988).

11. S. R. Schaefer, G. D. Cates, T. Chien, D. Gonatas, W. Happer, and T. G. Walker, "Frequency Shifts of the Magnetic-Resonance Spectrum of Mixtures of Nuclear Spin-Polarized Noble Gases and Vapors of Spin-Polarized Alkali Metal Atoms," *Phys. Rev. A* **39**, 5613 (1989).

12. D. Sesko, T. Walker, C. Monroe, A. Gallagher, and C. Wieman, "Collisional Losses from a Light-Force Atom Trap," *Phys. Rev. Lett.* **63**, 961 (1989).

13. Thad G. Walker, "Estimates of Spin-Exchange Parameters for Alkali–Noble-Gas Pairs," *Phys. Rev. A* **40**, 4959 (1989).

14. Thad Walker, David Sesko, and Carl Wieman, "Collective Behavior of Optically Trapped Neutral Atoms," *Phys. Rev. Lett.* **64**, 408 (1990).

15. D. Sesko, T. Walker, and C. Wieman, "Behavior of Neutral Atoms in a Spontaneous Force Trap", *JOSA B* **8**, 5 (1991).

16. T. Walker, D. Hoffmann, P. Feng, and R. S. Williamson III, "A Vortex-force Atom Trap", *Physics Letters A* **163**, 309 (1992).

17. L. W. Anderson and Thad Walker, "The Effect of Radiation Trapping on a High Field Spin Exchange Optically Pumped Target", *Nuclear Instruments and Methods in Physics Research A***316**, 123 (1992).

18. D. Hoffmann, P. Feng, R. S. Williamson III, and T. Walker, "Excited-state Collisions of Optically Trapped ^{85}Rb Atoms", *Phys. Rev. Lett.* **69**, 753 (1992).

19. T. Walker, P. Feng, D. Hoffmann, and R. S. Williamson III, "A Spin-Polarized Spontaneous-Force Atom Trap", *Phys. Rev. Lett.* **69**, 2168 (1992).

20. P. Feng, D. Hoffmann, and T. Walker, "Comparison of Trap-loss Collision Spectra for ^{85}Rb and ^{87}Rb ", *Phys. Rev A* **47**, R3495 (1993) (Rapid Communication).

21. T. Walker and L. W. Anderson, "Consequences of Spin-Exchange Collisions for Spin-Polarized Hydrogen and Deuterium Targets", *Phys. Rev. Lett.* **71**, 2346 (1993). (Comment)

22. T. Walker and L. W. Anderson, "Spin-exchange Collisions and their Consequences for Spin-Polarized Gas Targets of Hydrogen and Deuterium", *Nuclear Instruments and Methods in Physics Research A***334**, 313 (1993).

23. C. Martin, T. Walker, L. W. Anderson, and D. Swenson, "Laser Optical Pumping of Potassium in a High Magnetic Field Using Linearly Polarized Light", *Nuclear Instruments and Methods in Physics Research A***335**, 233 (1993).

24. D. Hoffmann, P. Feng, and T. Walker, "Measurements of Rb Trap-loss Collision Spectra", *J. Opt. Soc. Am. B* **11**, 712 (1994).

25. M. Peters, D. Hoffmann, J. Tobiason, and T. Walker, "Laser-induced Ultracold Rb($5S_{1/2}$) + Rb($5P_{1/2}$) Collisions", *Phys. Rev. A* **50**, R906 (1994). (Rapid Communication)

26. S. Bali, D. Hoffmann, and T. Walker, "Novel Intensity Dependence of Ultra-cold Collisions Involving Repulsive States", *Europhys. Lett.* **27**, 273, (1994).

27. T. Walker, "Three-dimensional Analytical Calculation of the Magneto-optical Trapping Forces on a Stationary $J = 0 \rightarrow J = 1$ Atom", *Laser Physics* **4**, 965 (1994).

28. T. Walker and D. Pritchard, "Dynamical Effects of Hyperfine Structure on Trap-loss Collisions of Optically Trapped Alkali Atoms", *Laser Physics* **4**, 1085 (1994).

