CURRICULUM VITAE

Carl J. Williams

Born: July 20, 1959, Denver, Colorado

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Education:

1977-1981	Rice University, Houston, B.A.
1981 (Summer)	International Summer School, University of Oslo, Oslo, Norway
1981-1982	University of Oslo, Oslo, Norway
1982-1987	University of Chicago, Chicago, Ph.D.

Employment and Research Positions:

1983-1987	Research Assistant with Professor Karl F. Freed, University of Chicago
1987 (Summer)	Visiting Scientist with Professor Karl F. Freed, University of Chicago
1987-1989	Research Associate with Professor Mark A. Ratner, Northwestern University
1990-1991	Research Associate with Professor David J. Tannor, University of Notre Dame
1991 (Fall)	Assistant Professor, University of Notre Dame
1992-1997	Research Scientist, James Franck Institute, University of Chicago
1997-1998	Research Staff Member, System Evaluation Division, Institute for Defense Analyses
1998-2000	Physicist, ZP-IV, Atomic Physics Division, National Institute of Standards & Technology
2000-2004	Physicist, ZP-V, Atomic Physics Division, National Institute of Standards & Technology
2000-	Coordinator, NIST Quantum Information Program
2004-2011	Division Chief, Atomic Physics Div., National Institute of Standards & Technology
2006-	Adjunct Professor, Department of Physics, University of Maryland College Park
2006-2011	Co-Director, Joint Quantum Institute, NIST and University of Maryland
2008-2010	Senior Research Analyst, Office of Science and Technology Policy, Exec. Office of the Pres.
2011-2015	Division Chief, Quantum Measurement Div., National Institute of Standards & Technology
2015-2021	Deputy Director, Physical Measurement Lab., National Institute of Standards & Technology
2022-	President and CEO, CJW Quantum Consulting LLC

Fellowships, Honors and Visiting Positions:

1977-1981	Robert A. Welch Foundation Scholarship in Chemistry
1977-1981	Houston Endowment Inc., Jesse Jones Scholarship
1981 (Summer)	Nansen Fund, John Dana Archbold Fellowship, University of Oslo, Oslo, Norway
1981-1982	Nansen Fund / Norway American Association Fellowship, University of Oslo, Oslo, Norway
1986 (Sept.)	Kipping Visiting Fellowship, University of Nottingham, Nottingham, England
1993 (Spring)	Visiting Professor, Ben Gurion University, Beer-Sheva, Israel
1994	Visiting Scientist, National Institute of Standards and Technology, Gaithersburg, MD
1995 (Spring)	Visiting Scientist, Institute for Theoretical Atomic and Molecular Physics, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA
1995-1997	Visiting Scientist, National Institute of Standards and Technology, Gaithersburg, MD
1997 (Spring)	Visiting Professor, Laboratorie Photophysique Moleculaire, University of Paris South, Orsay, France
1999 (Spring)	Visiting Professor, Laboratorie Aime Cotton and Laboratorie Kastler Brossel - ENS, Centre National de la Recherche Scientifique, Orsay / Paris, France
2002	Fellow, American Physical Society
2003	Silver Medal for Leadership, Department of Commerce
2005	Arthur S. Flemming Award for Scientific Excellence in Government Service
2008	Gold Medal for Science, Department of Commerce
2009	Fellow, American Association for the Advancement of Science
2010	Physical Science Award, Washington Academy of Science
2021	Gold Medal for Leadership, Department of Commerce

Professional Affiliations:

American Association for the Advancement of Science (Fellow since 2009)
American Physical Society (Fellow since 2002)
Sigma Xi
Associate Editor, Quantum Information and Computation (Rinton Press, 2001-)
Washington Academy of Science (Fellow since 2010)

Contract Research:

1988	Natl. Bureau of Standards, Gaithersburg, Md., $6000; #43NANB814359
1989	Natl. Inst. of Standards and Tech., Gaithersburg, Md., $6000; #43NANB919046
1990	Natl. Inst. of Standards and Tech., Gaithersburg, Md., $3000; #43NANB015649
1991-1992	Natl. Inst. of Standards and Tech., Gaithersburg, Md., $24800; #43NANB209608
1992-1993	Natl. Inst. of Standards and Tech., Gaithersburg, Md., $5000; #43NANB310194
1993	Natl. Inst. of Standards and Tech., Gaithersburg, Md., $3000; #43NANB313387
1993	Natl. Inst. of Standards and Tech., Gaithersburg, Md., $5000; #43NANB316856
1994	Natl. Inst. of Standards and Tech., Gaithersburg, Md., $55575; #IP4008
1995-1997	Natl. Inst. of Standards and Tech., Gaithersburg, Md., $124616; #IP5009

Grants:

1993-95	National Science Foundation, $46,500, NSF PHY 9223853
1995	Harvard-Smithsonian Institute for Astrophysics, Harvard University, $20,000
1995	Harvard-Smithsonian Institute for Astrophysics, Harvard University, $4,000
1996	Harvard-Smithsonian Institute for Astrophysics, Harvard University, $1,000
1999-2000	Advanced Technology Program-NIST, $40,000
2000	National Institute of Standards & Technology, Directors Reserve, $369,000
2000	Advance Research and Development Activity/NSA, $225,000
2000-2005	National Institute of Standards & Technology, Competency, $5,000,000
2000-2001	Advanced Technology Program-NIST, $105,000
2000-2001	Advance Research and Development Activity/NSA, $225,000
2001-2003	Defense Advanced Research Products Agency $2,530,000
2001-2002	Advance Research and Development Activity/NSA, $275,000
2001-2002	Advance Research and Development Activity/NSA, $220,000
2001-2002	Advance Research and Development Activity/NSA, $10,000
2001-2002	Advanced Technology Program-NIST, $105,000
2002-2003	Advance Research and Development Activity/NSA, $225,000
2002-2003	Advance Research and Development Activity/NSA, $250,000
2002-2003	Defense Advanced Research Products Agency $100,000
2003-2004	Advance Research and Development Activity/NSA, $950,000
2003-2004	Defense Advanced Research Products Agency $875,000
2004-2005	Advance Research and Development Activity/NSA, $790,000
2004-2005	Advance Research and Development Activity/NSA, $626,000
2005	Advance Research and Development Activity/NSA, $296,000
2005	Defense Advanced Research Products Agency $75,000
2005	Advance Research and Development Activity/NSA, $230,000
2005-2006	Advance Research and Development Activity/NSA, $375,000

Presidential Budget Initiatives:

2005-	Through multiple initiatives increased NIST's Scientific budget by $46M/yr

Invited Talks - Meetings, Workshops and Symposiums:

1986 (Sept.)	*Nonadiabatic Effects on the Photodissociation of Diatomic Molecules to Open-Shell Atoms: Resonances, Polarizations and Angular Distributions for CH^+* Discussions of the Faraday Society, University of Bristol, Bristol, England
1992 (April)	*Origin of the CN Rotational Distribution in the Time Dependent Nonadiabatic Photodissociation Dynamics of ICN* Symposium on State-to-State Dynamics on Multiple Potential Energy Surfaces, American Chemical Society, Spring Meeting, San Francisco, CA
1992 (April)	*Theory of Penning Ionization of He Metastable Atoms in Optical Traps* Symposium on Ultra-Cold Atom Collisions, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA
1993 (Mar.)	*Quantum Density Matrix Calculations of Ultra-Cold Atomic Collisions* Workshop on Collisions in Open Systems, Ben Gurion University, Beer-Sheva, Israel
1993 (July)	*Calculation of Long Range Molecular Hyperfine Structure* Workshop on Collisions of Laser Cooled Atoms, National Institute of Standards and Technology, Gaithersburg, MD
1993 (July)	*Quantum Density Matrix Calculations of Cold Collisions* Workshop on Collisions of Laser Cooled Atoms, National Institute of Standards and Technology, Gaithersburg, MD
1993 (Oct.)	*When Cold Atoms See the Light: The Unusual World of Cold Atom Collisions* Freed Symposium, Department of Chemistry, University of Chicago, Chicago, IL
1994 (April)	*What do cold atoms do when they see the light?* DAMOP Meeting, American Physical Society, Crystal City, VA
1994 (June)	*Lineshapes in the Photoassociation Spectra of Ultracold Atoms* International Conference on Spectral Line Shapes, Toronto, Canada
1994 (Aug.)	*Analytical Infinite Order Sudden Theory of Triatomic Photodissociation* Symposium on Nonadiabatic Dynamics, American Chemical Society, Summer Meeting, Washington, D.C. (Substituting for Karl F. Freed)
1995 (Mar.)	*Theory of Photoassocitive Spectroscopy of Trapped Atoms* Chemical Physics Division Symposium, March Meeting of the American Physical Society, San Jose, CA
1995 (April)	*Photoassocitive Spectroscopy: Making Atoms into Molecules* Symposium on Photodynamics: Manipulating Molecules with Fields, American Chemical Society, Spring Meeting, Anaheim, CA
1996 (Nov.)	*The Strange World of Ultracold Atomic Collisions: A Cornucopia of Quantum Phenomena* South-East Section of the American Physical Society, Decatur, GA
1999 (Mar.)	*Approaches to Obtaining Scattering Lengths of Alkali Atoms* Workshop on Cold Atomic Collisions and Formation of Cold Molecules, Les Houches, France
1999 (July)	*Ultracold Collisions: Hyperfine Structure, Feshbach Resonances, and Topology* Atomic Physics Gordon Conference, Plymouth State College, Plymouth, New Hampshire
2000 (April)	*Ultracold Collision Properties of Cs* Electron and Optical Physics Division, National Institute of Standards and Technology, Gaithersburg, MD
2000 (June)	*Cold Atomic Collisions and Precision Intermolecular Potentials* DAMOP Meeting, American Physical Society, University of Connecticut, Storrs, CT
2001 (Oct.)	*US Activities in Quantum Information and the NIST Quantum Information Program* European Union QIPC Program Review, Torino, Italy
2001 (Nov.)	*A Scalable Quantum Information Network* DARPA QuIST Kickoff Meeting, Dallas, TX

