

BARRY I. SCHNEIDER

Theoretical and Computational Physicist

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BIOGRAPHY

Barry I. Schneider (b.1940, Brooklyn, New York)

- Staff member of the NIST Applied and Computational Mathematics Division.
- General Editor for the DLMF project
- Research areas
 1. Quantum scattering theory
 2. Quantum chemistry
 3. Molecular structure
 4. Interaction of electromagnetic radiation with atoms and molecules
 5. Numerical methods
 6. Application of high performance computing in physics.
 7. See, [My Biography](#), for more details.

EDUCATION

- B.S. in chemistry, Brooklyn College, 1962
- M.S. in chemistry from Yale University, 1964
- Ph.D. in theoretical chemistry from the University of Chicago, 1968

EMPLOYMENT

- Postdoctoral research associate, University of Southern California, 1969-1970
- Staff member, General Telephone and Electronics Laboratory, 1970-1972
- Theoretical Division, Los Alamos National Laboratory, 1972-1991
- National Science Foundation, Physics Division (Project Manager for Theoretical Physics) and then Office of Cyberinfrastructure (Project Manager for HPC and eXtreme Science and Engineering Discovery Environment), 1991-2014
- NIST, 2014-present
- Visiting scientist, NIST from 1995 to 2013
- Sabbatical, NIST in 2000-2001.

AWARDS

- Awarded Poste Rouge by the CNRS (France) in 1979-1980
- Fellow of the American Physical Society (APS) 1983
- Awarded Alexander von Humboldt prize from the German government in 1987.

CURRENT PROJECTS

- Digital Library of Mathematical Functions
- Developing novel computational methods for the solution of the time dependent Schrödinger equation in ultra-short, and intense laser fields
- Finite element methods
- Time propagation of PDE's

PUBLICATION SUMMARY

- Authored or co-authored 135 refereed papers and books.
- Numerous invited talks at conferences, universities and laboratories in the US and abroad.
- 6380 citations
- h-index 41

See, [Complete Publication List](#), for a complete publication list and [Other Information](#).

SELECTED PUBLICATIONS

- *Generating solitons by phase engineering of a Bose-Einstein condensate*, J Denschlag, JE Simsarian, DL Feder, Charles W Clark, LA Collins, J Cubizolles, L Deng, EW Hagley, K Helmerson, William P Reinhardt, SL Rolston, BI Schneider, William D Phillips, *Science* **287**, 97 (2000)
- *Dark-soliton states of Bose-Einstein condensates in anisotropic traps*, D. L. Feder, M. S. Pindzola, L. A. Collins, B. I. Schneider, and C. W. Clark, *Phys. Rev.* **A62**, 063606 (2000)
- *Nonsequential two-photon double ionization of helium*, J Feist, S Nagele, R Pazourek, E Persson, BI Schneider, LA Collins, J Burgdörfer, *Phys. Rev.* **A77**, 043420 (2008)
- *R-matrix theory for electron-molecule collisions using analytic basis set expansions. II. Electron-H₂ scattering in the static-exchange model*, Barry I. Schneider, *Phys. Rev.* **A11**, 1957 (1975)
- *Theory of vibrational excitation and dissociative attachment: an R-matrix approach*, M LeDourneuf, B I Schneider and P G Burke, *J. Phys. B*, **12**, L365 (1979)
- *Resonant Vibrational Excitation of N₂ by Low-Energy Electrons: An Ab Initio R-Matrix Calculation*, B. I. Schneider, M. Le Dourneuf, and Vo Ky Lan, *Phys. Rev. Lett.* **43** , 1926 (1979)
- *Complex Kohn variational method: Application to low-energy electron-molecule collisions*, B. I. Schneider and T. N. Rescigno, *Phys. Rev.* **A37**, 3749 (1988)
- *Parallel solver for the time-dependent linear and nonlinear Schrödinger equation*, Barry I. Schneider, Lee A. Collins, and S. X. Hu, *Phys. Rev.*, **E73**, 036708 (2006)
- *Ground and excited states of Ne₂ and Ne₂⁺ . I. Potential curves with and without spin-orbit coupling*, James S. Cohen and Barry Schneider, *J. Chem. Phys.* **61**, 3240 (1974)
- *Linear-algebraic approach to electron-molecule collisions: General formulation* L. A. Collins and B. I. Schneider *Phys. Rev.* **A24**, 2387 (1981)

PROFESSIONAL SERVICE

- Co-organizer of West Coast Theoretical Chemistry Conference, 1975
- Instructor, Los Alamos Summer School For Atomic Physics, 1989-97
- Review Board-Cornell Supercomputer Center, 1992-1997
- Chairman, Interagency Committee for Atomic, Molecular and Optical Science, 1993-1994
- Chairman, NSF/DoE Partnership in Basic Plasma Science and Engineering, 1997-1998
- APS Davison-Germer Prize Selection Committee, 1998
- Vice-Chair and Chair-Elect APS Few-Body Topical Group, 1997-1999

- Chair, APS Few-Body Topical Group, 2000
- Visiting Scientist, Theoretical Division, Los Alamos National Laboratory, 1991-present
- Organizer of workshop, Computational Methods for Few-Body Dynamical Problems, NIST, 2000
- Chairman, NSF/DoE Partnership in Basic Plasma Science and Engineering, 2001-2002
- Reviewer of Computational Science Division, Daresbury Laboratory for EPSRC, 2002 and 2005
- Vice-Chair and Chair Elect, APS Division of Computational Physics, 2002-2003
- Chair, APS Division of Computational Physics, 2004-2005
- Program Chair, Conference in Computational Physics, 2005
- Chair Elect, Vice Chair and Chair APS Division of Computational Physics, 2013-2015
- Associate Editor in Chief, Computers in Science and Engineering, 2012-present
- Program Committee, Conference in Computational Physics, 2014
- Reviewer for DoE INCITE Program
- NSF and NIST representative to NITRD