29. T. Walker and P. Feng, "Measurements of Collisions Between Laser-cooled Atoms", *Advances in Atomic, Molecular, and Optical Physics* **34**, 125 (1995), B. Bederson and H. Walther, eds. (Review Article)

30. R. S. Schappe, P. Feng, L. W. Anderson, C. C. Lin, and T. Walker, "Electron Collision Cross Sections Measured with the Use of a Magneto-Optical Trap", *Europhys. Lett.* **29**, 439 (1995).

31. L. W. Anderson and T. Walker, "Spin-Exchange Optical Pumping of Hydrogen and Deuterium Nuclei", *Nuclear Instruments and Methods in Physics Research A* **357**, 220 (1995).

32. P. Feng and T. Walker, "Inexpensive Diode Laser Microwave Modulation for Atom Trapping", *American Journal of Physics* **63**, 905 (1995).

33. R. S. Williamson III and T. Walker, "Magneto-Optical Trapping and Ultracold Collisions of Potassium Atoms", *J. Opt. Soc. Am. B* **12**, 1393 (1995).

34. S. Bali, J. Simán, and T. Walker, "Measurements of Intensity Correlations of Scattered Light From Laser-cooled Atoms", *Phys. Rev. A* **53**, 3469 (1996).

35. R. Nesnidal and T. Walker, "Multilayer Dielectric Structure For Enhancement of Evanescent Waves", *Applied Optics* **35**, 2226 (1996).

36. D. Hoffmann, S. Bali, and T. Walker, "Trap-depth Measurements using Repulsive-State Traploss Collisions", *Phys. Rev. A* **54**, R1030 (1996).

37. R. S. Schappe, T. Walker, C. C. Lin, and L. W. Anderson, "Absolute Electron-Impact Ionization Cross Section Measurements Using a Magneto-Optical Trap", *Phys. Rev. Lett.* **76**, 4328 (1996).

38. T. G. Walker and W. Happer, "Spin Exchange Optical Pumping of Noble-Gas Nuclei", *Reviews of Modern Physics* **69**, 629 (1997).

39. T. G. Walker, J. Thywissen, and W. Happer, " Spin-Rotation Interaction of Alkali-metal–He-atom pairs", *Phys. Rev. A*, **56**, 2090 (1997).

40. Stephen Kadlecek, L. W. Anderson, and Thad Walker,"Measurement of Potassium-Potassium Spin Relaxation Cross Sections", *Nucl. Instr. and Methods A*, **402**, 208 (1998).

41. S. Kadlecek, L. W. Anderson, and T. Walker, "Field Dependence of Spin Relaxation in a Dense Rb Vapor", *Phys. Rev. Lett.* **80**, 5512 (1998)

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43. P. Leo, E. Tiesinga, P. Julienne, D. Walter, S. Kadlecek, and T. G. Walker, "Elastic and Inelastic Collisions of Cold Spin-Polarized Cs Atoms", *Phys. Rev. Lett.* **81**, 1389 (1998).

44. R. S. Williamson III, P. A. Voytas, R. T. Newell, and T. Walker, "A magneto-optical trap loaded from a pyramidal funnel", *Opt. Express* **3**, 111 (1998) .

45. D. K. Walter, W. Happer, and T. G. Walker, "Estimates of the relative magnitudes of the isotropic and anisotropic magnetic-dipole hyperfine interactions in alkali-metal–noble-gas systems", *Phys. Rev. A* **58**, 3642 (1998).

46. C. Sukenik and T. G. Walker, "Role of Spontaneous Emission in Two-Photon Energy-Pooling Collisions", *Phys. Rev. A*, **59**, 889 (1999).

47. Thad G. Walker, "Holography without Photgraphy", *American Journal of Physics* **67**, 783 (1999).

48. I. Nelson, B. Chann, and T. G. Walker, "Spin-Exchange Optical Pumping Using a Frequency-Narrowed High Power Diode Laser", *Appl. Phys. Lett.*, **76**, 1356 (2000).

49. Renée C. Nesnidal and Thad G. Walker, "Light-Induced Ultracold Spin-Exchange Collisions", *Phys. Rev. A Rapid Communications*, **62**, 030701(R) (2000).

