

Curriculum Vitae, Brenton John LeMesurier

Education, awards and honours

- M.S., 1982, Ph.D., 1986, New York University, New York, New York.
Dissertation: *The focusing singularity of the nonlinear Schrödinger equation*
- B. Sc. (Honours), 1980, Australian National University, Canberra.

Employment

- Associate Professor, Department of Mathematics College of Charleston, Charleston since August 2004.
- Assistant Professor, Department of Mathematics College of Charleston, Charleston, January 1999 – August 2004.
- Visiting Assistant Professor, Department of Mathematics, College of Charleston, Charleston, August 1996 – December 1998.
- Visiting Researcher, Department of Mathematics, Case Western Reserve University, Cleveland, Spring 1996.
- Lecturer, Department of Mathematics, Australian National University, Canberra, Australia, 1993–1995.
- Research Fellow, Centre for Mathematics and its Applications, Australian National University, Canberra, Australia, October 1991 – December 92.
- Assistant Professor, University of Arizona, Tucson, Arizona, 1987–1991.
- Associate Research Scientist, Courant Institute of Mathematical Sciences, New York, New York, June–August 1987.
- Postdoctoral Research Associate, Rensselaer Polytechnic Institute, Troy, New York, September 1985–August 1987.
- Exxon Research and Engineering Company, Clinton, New Jersey, June 1984–May 1985, part time.

Teaching and related activities at the College of Charleston

- Math 120: Introductory Calculus
- Math 220: Calculus 2
- Math 221: Calculus 3
- Math 245: Elementary Numerical Methods/Numerical Methods and Mathematical Computing.
- Math 246: Mathematical Computing and Programming Laboratory
- Math 545: Numerical Analysis 1 and Math 445: Numerical Analysis
- Math 645: Numerical Analysis 2

Grants and awards while at the College of Charleston

- College of Charleston 4th Century Initiative Faculty-Student Summer Research Grant of \$5,000 (estimated) for work with student Barron Whitehead, summer 2003: *Numerical simulation of nonlinear wave focusing in media with random defects.*
- South Carolina Research Initiative Grant of \$24,700 for 2001: *Investigation of the stability of symmetric solutions to models of wave collapse and self-focusing in laser propagation, plasmas, and molecular vibration.*
- College of Charleston SSM and Department of Mathematics grant of \$1000 for curriculum development, summer 2000.
- College of Charleston Starter Grant of \$2,500 for the summer of 1999: *Sustained dissipation from self-focusing waves in plasmas.*
- Travel grant of \$1,000 from the Society for Industrial and Applied Mathematics, funded by the National Science Foundation, towards costs of attending and speaking at ICIAM99, the 1999 International Conference on Industrial and Applied Mathematics in Edinburgh, Scotland.

Invited talks, conference presentations, and conference organizing activities since 2008

- Assisted with organizing the 2010 Southeastern Atlantic Mathematical Sciences Workshop at the College of Charleston, September 24–26.
<http://www.chachadays.org/chachadays2010/>

- *Davydov-Scott Models of Wave Motion in α -helix Protein and Exactly Energy-Momentum Conserving Discretizations for Hamiltonian Systems* at the SIAM Conference on Non-linear Waves and Coherent Structures. August 18, 2010.
<https://www.siam.org/meetings/nw10/>
- *Modeling Exciton Propagation in Molecular Chains, and Conservative Time Discretization of Large, Stiff Hamiltonian Systems*, at the 8th AIMS International Conference on Dynamical Systems, Differential Equations and Applications, May 26, 2010, Dresden University of Technology.
<http://aimsciences.org/AIMS-Conference/2010/>
- Assisted with organizing the 2009 Southeastern Atlantic Mathematical Sciences Workshop at the University of Central Florida, Orlando, Florida, November 6–8.
<http://www.chachadays.org/chachadays2009/>
- *Conservative Time-Discrete Hamiltonian Systems and Modeling Pulses in Molecular Chains* at the 6th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens Georgia, March 24, 2009.
<http://www.cs.uga.edu/~thiab/waves2009.html>
- *Conservative Time-Discrete Hamiltonian Systems and Modelling Pulses in Molecular Chains* at the Conference on Coherence and Persistence in Nonlinear Waves: Solitons in Their Roaring Forties, University of Nice, January 8, 2009.
<http://www.oca.eu/cpnlw09/>
- *Modelling Pulses in Molecular Chains, and Conservative Time-Discrete Hamiltonian Systems* at the workshop Singular phenomena in Nonlinear Optics, Hydrodynamics and Plasmas, at the Banff International Research Station, Banff, Canada, October 25, 2008.
http://www.birs.ca/birspages.php?task=displayevent&event_id=08w2133
- *Conservative Discretizations of Hamiltonian Evolution Equations Modeling Solitary Waves in Proteins* in the minisymposium on Numerical Computation of Nonlinear Waves at the International Conference on Nonlinear Waves – Theory and Applications, Tsinghua University, Beijing, P. R. China, June 9, 2008.
<http://lsec.cc.ac.cn/~icnwta/>