2002 (Jan.) *Quantum Computing with Neutral Atoms*
German Physical Society (DFG) Program on Quantum Information, Bad Honnef, Germany

2002 (Feb.) *Quantum Computing with Neutral Atoms*
American Association for the Advancement of Science - Annual Meeting, Boston, MA

2002 (Feb.) *Quantum Information: What is it? What's the Outlook?*
International Information Integrity Institute – Forum 45, Los Angeles, CA

2002 (Mar.) *Neutral Atom Quantum Computing*
Southwest Quantum Information and Technology (SQuInT), Boulder, CO

2002 (June) *Neutral Atom Quantum Computing*
Neutral Atom Quantum Computing Workshop, NIST, Gaithersburg, MD

2002 (July) *From Ultracold Collisions to Quantum Computing*
Fano Festival, Institute for Theoretical Atomic Molecular & Optical Physics, Boston, MA

2002 (Aug.) *First-Principles Physical Models of Quantum Computers*
ARDA Quantum Computing Program Review, Nashville, TN

2002 (Sept.) *An Extensible Quantum Communication Network*
DARPA Quantum Information Science and Technology Program Review, Boston, MA

2002 (Oct.) *Scalable Quantum Architectures using Efficient Non-local Interactions*
Institute for Pure and Applied Mathematics, UCLA, Los Angeles, CA

2003 (Jan.) *The Bose-Hubbard Hamiltonian: From a Superfluid to a Mott-Insulator*
American Mathematical Society Annual Meeting, Baltimore, MD

2003 (June) *Few Body Problems in Neutral Atom Quantum Computing*
International Few-Body Conference, TUNL, Duke University, Durham, NC

2003 (July) *From Quantum Architectures to the Mott-Insulator Transition*
Quantum Information Processing Conference/QUIPROCONE, Oxford, England

2003 (Aug.) *First-Principles Physical Models of Quantum Computers*
ARDA Quantum Computing Program Review, Nashville, TN

2003 (Nov.) *An Introduction to Quantum Information*
Tutorial, Supercomputing 2003, Phoenix, AZ

2003 (Nov.) *An Extensible Quantum Communication Network*
DARPA Quantum Information Science and Technology Program Review, Los Angeles, CA

2003 (Dec.) *A Quantum Bus for Entangling Qubits*
Focus on Quantum System (FoQuS) Workshop, Budmerice, Slovakia

2004 (Feb.) *The New Wave of Quantum Technology*
American Association for the Advancement of Science - Annual Meeting, Seattle, WA

2004 (Mar.) *Mott-Insulator State and Quantum Computing*
European Union Quantum Information Network Meeting, La Thuile, Italy

2004 (April) *Quantum Information at NIST and the Federal Research Agenda*
Quantum Information Science and Emerging Technology (QISET), Boulder, CO

2004 (Aug.) *Neutral Atom Quantum Computing with Optical Control*
ARDA Quantum Computing Program Review, Orlando, FL

2004 (Oct.) *Neutral Atom Quantum Computing*
Optical Society of America, Frontiers in Optics Meeting, Rochester, NY

2004 (Nov.) *An Extensible Quantum Communication Network*
DARPA Quantum Information Science and Technology Program Review, Scottsdale, AZ

2004 (Nov.) *The Next Information Age?*
Council for Advancement of Scientific Writing, Fayetteville, AK

2004 (Nov.) *Introduction to Quantum Computation*
State Department, Rosslyn, VA.

2004 (Dec.) *Quantum Information: What have we Learned?*

APS Seniors Meeting, College Park, MD.

2005 (Mar.) *Spectra and Dynamics of trapped non-interacting bosons, interacting bosons, and fermions in a 1-D optical lattice*
Innsbruck Quantum Optics Meeting, Obergurgl, Austria.

2005 (Mar.) *Quantum Cryptography*
GovCon05, Crystal City, VA.