50. B. Chann, I. Nelson, and T. G. Walker, "Frequency-Narrowed External Cavity Diode Laser Array Bar", *Opt. Lett.*, **25**, 1352 (2000).

51. C. J. Erickson, D. Levron, W. Happer, S. Kadlecek, B. Chann, L. W. Anderson, and T. G. Walker,"Spin Relaxation Resonances Due to the Spin-Axis Interaction in Dense Rubidium and Cesium Vapor", *Phys. Rev. Lett.*, **85**, 4237 (2000).

52. S. Kadlecek, J. Sebby, R. Newell, and T. G. Walker, "Non-destructive spatial heterodyne imaging of cold atoms", *Opt. Lett.* **26**, 137 (2001).

53. E. Vliegen, S. Kadlecek, L. W. Anderson, T. G. Walker, C. J. Erickson, and William Happer, "Faraday rotation density measurements of optically thick alkali metal vapors", *Nucl. Instr. and Methods A* **460**, 444 (2001).

54. S. Kadlecek, T. G. Walker, D. Walter, C. Erickson, and W. Happer, "Spin-axis relaxation in spin-exchange collisions of alkali atoms", *Phys. Rev. A* **63**, 052717 (2001).

55. T. Wise, W. Haeberli, B. Lorentz, P. A. Quin, F. Rathmann, B.Schwartz, T. G. Walker, A. Wellinghausen, J. T. Balewski, J. Doskow, H. O. Meyer, R. E. Pollock, B. v. Przewoski, T. Rinckel, Swapan K. Saha, and P. V. Pancella, "Nuclear Polarization of Hydrogen Molecules from Recombination of Polarized Atoms", *Phys. Rev. Lett.*, **87**, 042701 (2001)

56. S. Kadlecek, L. W. Anderson, and T. G. Walker, "Spin Relaxation in Alkali $^1\Sigma_g^+$ Dimers", *Phys. Rev. A* **64**, 052717(2001).

57. I. A. Nelson and T. G. Walker, "Rb-Xe Spin Relaxation in Dilute Xe Mixtures", *Phys. Rev. A* **65**, 012712 (2001).

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59. B. Chann, E. Babcock, L. W. Anderson, and T. G. Walker, "Measurements of Rb-^{3}He Spin-Exchange Rates", *Phys. Rev. A*, **66**, 032703 (2002).

60. Keith D. Bonin, Bakhit Kourmanov, and Thad G. Walker, "Light torque nanocontrol, nanomotors and nanorockers", Opt. Express, **10**, 984 (2002).

61. B. Chann, E. Babcock, L. W. Anderson, and T. G. Walker, "Skew light propagation in optically thick optical pumping cells", *Phys. Rev. A*, **66**, 033406 (2002).

62. M. Saffman and T. G. Walker, "Creating single atom and single photon sources from entangled atomic ensembles", *Phys. Rev. A* **66**, 065403 (2002) .

63. R. S. Schappe, L. Keeler, P. Feng, R. Nesnidal, T. Zimmermann, L. W. Anderson, C. C. Lin, and T. Walker, "Methods of Measuring Electron-Atom Collision Cross Sections with an Atom Trap", Adv. Atom. Mol. Opt. Phys. **48**, 357 (2002).

64. R. Newell, J. Sebby, and T. G. Walker, "Dense Atom Clouds in a Holographic Atom Trap", Opt. Lett. **28**, 1266 (2003).

65. Earl Babcock, Ian Nelson, Steve Kadlecek, Bastiaan Driehuys, L. W. Anderson, F. W. Hersman, and Thad G. Walker, "Hybrid spin-exchange optical pumping of ^{3}He", Phys. Rev. Lett. **91**, 123003 (2003).

66. E. Babcock, B. Chann, W. Chen, T. Smith, T. Walker, T. G. Walker, L. W. Anderson, T. Gentile, and A. Thompson, "Production of highly polarized ^{3}He using spectrally narrowed diode laser array bars" , Journal of Applied Physics **94**, 6908 (2003).