Selected publications and manuscripts

- [1] B. LeMesurier. Conservative A-stable discretization methods for stiff Hamiltonian equations, and an application to wave motion in lattice equations modeling protein molecules. submitted to Physica D.

- [2] Brenton LeMesurier. Studying Davydov’s ODE model of wave motion in alpha-helix protein using exactly energy-momentum conserving discretizations for hamiltonian systems. *Mathematics and Computers in Simulation*, December 2010.
- [3] Brenton LeMesurier. Modeling thermal effects on nonlinear wave motion in biopolymers by a stochastic discrete nonlinear schrödinger equation with phase damping. *Discrete and Continuous Dynamic Systems Series S*, 1(2):317–327, June 2008.
- [4] Brenton LeMesurier and Barron Whitehead. Wave energy self-trapping by self-focusing in large molecular structures: a damped stochastic discrete nonlinear Schrödinger equation model. *Physica D*, 225(1):1–12, January 2007.
- [5] Brenton John LeMesurier, Peter Leth Christiansen, Yuri B. Gaididei, and Jens Juul Rasmussen. Beam stabilization in the 2D nonlinear Schrödinger equation with attractive potential by beam splitting and radiation. *Phys. Rev. E*, 70, 2004. 046614.
- [6] Peter Leth Christiansen, Yuri B. Gaididei, and Brenton John LeMesurier. Collapse control in an inhomogeneous nonlinear Schrödinger equation model. In Luis Vázquez, Robert S. MacKay, and Maria Paz Zorzano, editors, *Proceedings of “Localization and Energy Transfer in Nonlinear Systems”*, pages 28–43. World Scientific, 2003.
- [7] Brenton John LeMesurier and Peter Leth Christiansen. Regularisation and control of self-focusing in the 2D cubic Schrödinger equation by linear potentials. *Physica D*, 184:226–236, 2003.
- [8] Brenton John LeMesurier. Multi-focusing and sustained dissipation in the dissipative nonlinear Schrödinger equation. *Mathematics and Computers in Simulation*, 55:503–517, 2001.
- [9] Brenton John LeMesurier. Dissipation at singularities of the nonlinear Schrödinger equation through limits of regularisations. *Physica D*, 138:334–343, 2000.
- [10] Brenton John LeMesurier. Dynamic rescaling methods for simulating wave collapse in plasmas. In R.L. May and A.K. Easton, editors, *Computational Techniques and Applications: CTAC95*, pages 455–462. World Scientific, 1996.
- [11] Brenton John LeMesurier, George C. Papanicolaou, Catherine Sulem, and Pierre-Louis Sulem. Local structure of the self-focusing singularity of the nonlinear Schrödinger equation. *Physica D*, 32:210–226, 1988.
- [12] Brenton John LeMesurier, George C. Papanicolaou, Catherine Sulem, and Pierre-Louis Sulem. Focusing and multi-focusing solutions of the nonlinear Schrödinger equation. *Physica D*, 31:78–102, 1988.
- [13] Brenton John LeMesurier. *The focusing singularity of the nonlinear Schrödinger equation*. PhD thesis, New York University, 1986.