2006 (Feb.) *Spectra and Dynamics of trapped non-interacting bosons, interacting bosons, and fermions in a 1-D optical lattice*
Many-Body Physics and Quantum Information Conference, Key West, FL

2006 (Feb.) *The Essentials of Quantum Computing*
Ion Trap Workshop, NIST, Boulder, CO

2006 (Feb.) *Problems and Issues for Ion Trap QC*
Ion Trap Workshop, NIST, Boulder, CO

2006 (Mar.) *An Introduction to Quantum Information Science and Its Future Technological Implications*
Capital Science 2006, Arlington, VA

2006 (Oct.) *Quantum Information Science and Its Future Technological Implications*
US-Japan Workshop on Quantum Information Science, Maui, HA

2006 (Oct.) *Photonic Quantum Information Systems*
US-Japan Workshop on Quantum Information Science, Maui, HA

2007 (Mar.) *Quantum Information Science, NIST, and Future Technological Implications*
International Conference on Frontiers of Characterization and Metrology for Nanoelectronics, NIST, Gaithersburg, MD

2007 (June) *Towards Quantum Simulation with Neutral Atoms in Optical Lattices*
International Conference on Quantum Information, U. Rochester, Rochester, NY

2007 (July) *Quantum Information Science*
Atomic Physics Gordon Research Conference, Tilton, NH

2007 (Sept.) *From Small Molecule Dynamics to Quantum Computing*
Freed Symposium, University of Chicago, Chicago, IL

2007 (Oct.) *High Speed Quantum Cryptography at NIST: Advances, Issues, and Protocols*
Updating Quantum Cryptography Workshop, AIST, Tokyo, Japan

2007 (Oct.) *Quantum Information Science, NIST, and Future Technological Implications*
IEEE Workshop on Cryptography and Computer Security, NIST, Gaithersburg, MD

2007 (Dec.) *Pairing and Structure in Trapped Atomic Systems*
Conference on Quantum Information and Many-body Physics, U. British Columbia, Vancouver, Canada

2007 (Dec.) *Quantum Information Science and Future Technological Implications*
TTI Vanguard NextGens Conference, Santa Monica, CA

2008 (Mar.) *Quantum Information Science, NIST, and Future Technological Implications*
I3P Consortium Meeting, NIST, Gaithersburg, MD

2008 (June) Quantum Information Science, NIST, CPEM, and Future Technological Implications, Conference on Precision Electromagnetic Measurements, Plenary Lecture, Broomfield, CO

2008 (Sept) Phase Diagrams and Structures of Harmonically Trapped Fermionic and Bosonic Atoms in Optical Lattices, 32nd International Conference on Theoretical Physics, Ustron, POLAND

2008 (Oct.) *From Phase Diagrams to Quantum Simulations with Neutral Atoms*, Frontiers in Optics/Laser Science XXIV, Optical Society of America, Rochester, NY

2009 (Apr.) *Two Component Mixtures of Ultracold Atoms in Optical Lattices*, Quantum Frontiers Symposium, University of Queensland, Brisbane, AUSTRALIA

2009 (Oct.) *Quantum Information Science: NIST's Role and the National Agenda*, Visiting Committee on Advanced Technology, NIST, Boulder, CO

2010 (Mar.) *The Quantum Revolution – Putting Weirdness to Work: Applications for Tomorrow*, Capital Science 2010, Arlington, VA

2010 (Sept.) *Pattern Formation in Two-Component Ultracold Atom Mixtures in Optical Lattices*, 34th International Conference on Theoretical Physics, Ustron, POLAND