67. Thad G. Walker and Mark Saffman, "Zeros of Rydberg-Rydberg Foster Interactions", J. Phys. B: At. Mol. Opt. Phys. **38**, S309-S319 (2004).

68. T. R. Gentile, W. C. Chen, J. A. Borchers, C. F. Majkzrak, K. V. O'Donovan, D. Hussey, X. Tong, H. Yan, W. M. Snow, J. Baker, F. Dias, A. Yue, G. L Jones, E. Babcock, T. G. Walker, J. Cowan, T. Koetzle, A. Schultz, S. G. E. te Velthuis, C. Hoffmann, and W. T. Lee, "Polarized ^{3}He spin filters in neutron scattering", Physica B **356**, 96 (2005).

69. J. Sebby-Strabley, R. T. R. Newell, J. O. Day, E. Brekke, and T. G. Walker, "High Density Mesoscopic Atom Clouds in a Holographic Atom Trap", Phys. Rev. A **71**, 021401(2005).

70. E. Babcock, B. Chann, I. Nelson and T. G. Walker, "Frequency Narrowed Diode Array Bar", Applied Optics **24**, 3098 (2005).

71. E. Babcock, I. A. Nelson, S. Kadlecek, and T. G. Walker, "^{3}He polarization-dependent EPR frequency shifts of alkali-metal ^{3}He pairs", Phys. Rev. A **71** , 013414 (2005).

72. W. Andrew Shelton, Keith D. Bonin, and Thad G. Walker, "Nonlinear motion of optically torqued nanorods", Phys. Rev. E **71**, 036204 (2005).

73. M. Saffman and T. G. Walker, "Entangling single and N atom qubits for fast quantum state detection and transmission", Phys. Rev. A 72, 042302 (2005) .

74. M. Saffman and T. G. Walker, "Analysis of a quantum logic device based on dipole-dipole interactions of optically trapped Rydberg atoms", Phys. Rev. A **72**, 022347 (2005).

75. E. Babcock, B. Chann, T.G. Walker, W.C. Chen, and T. R. Gentile,"Limits to the polarization for spin-exchange optical pumping of ^{3} He", Phys. Rev. Lett. **96**, 083003 (2006).

76. D. D. Yavuz, P. B. Kulatunga, E. Urban, T. A. Johnson, N. Proite, T. Henage, T. G. Walker, and M. Saffman, "Fast Ground State Manipulation of Neutral Atoms in Microscopic Optical Traps", Phys. Rev. Lett. **96**, 063001 (2006).

77. Zhimin Li, Ronald T. Wakai, and Thad G. Walker, "Parametric Modulation of an Atomic Magnetometer", Appl. Phys. Lett. **89**, 134105 (2006).

78. W.C. Chen, T.R. Gentile, T.G. Walker, and E. Babcock, "Spin-exchange optical pumping of ^{3}He with Rb/K mixtures and pure K", Phys. Rev. A **75**, 013416 (2007).

79. Thad G. Walker and Charles J. Goebel, "Violation of Rotational Invariance in 'M-Dependent Lifetimes due to Hyperfine Induced Interference Effects' ", PRL, submitted for publication.

80. Douglas Bonessi, Keith Bonin, and Thad Walker, "Optical Forces on Particles of Arbitrary Shape and Size", J. Opt. A: Pure Appl. Opt. , submitted for publication.

Manuscripts in preparation

81. Keith D. Bonin, W. Andrew Shelton and Thad G. Walker, "Light-torque technique for absolute single-particle polarizabilities".

82. A. Shelton, K. D. Bonin, and T. G. Walker, "Nonlinear Motion of Light-Torqued Nanofibers"

Other Publications and Invited Talks

Articles in Conference Proceedings

T. G. Walker, D. Sesko, C. Monroe, and C. Wieman, "Collisional Loss Mechanisms in Light-Force Atom Traps," *AIP Conference Proceedings* **205**, 593 (1990).

Carl Wieman, Thad Walker, David Sesko, and Chris Monroe, "Curious Behavior of Optically Trapped Neutral Atoms", proceedings of ICAP-12, 1990.

T. Walker and L. W. Anderson, "Limitations of Optically Pumped Spin-Exchange-Polarized Targets", *AIP Conference Proceedings* **293**, 138 (1993).

