CURRICULUM VITAE
Carl J. Williams

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.

Appointments:

1983-1987	Research Assistant with Professor Karl F. Freed, U. Chicago
1987 (Summer)	Visiting Scientist with Professor Karl F. Freed, U. Chicago
1987-1989	Research Associate with Professor Mark A. Ratner, Northwestern U.
1990-1991	Research Associate with Professor David J. Tannor, U. Notre Dame
1991 (Fall)	Assistant Professor, U. Notre Dame
1992-1997	Research Scientist, James Franck Institute, U. Chicago
1997-1998	Research Staff Member, System Evaluation Div., Inst. for Defense Analyses
1998-2000	Physicist, ZP-IV, Atomic Physics Div., National Inst. of Standards & Tech.
2000-2004	Physicist, ZP-V, Atomic Physics Div., National Inst. of Standards & Tech.
2000-	Coordinator, NIST Quantum Information Program
2004-	Chief, Atomic Physics Division, National Inst. of Standards & Tech.
2006-	Co-Director, Joint Quantum Inst., NIST and U. Maryland

Professional Affiliations and Service:

American Physical Society (Fellow); American Association for the Advancement of Science; Sigma Xi; Optical Society of America

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, U. Oslo, Oslo, Norway
1981-1982	Nansen Fund / Norway American Asso. Fellowship, U. Oslo, Oslo, Norway
1986 (Sept.)	Kipping Visiting Fellowship, U. Nottingham, Nottingham, England
1993 (Spring)	Visiting Professor, Ben Gurion U., Beer-Sheva, Israel
1994	Visiting Scientist, National Inst. of Standards & Tech., 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 Inst, of Standards & Tech., Gaithersburg, MD
1997 (Spring)	Visiting Prof., Lab. Photophysique Moleculaire, U. Paris South, Orsay, France
1999 (Spring)	Visiting Prof., Lab. Aime Cotton and Lab. 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
2006	Arthur Flemming Award for Scientific Achievment

Current and Past Research Activities: Current area of primary interests include high-speed quantum key distribution, security of quantum communication, physics of neutral atoms in optical lattices, quantum computing with neutral atoms, quantum computing architectures, many-body physics associated with Bose-Hubbard Hamiltonian. Past activities include atom-atom interactions, photoassociation spectroscopy, Bose-Einstein condensation, and photodissociation.

Five Publications Most Relevant to the Proposed Project:

1. Quantum Computations with Atoms in Optical Lattices: Marker Atoms and Molecular Interactions, *Phys. Rev. A* **70**, 012306 (2004), T. Calarco, U. Dorner, P. S. Julienne, C. J. Williams, and P. Zoller.
2. Scattering Length Determination from Trapped Pairs of Atoms, quant-ph/0505102 and *Phys. Rev. A* **72**, 022701(2005), S. Shresta, E. Tiesinga, and C. Williams.
3. Ultracold Atoms Confined in an Optical Lattice plus Parabolic Potential: a Closed-form Approach, cond-mat/0503477 and *Phys. Rev. A* **72**, 033616 (2005), A. M. Rey, G. Pupillo, C. W. Clark, and C. J. Williams.
4. Effects of Finite Temperature on the Mott-insulator State, cond-mat/0407075 and *Phys. Rev. A* **73**, 013408 (2006), G. Pupillo, C. J. Williams, and N. V. Prokof'ev.
5. Extended Fermionization of 1-D Bosons in Optical Lattices, cond-mat/0505325 and *New J.Phys*. **8,** 161 (2006), G. Pupillo, A. M. Rey, C. J. Williams, and C. W. Clark.

Five Additional Significant Publications:

1. Precision Feshbach Spectroscopy of Ultracold Cs_2, *Phys. Rev. A* **70**, 032701 (2004), C. Chin, V. Vuletić, A. J. Kermin, S. Chu, E. Tiesinga, P. J. Leo, and C. J. Williams.
2. Bragg Spectroscopy of Ultracold Atoms Loaded in an Optical Lattice, cond-mat 0406552 and *Phys. Rev. A* **72**, 023407 (2005), A. M. Rey , P. B. Blakie, G. Pupillo , C. J. Williams, and C. W. Clark.
3. Scalable Register Initialization for Quantum Computing in an Optical Lattice, quant-ph/0312069 and *J. Phys. B* **38**, 1687 **(**2005), G. K. Brennen, G. Pupillo, A. M. Rey, C. W. Clark, and C. J. Williams.
4. Loading Bose condensed atoms into the ground state of an optical lattice, cond-mat/0412639 and *Phys. Rev. A* **72**, 053615 (2005), P. S. Julienne, C. J. Williams, Y. B. Band, and M. Trippenbach.
5. Mean-field Treatment of the Damping of the Oscillations of a One-dimensional Bose Gas in an Optical Lattice, cond-mat/0410677 and *Phys. Rev. A* **73**, 013605 (2006), J. Gea-Banacloche J, A. M. Rey , G. Pupillo, C. J. Williams, and C. W. Clark.