2011 (May)	*Pattern Formation in Two-Component Ultracold Atom Mixtures in Optical Lattices*, Quantum Science and Technologies Workshop, Rovereto, ITALY
2011 (July)	*Pattern Formation in Two-Component Ultracold Atom Mixtures in Optical Lattices*, International Conference on Quantum Technologies, Moscow, RUSSIA
2011 (Dec.)	*Quantum Computing and Quantum Simulations with Neutral Atoms in Optical Lattices* International School on Quantum and Nano Computing Systems, Agra, INDIA
2012 (June)	*Does Beyond CMOS Lead to Quantum Processors?* Atomically Precise, No Interface, Device Regime Workshop, NIST, Gaithersburg, MD
2013 (Jan.)	*A QuEST for the 21st Century: Quantum Engineering, Science, and Technology* Standards Alumni Association, NIST, Gaithersburg
2013 (Mar.)	*A QuEST for the 21st Century: Quantum Engineering, Science, and Technology* Joint Research Center, European Union, Brussels, BELGIUM
2013 (Mar.)	*Quantum Information Science (QIS) and QIS at NIST* ITL Science Day, NIST, Gaithersburg
2013 (May)	*Quantum Information: Achievements and Prospects* Symposium in Honor of Katharine Gebbie, NIST, Gaithersburg
2013 (July)	*Quantum Simulation and Quantum Based Measurements* International Conference on Quantum Technologies, Moscow, RUSSIA
2013 (Sept.)	*A QuEST for the 21st Century: Quantum Engineering, Science, and Technology* Army Research Laboratory Workshop, Bolger Center, Potomac, MD
2014 (Jan.)	*The Treaty of the Meter and Redefining the International System of Units (SI)* NIST Standards Coordinating Office, NIST, Gaithersburg
2014 (May)	*A Scattered Success Story* Frontiers of Cold Matter Symposium, JQI, College Park, MD
2014 (July)	*Measurement Challenges for Schrodinger's Cat* NCSLI Workshop & Symposium on Measurement Science and the Environment, Orlando, FL
2015 (Mar.)	*Evolution of "Système International": Quantum Based Standards and the Past/Future of Electrical Measurements* i-PCGRID Workshop, San Francisco, CA
2015 (July)	*The Planned Redefinition of the Metric System: Made Easy* (with Alan Steele/NRC-Canada) NCSLI Workshop & Symposium on Measurement Science and the Environment, Grapevine, TX
2015 (Dec.)	*Manufacturing for Schrodinger's Cat* International Electronics Manufacturing Initiative (iNEMI), Board of Directors, NIST Gaithersburg, MD
2016 (Jan.)	*NIST and the Redefinition: Evolution of "Système International" and Its Impact on Metrology at NIST* Seminar Istituto Nazionale di Ricerca Metrologica (INRiM), Torino, ITALY
2016 (Jan.)	*Information in the Age of Schrodinger's Cat* Colloquim at KAIST, Daejeon Korea
2016 (June)	*The SI and Quantum Metrology* Metrology From Physics Fundamentals to the Quality of Life, Enrico Fermi Summer School, Varenna, ITALY
2016 (July)	*The Future of Quantum Based Measurements and the SI* Metrology From Physics Fundamentals to the Quality of Life, Enrico Fermi Summer School, Varenna, ITALY
2016 (July)	*From the Mise-en-pratique for Mass to the Future of Metrology for the SI* Metrology From Physics Fundamentals to the Quality of Life, Enrico Fermi Summer School, Varenna, ITALY
2017 (Mar.)	*With Great Measurements Come Great Results* American Physical Society Invited Talk, March Meeting, Dallas, TX
2017 (Mar.)	*Advances in Electrical Metrology and the Redefinition of the SI* i-PCGRID Workshop, San Francisco, CA
2017 (July)	*A Federal Perspective on Single Photon Metrology and Technology* Single Photon Workshop, Boulder, CO

Invited Talks - Other:

1986 (Sept.) *Spectroscopy and Dynamics of Near Threshold Nonadiabatic Resonances in Photodissociation to Open Shell Atoms: CH^+ A Model System*
Theoretical Chemistry Seminar, University of Oslo, Oslo, Norway

1987 (May) *Spectroscopy and Dynamics of Near Threshold Nonadiabatic Resonances in Photodissociation to Open Shell Atoms: CH^+ A Model System*
Molecular Physics Division Seminar, National Bureau of Standards, Gaithersburg, MD

1988 (May) *Adiabatic Distorted Wave Calculation of Hydrogen Bonded Dimers: A Vibrational Self Consistent Field Approach*
Molecular Physics Division Seminar, National Bureau of Standards, Gaithersburg, MD

1989 (Jan.) *Nonadiabatic Effects in the Photodissociation of Diatomic Molecules: Spectroscopy and Dynamics*
Chemistry Colloquium, Kansas State University, Manhattan, KS

1989 (Feb.) *Dynamics and Spectroscopy of Small Molecule Photodissociation*
Propulsion Group Seminar, Aerospace Corp., Los Angeles, CA

1989 (Feb.) *Photodissociation Dynamics and Spectroscopy of Small Molecules*
Chemistry Colloquium, University of Oregon, Eugene, OR

1990 (May) *Photodissociation Dynamics and Spectroscopy of Small Molecules*
Chemistry Colloquium, Georgia Institute of Technology, Atlanta, GA

1992 (Jan.) *Time-Dependent Photodissociation Dynamics of ICN and O_3*
Chemistry Colloquium, North Dakota State University, Fargo, ND

1992 (June) *The Strange World of Ultracold Atomic Collisions*
Chemistry Colloquium, Theoretical Chemistry Div., Argonne National Lab., Argonne, IL

1992 (Nov.) *The Strange World of Ultracold Atomic Collisions*
Physical/Inorganic Chemistry Seminar, University of Toledo, Toledo, OH

1993 (Feb.) *Photodissociation of Small Molecules*
Chemistry Colloquium, University of Missouri, Kansas City, MO

1993 (Mar.) *Photodissociation of Small Molecules*
Chemistry Colloquium, Purdue University, Purdue, IN