L. W. Anderson and T. Walker, "Spin-Exchange Optical Pumping in a High Magnetic Field", *AIP Conference Proceedings* **293**, 142 (1993). C. Martin, T. Walker, L. W. Anderson, and D. Swenson, "Laser Optical Pumping of Potassium in a High Magnetic Field Using Linearly Polarized Light", *AIP Conference Proceedings* **293**, 146 (1993).

S. Bali, D. Hoffmann, and T. Walker, "Investigations of Intensity Correlations of Scattered Light from Laser-Cooled Atoms", in *Coherence and Quantum Optics VII*, J. Eberly *et al.* eds, 373 (1996).

Jennifer Sebby, Raymond Newell, Stephen Kadlecek, and Thad Walker, "Spatial Heterodyne Imaging of Cold Atoms", 2nd Pan Pacific Basin Workshop on Microgravity Sciences, FP-1100, (2001).

T.G.Walker, R.Newell, J. Sebby, and M.Saffman, "High-Density Trapped Atoms in a Holographic Atom Trap", 2002 NASA Workshop on Fundamental Physics in Space.

Keith D. Bonin, W. Andrew Shelton, and Thad G. Walker, "Light-torqued nanomotors free of a surface". in *Optical Trapping and Optical Micromanipulation*, edited by Kishan Dholakia and Gabriel C. Spalding, Proceedings of SPIE Vol. 5514 (SPIE, Bellingham, WA, 2004) 678-686.

Keith Bonin, Andrew Shelton, Bakhit Kourmanov, and Thad G. Walker, "Light torqued nanomotors in a standing wave", in *Clusters and Nano-Assemblies, Physical and Biological Systems*, ed. P. Jena, S.N. Khanna, and B.K. Rao, (World Scientific, New Jersey, 2005), pp. 257-263.

Keith D. Bonin, W. Andrew Shelton, Douglas Bonessi, and Thad G. Walker, "Nonlinear motion of rotating glass fibers". in *Optical Trapping and Optical Micromanipulation*, edited by Kishan Dholakia and Gabriel C. Spalding, Proceedings of SPIE Vol. xxxx (SPIE, Bellingham, WA, 2005) xxx-xxx.

T. R. Gentile, E. Babcock, J. A. Borchers, W. C. Chen, D. Hussey, G. L. Jones, W. T. Lee, C. F. Majkzrak, K. V. O'Donovan, W. M. Snow, X. Tong, S. G. E. te Velthuis, T. G. Walker, and H. Yan, "Polarized ^{3}He spin filters in neutron scattering", Proceedings of the Fifth International Workshop on Polarised Neutrons in Condensed Matter Investigations, F. Klose, W. Lee, and G. Ehlers eds, 96 (2005).

Invited Papers, Talks, and Colloquia

"Near-Infrared Spectroscopy of the NaK Molecule", Physics Colloquium, Abilene Christian University, Feb. 10, 1985.

"Relaxation of Metastable Ba and Ba^+", seminar given at University of California at Berkeley, University of Washington, Los Alamos National Laboratory, Joint Institute for Laboratory Astrophysics, and Harvard-Smithsonian Center for Astrophysics, April 1-15, 1988.

"Collisional Loss Mechanisms in Light-Force Atom Traps", invited talk, XVI International Conference on the Physics of Electron and Atomic Collisions, New York, July 1989.

"Collisions Between Optically Trapped Atoms", Quantum Optics Seminar, University of Rochester, Jan. 22, 1990.

"Collective Behavior of Trapped Atoms", Physics Colloquium, University of Rochester, Jan. 23, 1990.

"Collective Behavior of Trapped Atoms", Atomic Physics Seminar, University of Wisconsin, Feb. 1, 1990.

"Collective Behavior of Trapped Atoms", Physics Colloquium, Purdue University, Feb. 13, 1990.

"Collective Behavior of Trapped Atoms", Laser Spectroscopy Seminar, Massachusetts Institute of Technology, Feb. 27, 1990.

"Collective Phenomena in Optical Traps", invited discussion leader, Telluride workshop on Cold Atoms, August 1990.

