

KURT WIESENFELD

School of Physics
Georgia Institute of Technology, Atlanta GA 30332

Born:

February 12, 1958, New York, NY

EDUCATION:

Ph.D. in Physics, UC Berkeley, 1985 (thesis advisor: E. Knobloch)
M.A. in Physics, UC Berkeley, 1982
B.S. in Physics, M.I.T., 1979

PROFESSIONAL EXPERIENCE:

1997-Present Professor of Physics, Georgia Institute of Technology
1992-1997 Associate Professor of Physics, Georgia Institute of Technology
1987-1992 Assistant Professor of Physics, Georgia Institute of Technology
1985-1987 Research Scientist, Physics Dept., Brookhaven National Lab
1984-1985 Lecturer and Researcher, Physics Board of Studies, UC Santa Cruz

GRADUATE AND POSTDOCTORAL ADVISORS

Edgar Knobloch (professor, Leeds University, UK) graduate advisor
Michael Nauenberg (emeritus, UC Santa Cruz) postdoctoral supervisor
Per Bak (deceased) postdoctoral supervisor

HONORS:

Elected Fellow of the American Physical Society (2001)
Elected, Executive Committee, Division of Biological Physics, American Physical Society (1999)

PhD DISSERTATIONS DIRECTED (all GaTech School of Physics graduates) :

*Barbara Breen, "Computational nonlinear dynamics: monostable stochastic resonance and a bursting neuron model" (2003).
Ted Heath, "Synchronization and phase dynamics of coupled oscillators" (2000).
Jeff Hasty, "A renormalization group study of self-organized criticality" (1998).
Ken DeMino, "Shot noise approach to stochastic resonance" (1996).
Steven Nichols, "Dynamics of Josephson junction arrays" (1994).
**Li-Shi Luo, "Lattice-gas automata and lattice Boltzmann equations for two-dimensional hydrodynamics" (1993).

* co-advisors: Prof. John Lindner (Physics, Wooster College) and Prof. Robert Butera (Biomedical Engineering, Georgia Tech).

** co-advisor: Dr. Gary Doolen (Theory Division, Los Alamos National Laboratory).

ADVANCED SCHOOL LECTURES:

University of California Summer School "Slips, Cracks, and Tears", Santa Barbara, CA, August 1992 (10 lectures).
Danish Research Academy Winter School, "Organized Motion at the Edge of Disorder", Copenhagen, Denmark, January 1994 (2 lectures).
International Center for Theoretical Physics Summer School, "Workshop on Nonlinearity", Trieste, Italy, August 1995 (3 lectures).
UK Spring School on Nonlinear Science, Loughborough, England, April 1997 (5 lectures).
Advanced School on "Coherent Evolution in Noisy Environments", held at the Max-Planck Institute for Complex Systems, Dresden, Germany, April-May 2001 (5 lectures).

GRADUATE STUDENT ADVISEES (9 total):

Bruce McNamara (1990), Li-Shi Luo (1991), Steve Nichols(1992; Siemens), Ken Demino (1995) (Michelin), Jeff Hasty (1998) (UC San Diego), Ted Heath (2000) (Georgia Tech Research Institute), Barbara Breen (2003) (Emory University), Denis Tsygankov (2005), Matthew Bennett (2006).

POSTDOCTORAL ADVISEES (8 total, 2 in past 5 years):

Mukesh Dhamala (Univ. Florida, Gainesville) and Slaven Peles (Georgia Tech).

CURRENT RESEARCH SUPPORT:

Office of Naval Research; National Institute of Mental Health (through subcontract with Emory University); HRL Laboratories (Malibu, CA).

OTHER COLLABORATORS (in past 48 months):

F. Jaramillo, A. Bulsara, M. Inchiosa, P. Hanggi, L. Gammaitoni, N.F. Pedersen, G. Filatrella, J. Lindner, H. Rockwood, M. Schatz, J. Rogers, G. Berns, G. Pagnoni, M. Dhamala,

SELECTED PUBLICATIONS:

1. "Stochastic resonance and the benefits of noise: from ice ages to crayfish and SQUIDS," K. Wiesenfeld and F. Moss, *Nature* **373**, 33 (1995).
2. "Mechanoelectrical transduction assisted by Brownian motion: a role for noise in the auditory system," F. Jaramillo and K. Wiesenfeld, *Nature Neuroscience* **1**, 384 (1998).
3. "Frequency locking in Josephson arrays: connection with the Kuramoto model," K. Wiesenfeld, P. Colet and S. Strogatz, *Phys. Rev. E* **57**, 1563 (1998).
4. "Wavelets of Excitability in Sensory Neurons", J. Hasty, J. J. Collins, K. Wiesenfeld, and P. Grigg, *J. Neurophysiology* **86**, 2096 (2001).
5. "Graduate lectures on stochastic resonance," K. Wiesenfeld, A. Buchleitner, and T. Wellens, chapter 3 in *Coherent Evolution in Noisy Environments*, *Springer Lecture Notes in Physics* **611** (2002).