

# Brandon G. Bale

---

University of Washington, Department of Applied Mathematics  
Box 352420  
Seattle, WA 98195-2420  
Email: bbale@amath.washington.edu

## Education

M.S. Applied Mathematics, University of Washington, 2004

B.S. Applied and Computational Mathematical Sciences, U. of Washington, 2001

## Research

Graduate Research Assistant 2004–Present  
J. Nathan Kutz University of Washington  
Spectral filtering for ultra-fast mode-locking. Passive multi-frequency mode-locking with wave-guide arrays. Self-similar mode-locking in net zero-dispersion laser cavities. Gain stabilization in the cubic-quintic complex Ginzburg-Landau equation.

Undergraduate Research Assistant 1998–2000  
J. Nathan Kutz University of Washington  
Pulse interactions due to an acoustical wave perturbation in optical fibers.

## Teaching Experience

Instructor, Department of Applied Math, U. of Washington, Spring 2007

Course: *Beginning Scientific Computing*

Instructor, Department of Applied Math, U. of Washington, Spring 2005

Course: *Applied Linear Algebra and Numerical Analysis*

Instructor, Department of Applied Math, U. of Washington, Summer 2004

Course: *Applied Linear Algebra and Numerical Analysis*

Teaching Assistant, Department of Applied Math, U. of Washington Autumn 2006

Course: *Beginning Scientific Computing*

Teaching Assistant, Department of Applied Math, U. of Washington Spring 2004

Course: *Beginning Scientific Computing*

Teaching Assistant, Department of Applied Math, U. of Washington Winter 2004

Course: *Ordinary Differential Equations*

Calculus Tutor, University of Washington, 1998-2000

## Submitted Papers

Brandon G. Bale, J. Nathan Kutz, Andy Chong, William H. Renninger, and Frank W. Wise *Spectral Filtering for Ultra-fast Mode-locking in the Normal Dispersive Regime*, Optics Lett. (2007).

Brandon G. Bale, Edward Farnum and J. Nathan Kutz *Theory and Simulation of Passive multi-frequency mode-locking with waveguide arrays*, IEEE J. Quan. Elec.(2007).

## Working Papers

Brandon G. Bale, Bernard Deconinck, J. Nathan Kutz, *Nonlinear Stability of Plane-Wave Solutions to the Nonlocal Nonlinear Schrödinger Equation*.

Brandon G. Bale, J. Nathan Kutz *Theory of self-similar mode-locking in net zero-dispersion laser cavities*, 2007.

## Refereed Proceedings

*Spectral Filtering for Ultra-fast Mode-locking in the Normal Dispersion Regime*, Nonlinear Photonics JWA16 (2007), Quebec City, Canada [Bale, Kutz]

*Multi-frequency mode-locking with wave-guide arrays*, Nonlinear Photonics JWA17 (2007), Quebec City, Canada [Bale, Farnum, Kutz]

## Presentations: Talks

*Enhanced Mode-locking in the Normal Dispersive Regime*. 6th International Congress on Industrial and Applied Mathematics, ETH Zurich, Summer 2007.

*Spectral Filtering for Ultra-fast Mode-locking in the Normal Dispersive Regime*. Dynamics Days Europe, Loughborough University, U.K. Summer 2007.

*Modelocked Mechanisms in a Normal Dispersive Regime*. Society for Industrial and Applied Mathematics, U. of Washington, Autumn 2006.

*Nonlocal Optical Media*. Undergraduate Mathematical Sciences Seminar, U. of Washington, Autumn 2005.

*Nonlocality in Bose-Einstein Condensates*. Society for Industrial and Applied Mathematics, U. of Washington, Autumn 2005.

*Pulse-to-Pulse Interactions in Optical Fiber Lasers*. U. of Washington Undergraduate Research Symposium, University of Washington, Spring 2000.

*Pulse Interactions in Fiber Optic Lasers due to the Acoustic Effect*. U. of Washington Undergraduate Research Symposium, University of Washington, Spring 1999.

## Presentations: Posters

*Nonlinear Stability of Plane-Wave Solutions to the Nonlocal Nonlinear Schrödinger Equation*. SIAM Conference on Nonlinear Waves and Coherent Structures, Seattle, September 2006.