"Strange Behavior of Optically Trapped Atoms", Physics Colloquium, University of Wisconsin, September 21, 1990.

"What's Cold in Atomic Collision Physics", Atomic Physics Seminar, University of Wisconsin, October 4, 1990 (continued on October 21, 1990).

"Strange Behavior of Optically Trapped Atoms", Atomic Physics Seminar, Argonne National Laboratory, October 23, 1990.

"Strange Behavior of Optically Trapped Atoms", Atomic Physics Seminar, Notre Dame University, November 19, 1990.

"Strange Behavior of Optically Trapped Atoms", National Institute of Standards and Technology, February 25, 1991.

"A Spin-Polarized Atom Trap", Atomic Physics Seminar, University of Wisconsin, March 5, 1992.

"Dynamics of Trap-loss Collisions", Symposium on Cold Atom Collisions, Harvard, April 26,1992.

"Dynamics of Rb Traploss Collisions", Atomic Physics Seminar, University of Connecticut, April 29, 1992.

"Spin-exchange Collisions and their Consequences for Polarized H and D Targets", Nuclear Physics Seminar, Argonne National Laboratory, August 27, 1992.

"Spin-exchange Collisions and their Consequences for Polarized H and D Targets", Atomic Physics Seminar, University of Wisconsin, September 3, 1992.

"Spin-exchange Collisions and their Consequences for Polarized H and D Targets", Nuclear Physics Seminar, University of Wisconsin, September 10, 1992.

"Atomic Collisions at 100 μK", Physical Chemistry Seminar, University of Wisconsin, September 15, 1992.

"Collisions of Optically Trapped Atoms", invited talk, Gaseous Electronics Conference, Boston, October 29, 1992.

"Spin-polarized Atom Traps", LAMPF Seminar, Los Alamos Meson Physics Facility, July 8, 1993.

"Strange Behavior of Laser-Cooled Atoms", University of Wisconsin-Whitewater Col-

loquium, September 15, 1993.

"Collective Behavior of Atoms in Optical Traps", invited talk, Optical Society of America meeting, October 4, 1993.

"Spin-polarized Atom Traps", TRIUMF Colloquium, February 10, 1994.

"Progress in Understanding Ultracold Collision Dynamics", Atomic Physics Seminar, University of Wisconsin, February 17, 1994.

"Spin-Exchange in Polarized H and D Targets", invited talk, Workshop on Polarized Beams and Targets, Les Houches, June 1994.

"Laser-Cooled Atoms: Ultracold Collisions and Spin-Polarized Traps", Laser Cooling Seminar, L'Ecole Normale Superieure, June 10, 1994. "Novel Collional Processes in Traps", invited discussion leader, Telluride workshop on Ultracold Collision Dynamics, August 1994.

"Beta-Asymmetry Experiments Using Trapped Atoms", invited talk, APS Washington Meeting, April 1995.

"Strange Behavior of Laser-Cooled Atoms", Abilene Christian University Colloquium, October 4, 1994.

"Spin-Rotation Interactions of Alkali–Noble-Gas Atom Pairs", University of Wisconsin Atomic Physics Seminar, January 26, 1995.

"Interactions Between Laser-Cooled Rb Atoms", joint seminar of the Harvard-Smithsonian Institute for Theoretical Atomic and Molecular Physics and Harvard University, March 29, 1995.

"Interactions Between Laser-Cooled Rb Atoms", University of Toledo Physics Department Colloquium, April 13, 1995.

"Interactions Between Laser-Cooled Rb Atoms", Yale University Atomic Physics Seminar, May 15, 1995.

"Measurements of Electron-Scattering Cross Sections Using Optically-Trapped Atoms", invited talk, APS DAMOP Meeting, May 1996.

"The Physics of Laser Cooling", Kansas State University Physics Colloquium, Oct. 10, 1996.

"Ultracold Collisions", Kansas State University Atomic Physics Seminar, Oct. 11, 1996.

"Cold Atom Physics", University of Wisconsin-Madison Physics Colloquium, Oct. 18, 1996.

"Excited-State Ultracold Collisions", invited talk, Gaseous Electronics Conference, October 1997.