1993 (Mar.) *A Time Dependent Excursion through Momentum Space*
Chemistry Colloquium, Ben Gurion University, Beer-Sheva, Israel

1993 (April) *When Cold Atoms See the Light: Collisions of Ultra-Cold Atoms*
Physical Chemistry Seminar, Tel Aviv University, Tel Aviv, Israel

1993 (April) *When Cold Atoms See the Light: Collisions of Ultra-Cold Atoms*
Physical Chemistry Seminar, Ben Gurion University, Beer-Sheva, Israel

1993 (May) *When Cold Atoms See the Light: Collisions of Ultra-Cold Atoms*
Physical Chemistry Colloquium, Weizmann Institute, Rehovet, Israel

1993 (May) *When Cold Atoms See the Light: Collisions of Ultra-Cold Atoms*
Physics Colloquium, University of Nevada, Reno, NV

1993 (Aug.) *The Strange World of Cold Atom Collisions*
Chemistry Colloquim, University of Pittsburg, Pittsburg, PA

1993 (Dec.) *Collisions of UltraCold Atoms in Optical Fields*
Atomic Physics Seminar, University of Wisconsin, Madison, WI

1994 (Jan.) *When Cold Atoms See the Light: Collisions and Spectroscopy of UltraCold Atoms*
Atomic Physics Seminar, University of Texas, Austin, TX

1994 (Jan.) *When Cold Atoms See the Light: The Unusual World of UltraCold Atom Collisions*
Physics Colloquium, Rice University, Houston, TX

1994 (Feb.) *The Unusual World of Cold Atom Collisions*
Chemistry Colloquium, Colorado State University, Fort Collins, CO

1994 (Oct.) *Photoassociative Spectroscopy: Making Ultracold Atoms into Molecules*
Physical Chemistry Seminar, University of Nottingham, Nottingham, England

1994 (Oct.) *Photoassociative Spectroscopy: Making Ultracold Atoms into Molecules*
Physic Seminar, University of Utrecht, Utrecht, The Netherlands

1994 (Oct.) *Photoassociative Spectroscopy: Making Ultracold Atoms into Molecules*
Atomic Physic Seminar, Eindhoven University of Technology, Eindhoven, The Netherlands

1994 (Oct.) *Photoassociative Spectroscopy: Making Ultracold Atoms into Molecules*
Atomic and Molecular Physics Seminar, University of Hannover, Hannover, Germany

1994 (Oct.) *Photoassociative Spectroscopy: Making Ultracold Atoms into Molecules*
Seminar, Laboratorie' Aime' Cotton, University of Paris - Sud, Orsay, France

1995 (Jan.) *Photoassociative Spectroscopy: Making Atoms into Molecules*
Chemistry Seminar, Argonne National Laboratory, Argonne, IL

1995 (Feb.) *Photoassociative Spectroscopy: Making Ultracold Atoms into Molecules*
Joint ITAMP & Atomic Physics Colloquium, Harvard University, Cambridge, MA

1995 (Feb.) *Photoassociative Spectroscopy: When Cold Atoms Go Bump in the Light*
Physics Colloquium, Wesleyan University, Middletown, CT

1995 (Feb.) *Photoassociative Spectroscopy: When Cold Atoms Go Bump in the Light*
Optical Science Seminar, University of Connecticut, Storrs, CT

1995 (Mar.) *Photoassociative Spectroscopy: Making Ultracold Atoms into Molecules*
Physical Chemsitry Seminar, Brown University, Providence, RI

1996 (Nov.) *Photoassociative Spectroscopy: When Cold Atoms Go Bump in the Light*
Chemical Physics Seminar, Emory University, Decatur, GA

1996 (Dec.) *Collisions and Serendipity in Bose Condensation*
AMO Theory Seminar, JILA, University of Colorado, Boulder, CO

1999 (Mar.) *Approaches to Obtaining Scattering Lengths of Alkali Atoms*
Aime Cotton Colloquium, Laboratoire Aime Cotton, Orsay, France

1999 (April) *Ultracold Collisions and Photoassociation Spectroscopy*
Group Seminar, Max-Planck Institut for Kernphysik, Heidelberg, Germany

1999 (June) *High Resolution Photoassociation Spectroscopy: What Do We Learn*
Molecular Spectroscopy Seminar, University Lyon, Lyon, France

1999 (June) *Ultracold Atomic Collisions: Hyperfine Structure, Feshbach Resonances, and Topology*,
Colloquium Laboratoire Kastler Brossel, Ecole Normale Superieure, June 1999, Paris, France

1999 (June) Mini-course (3 lectures) on *Ultracold Atomic Collisions*
Cold Atom Optics Group, Institut d'Optik, Orsay, France

2000 (April) *Ultracold Collision Properties of Cs*

Electron and Optical Physics Division, National Institute of Standards and Technology, Gaithersburg, MD

