

Curriculum Vitae

Russell K Jackson

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Current Position:

Assistant Professor, 2005 –
location: Department of Mathematics, United States Naval Academy

Postdoctoral Training:

NSF Mathematical Sciences Postdoctoral Research Fellow, 2002–2005
location: Department of Mathematics and Statistics, Boston University
supervisors: C. Eugene Wayne and Tasso Kaper

Education:

Ph.D., Division of Applied Mathematics, Brown University, 2003
advisor: Christopher K. R. T. Jones
title: *Multiple Pulses in Nonlinear Optical Systems*

M.S., Department of Mathematics, The University of North Carolina, 1997
advisor: Karl O. Petersen
title: *Iterated Function Systems and a Measure on Julia Sets*

B.S. (magna cum laude), Mathematics Department, Duke University, 1994

The North Carolina School of Science and Mathematics, 1990

Research Interests:

My primary aim is to develop dynamical systems tools in order to explore the qualitative behavior of evolving systems. In particular, I am interested in studying bifurcations of nonlinear waves, and understanding how the structure of these bifurcations impacts the stability of the various resulting waves. These tools may be geometric or functional analytic in character, and have application in a wide variety of physical fields, including optics and neuroscience.

Teaching and Service:

the United States Naval Academy (2005–):

- participated in the *USNA Teaching Portfolio Workshop*, Summer 2006
- have taught small (~ 20 student) classes of *Calculus 1*, *Calculus 2*, *Calculus 3* and *Differential Equations*
- have served in the *Math Lab* each semester and contributed to the *Math News*
- have spoken in the *Naval Academy Summer Seminar* and the *Topics in Mathematics* course
- currently advising 5 mathematics majors and serving as a reader for 1 honors project
- currently serving on the *Applied Math Colloquium Committee* and the *Assessment Committee*

Boston University (2002–2005):

- taught large (~ 125 student) classes of *Calculus 1*, *Calculus 2* and *Calculus 3*, coordinating graduate assistants and undergraduate graders
- served as a reader for two PhD dissertations

Brown University (1997–2002):

- earned a teaching certificate through the *Sheridan Center for Excellence in Teaching*
- taught a senior seminar (~ 2 students) entitled *Quantitative Models of Biological Systems*

the University of North Carolina (1994–1997):

- completed semester-long teaching orientation program
- taught small (~ 30 student) classes of *College Algebra*, *Calculus 1* and *Calculus 2*
- served as president of the Graduate Mathematics Organization

Refereed Publications:

1. *Dispersion managed solitons via an averaged variational principle*, (with C. K. R. T. Jones and V. Zharnitsky), *Physica D* **190** (2004), 63–77
2. *Geometric analysis of bifurcation and symmetry breaking in a Gross-Pitaevskii equation*, (with M. Weinstein), *J. Statist. Phys.* **116** (2004), 881–905
3. *Existence and stability of traveling pulses in a continuous neuronal network*, (with C.E. Wayne and D. Pinto), *SIAM J. Appl. Dyn. Syst.*, **4** (2005), 954–984
4. *Pulses in Nonlinearly Coupled Schrödinger Equations I. A Homoclinic Flip Bifurcation*, *SIAM J. Appl. Dyn. Syst.*, **5** (2006), 575–597
5. *Pulses in Nonlinearly Coupled Schrödinger Equations II. An Instability Criterion*, (with C. K. R. T. Jones), *SIAM J. Appl. Dyn. Syst.*, submitted

Recent Talks, Conferences:

- Speaker, *Eighth Conference on Applications of Dynamical Systems*, SIAM, Snowbird, Utah, May 26-30, 2005
- Speaker, *Applied Mathematics Seminar*, United States Naval Academy, March 10, 2005
- Speaker, *Joint Mathematics Meeting*, AMS/MAA, Atlanta, Ga, Jan 5-8, 2005
- Speaker, *Applied Mathematics Seminar*, University of Kansas, December 8, 2004
- Speaker, *Dynamical Systems Seminar*, Boston University, November 8, 2004
- Speaker, *Special Sessions on Pulse Propagation in Nonlinear Optical Fibers and Spatially Structured Activity in Neural Networks*, SIAM Conference on Nonlinear Waves, Orlando, FL, October 2-5, 2004
- Speaker, *Applied Analysis and Computation Seminar*, University of Massachusetts Amherst, March 23, 2004
- Speaker, *Special Session on Current Topics in Optical Communications*, AMS Southeastern Sectional Meeting, Chapel Hill, NC, October 24-25, 2003
- Speaker, *Seventh Conference on Applications of Dynamical Systems*, SIAM, Snowbird, Utah, May 27-31, 2003

Fellowships, Support and Awards:

- Naval Academy Research Grant*, USNA, Summer 2006
- NSF Mathematical Sciences Postdoctoral Research Fellowship*, Boston University, 2002-2005
- Internship at Bell Labs / Lucent Technologies, Mathematical Research Division* (supervisor: V. Zharnitsky), Murray Hill, NJ, Summer, 2001
- Vertically Integrated Graduate Research Experience (VIGRE) Fellowship*, Brown University, 2000-01, 2001-02
- Graduate Assistance in Areas of National Need (GAANN) Fellowship*, University of North Carolina, 1994-95, 1995-96
- Julia Dale Prize for Excellence in Mathematics*, Duke University, Spring 1994
- North Carolina Math Contest Scholarship*, Duke University, 1990-1994

Memberships and Affiliations:

I am a member of the Society of Industrial and Applied Mathematics (SIAM), the American Mathematical Society (AMS), the Mathematical Association of America (MAA), Phi Beta Kappa (Φ BK), and USA Triathlon (USAT). I have also served as a referee for several journals including *Physica D* and *SIAM J. Appl. Dyn. Syst.*