"Two-photon energy pooling collisions of Rb", invited talk, Workshop on Collisions of Cold, Trapped Atoms, JILA, November 1997.

"Converting Photons into Polarized Nuclei", Old Dominion University Physics Colloquium, Feb. 13, 1998.

"Excited-State Ultracold Collisions", Notre Dame Atomic Physics Seminar, Feb. 24, 1998.

"Excited-State Ultracold Collisions", invited talk, ESCOLAR '98, Burgenland, Austria, April 1, 1998.

"Light-Induced Ultracold Collision Dynamics", Ohio State Atomic Physics Seminar, May 18, 1998.

"Electron Collisions Using a Trapped Atom Target", invited talk, DAMOP, May 27, 1998.

"Collisions Hot and Cold", Michigan Atomic Physics Seminar, March 14, 1999.

"Physical Limits on Production of Hyperpolarized Noble Gases", Univ. of Texas Quan-

tum Optics Seminar, Nov. 5, 1999.

"Limits on Production of Hyperpolarized Noble Gases", Monday Morning Seminar Series, Argonne National Laboratory Chemistry Division, Jan. 10, 2000.

"Hyperpolarized Noble Gases", Lawrence University Physics Seminar, Jan. 20, 2000.

"Laser Cooling", Lawrence University Science Colloquium, Jan. 20, 2000.

"Towards the Ultimate Laser Cooling", Washington University Condensed Matter Seminar, Feb. 28, 2000.

"Spin-exchange optical pumping of ^{3}He and ^{129}Xe using frequency narrowed diode lasers", P-23 Seminar, Los Alamos National Laboratory, Oct. 12, 2000.

"Spin-exchange optical pumping", NIST Physics Colloquium, Nov. 29, 2000.

"Non-destructive imaging of atoms in FORTs", invited talk, 2001 CAP Congress, June 2001.

"Hot and Cold Collisions", Atomic Physics Seminar, Oersted Laboritory, Niels Bohr Institute, June 12, 2002.

"High-Density Trapped Atoms in a Holographic Atom Trap", Quantum Optics Seminar, Aarhus University, June 14, 2002.

"Fundamental Processes in Rb-Xe Spin Exchange", Surface Physics Seminar, Marburg University, Marburg, Germany, September 6, 2002

"Spin-Exchange Optical Pumping with Frequency-Narrowed Diode Arrays", Invited Talk, HELION02, Mainz, Germany, September 9, 2002.

"High-Density Atom Traps", Colloquium, Harvard/MIT Center for Ultracold Atoms, November 26, 2002.

"Converting photons into polarized nuclei", Colloquium, University of New Hampshire, January 27, 2003.

"Turning photons into polarized nuclei", Invited Talk, Gordon Research Conference on Atomic Physics, June 18, 2003.

"Turning photons into polarized nuclei", Electrical and Computer Engineering Colloquium, University of Wisconsin, November 10, 2003.

"Cold Atoms at High Densities: One at a Time", Physics Colloquium, University of Delaware, February 18, 2004.

"Turning photons into polarized nuclei", Physics Colloquium, University of Central Michigan, April 15, 2004.

"Cold Atoms at High Densities: One at a Time", Physics Colloquium, University of Nevada-Reno, October 18, 2004.

"Quantum Entanglement of Atoms–Without Forces", Physics Seminar, Abilene Christian University, March 1, 2005.

"Quantum Manipulation of Trapped Neutral Atoms", Harvard/MIT Center for Ultracold Atoms, November , 2005.

"Quantum Manipulation of Atoms Using Rydberg States", SQuINT Meeting, February 17, 2006.

"Quantum Manipulations Using Rydberg Atoms", LANL Quantum Lunch Seminar, March 23, 2006.

"Quantum Manipulations Using Rydberg Atoms", Ohio State Atomic Physics Seminar, April 27, 2006.

"Quantum Manipulations Using Rydberg Atoms", University of Connecticut Physics Colloquium, October 6, 2006.

"Quantum Entanglement of Atoms–Without Forces", Physics Colloquium, St. Olaf College, November 8, 2006.