2000 (Sept.) *Introduction to Quantum Computing in Optical Lattices,*
Chemistry Colloquium, Brown University, Providence, RI

2001 (Feb.) *An Introduction to Quantum Information and Computing*
Physics Colloquium, Swarthmore University, Swarthmore, PA

2001 (Feb.) *Quantum Computing with Neutral Atoms in Optical Lattices*
INFM, University of Florence, Florence, Italy

2001 (Feb.) *Quantum Computingand Optical Nanostructures*
INFM, University of Pisa, Pisa, Italy

2001 (Mar.) *An Introduction to Quantum Information and Quantum Computing*
Physics Colloquium, Brigham Young University, Provo, UT

2001 (April) *Cs Feshbach Spectroscopy and Atomic Clocks*
Physics Colloquium, Georgia Tech, Atlanta, GA

2001 (July) *An Introduction to Quantum Information and Quantum Computing*
SURF Colloquium, National Institute of Standards and Technology, Gaithersburg, MD

2001 (Nov.) *Quantum Computing with Neutral Atoms*
Colloquium, Laboratory for Physical Science, University of Maryland, College Park, MD

2002 (Jan.) *Coherent Manipulations of Atoms: From Atomic Clocks to Quantum Computing*
Quantum Optics and Spectroscopy Seminar, University of Innsbruck, Innsbruck, Austria

2002 (Jan.) *Coherent Manipulation of Atoms: From Atomic Clocks to Quantum Computing*
Colloquium, Institute for Quantum Optics, University of Hannover, Hannover, Germany

2002 (Feb.) *Coherent Manipulation of Atoms: From Atomic Clocks to Quantum Computing*
Atomic Physics Seminar, Penn State University, State College, PA

2002 (Mar.) *An Introduction to Quantum Information*
University Honors Program Distinguished Lecture, Georgia Southern Univ., Statesboro, GA

2002 (Mar.) *Quantum Computing with Neutral Atoms*
Quantum Coherence and Information Seminar, University of Maryland, College Park, MD

2002 (April) *Quantum Computing with Neutral Atoms*
Atomic Physics Seminar, State University New York - Stony Brook, Stony Brook NY

2002 (Oct.) *Quantum Computing with Neutral Atoms*
Atomic Physics Colloquim, University of Texas, Austin, TX

2002 (Nov.) *NIST Quantum Communications Test-Bed*
Electrical Engineering/Physics Seminar, Northwestern University, Evanston, IL

2002 (Dec.) *Neutral Atom Quantum Computing*
Quantum Optics Seminar, Imperial College, London, UK

2003 (Sept.) *Neutral Atoms, the Mott-Insulator Transition, and Quantum Computing*
Center for Ultracold Atoms, Harvard University, Boston, MA

2003 (Dec.) *Mott-Insulator Transitio, and Neutral Atom Register Initialization*
Quantum Optics Institute, University of Bratislava, Bratislava, Slovakia

2004 (April) *A General Introduction to Quantum Computing with Neutral Atoms*
Physics Colloquium, University of Nevada – Reno, Reno, NV

2005 (May) *Physics of a Neutral Atom Quantum Register,*
Seminar, National Research Council, Ottawa, Canada

2005 (May) *Scalable Quantum Architecture*
Division Seminar, Time and Frequency Division Colloquim, NIST, Boulder, CO.

2005 (Oct.) *What does the Bose Hubbard Model say about Quantum Computation*
AMO/QI Seminar, University of Maryland, College Park, MD

2006 (Jan.) *An Introduction to Quantum Information: Facts and Fiction*
Briefing Air Staff System Operations, Pentagon, Arlington, VA

2006 (Jan.) *The NIST Quantum Information Program and Neutral Atom Quantum Computing*
Sigma Xi Colloquim, Naval Research Laboratory, VA

2006 (Feb.) *The NIST Quantum Information Program and Neutral Atom Quantum Computing*
Atomic Physics Division Seminar, NIST, Gaithersburg MD.

2006 (Mar.) *The Future of Quantum Information*
Quantum Information Seminar, George Mason University, Fairfax, VA

2006 (Oct.) *An Introduction to Quantum Information Science and Its Future Technological Implications*
Quantum Information Seminar, Georgia Institute of Technology, Atlanta, GA

2007 (Feb.) *Quantum Information with Neutral Atoms*
James Franck Institute Colloquim, University of Chicago, Chicago, IL

2008 (Jan.) *Quantum Information Science and Future Technologies*
Sandia National Laboratory, Albuquerque, NM

2008 (Mar.) *From Classical Bits to Quantum Bits: The Future of Information Theory*
Winston Churchill High School, Potomac, MD

2008 (Apr) From Quantum Information Science to Quantum Simulations
Physics Colloquim, George Mason University, Fairfax, VA

Contributed Talks and Posters:

1984 (May) *Resonances of CH^+ and their Application to Interstellar Media*
Midwest Theoretical Chemistry Conf., Southern Illinois University, Carbondale, IL (Talk)

1985 (May) *Dynamical Effects of Resonances in the Low Energy Photodissociation of CH^+*
Midwest Theoretical Chemistry Conf., Marquette University, Milwaukee, WI (Talk)

1986 (May) *Spectroscopy and Dynamics of Near Threshold Nonadiabatic Resonances in Photodissociation to Open Shell Atoms: CH^+ A Model System*
Midwest Theoretical Chemistry Conf., Indiana University, Bloomington, IN (Talk)

1987 (July) *Theory of Diatomic Photodissociation to Open Shell Atoms in the Presence of an External Magnetic Field*
Conf. on the Dynamics of Molecular Collisions, Olgelby Park, WV (Poster)

1989 (July) *Vibrational Predissociation of Hydrogen Bonded Systems: Model Potentials and Calculations for the HCN Dimer*
Molecular Energy Transfer Gordon Conf., Brewster Academy, NH (Poster)

1989 (July) *Vibrational Predissociation of Hydrogen Bonded Systems: Model Potentials and Calculations for the HCN Dimer*
Conf.on the Dynamics of Molecular Collisions, Asilomar, CA (Poster)

1990 (May) *A New Time Dependent FFT-Interaction Representation Approach to Photodissociation of ICN on Two Coupled Potential Energy Surfaces*
Midwest Theoretical Chemistry Conf., University of Wisconsin, Madison, WI (Poster)

1990 (July) *New Time Dependent Approaches to Photodissociating Molecules: A Merged Lanczos Interaction Scheme*
Atomic and Molecular Physics Gordon Conf., Salva Regina College, RI (Poster)

1991 (May) *A Dual Approach to the Time Ordering Problem for the Time Dependent Schrodinger Equation*
Midwest Theoretical Chemistry Conf., Northern Illinois University, DeKalb, IL (Oral)

1991 (July) *Time Dependent Photodissociation Dynamics of ICN and O_3*
Conf.on the Dynamics of Molecular Collisions, Lake George, NY (Poster)

1992 (April) *Nonadiabatic Collisions of Ground State H(^{2}S) Atoms at Sub-millikelvin Temperatures*
American Chemical Society, Spring Meeting, San Francisco, (Poster)

1992 (June) *Novel Effects in Ultracold Atomic Collisions*
Midwest Theoretical Chemistry Conf., Michigan State University, E. Lansing, MI (Oral)

1993 (May) *Hyperfine Analysis of the High Resolution Features in the Photoassociation Spectrum of Trapped Na Atoms*
Div. of Atomic, Molecular, & Optical Phys., American Physical Society, Reno, NV, (Oral)

1993 (July) *Hyperfine Analysis of the High Resolution Photoassociative Ionization Spectrum of Trapped Na Atoms*
Atomic Physics Gordon Conf., Brewster Academy, NH (Poster)

1994 (August) *Photoassociative Spectroscopy: Combining Atoms into Molecules*
Symposium on Nonadiabatic Dynamics, American Chemical Society, Summer Meeting, Washington, DC

1996 (May) *Dipolar Relaxation Rates for ^{87}Rb for T<1 μK*
Div. of Atomic, Molecular, & Optical Phys., American Physical Society, Ann Arbor, MI (Oral)

1997 (May) *Serendipity in Rb Bose-Einstein Condensates*
Div. of Atomic, Molecular, & Optical Phys., American Physical Society, Washington DC (Oral)

1998 (May) *Lineshape analysis of ultra-cold photoassociation*
Div. of Atomic, Molecular, & Optical Phys., American Physical Society, Sante Fe, NM (Oral)

1999 (March)	*What the Hamiltonian Structure of Ground State Alkali Atoms Tell Us About K* APS Centennial Meeting/DAMOP, Atlanta, Georgia (Poster)
2000 (June)	*Interacting Atoms Under Strong Confinement* Div. of Atomic, Molecular, & Optical Phys., American Physical Society, Storrs, CT (Poster)
2001 (May)	*Calculations on the threshold collisions of cold Cs atoms* Div. of Atomic, Molecular, & Optical Phys., American Physical Society, London, Ontario (Poster)
2002 (July)	*A High-Speed Quantum Communication Testbed* SPIE Meeting, Seattle, WA
2003 (May)	*A Quantum Computer Architecture for Nonlocal Interactions* Div. of Atomic, Molecular, & Optical Phys., American Physical Society, Boulder, CO
2007 (June)	*Collapse and Revival in the Double Well Optical Lattice* Div. of Atomic, Molecular, & Optical Phys., American Physical Society, Calgary, CA (Oral)

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