

Mathew A. Johnson

Contact Information

Department of Mathematics
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U.S. Citizen, Born February 26, 1983

Education

Current:

University of Illinois at Urbana-Champaign, Urbana, IL
Ph.D. Candidate in Mathematics, 2005 - Present

Previous:

Ball State University, Muncie, IN
B.S. in Mathematics, 2005, *Magna Cum Laude*

Interests

I am interested in stability theory for non-linear partial and ordinary differential equations, spectral theory, and scattering problems related certain non-linear evolutionary equations via the inverse scattering transform.

Teaching Experience

- Teaching Assistant: Calculus for Business I (Math 234), UIUC Fall 2007.
 - Responsibilities: Lead discussion/recitation sections for one class twice per week. Recitation consisted of HW sessions as well as occasional lectures. Administer weekly quizzes. Proctor and grade quizzes and course exams.
- Teaching Assistant: Calculus 1 (Math 221), UIUC, Fall 2006.
 - Responsibilities: Lead discussion/recitation sections for two classes twice per week. Recitation consisted of homework sessions as well as occasional lectures. Prepare, administer, and grade weekly quizzes. Proctor and grade course exams.
- Mathematics Mentor, Ball State University Department of Mathematics, January 2005 - May 2005.
- Grader, Ball State University Department of Mathematics, January 2004 - December 2005.
- Mathematics & Physics Tutor, Ball State University Learning Center, August 2002 - December 2004.

Awards

- Graduate Research Assistant: Summer 2008. Advisor: Dr. Jared Bronski.
- Research Assistantship: Spring 2007 - Spring 2008. Advisor: Dr. Jared Bronski.
- University of Illinois "Incomplete List of Teachers Rated Excellent By Their Students": Fall 2007 (Rated Exceptional), Fall 2006.

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Publications

- *Krein signatures for the Faddeev-Takhtajan eigenvalue problem*, with J.C. Bronski, submitted to Communications in Mathematical Physics.

Working Papers

- *Geometry of the Modulational Instability of a Generalized KdV*, with J.C. Bronski, in preparation.

Invited Talks

- The XIXth International Workshop on Operator Theory and its Applications, July 22-26 2008, College of William and Mary.
- 32nd SIAM Southeastern-Atlantic Section Conference (SIAM-SEAS 2008), University of Central Florida, Orlando, March 14-15 2008.
- UIUC Analysis Seminar, March 6, 2008.
- UIUC Graduate Student Analysis Seminar, September 25, 2007.
- UIUC Graduate Student Analysis Seminar, March 14, 2007.

Service

- UIUC Graduate Mathematics Open House Organizing Committee (2007,2008).

Undergraduate Papers

- *Non-Destructive Testing of Thermal Resistances for a Single Inclusion in a 2-Dimensional Domain*, with N. Christian, Rose-Hulman Institute of Technology Undergraduate Math Journal, Vol. 6 (1), 2005.
- *Non-Destructive Testing of Thermal Resistances for a Single Inclusion in a 2-Dimensional Domain* (Shortened version of full technical report: see above), with N. Christian, Ball State Undergraduate Mathematics Exchange, Fall 2004, Vol. 2, No. 2.
- *Quantum Mechanics in Quantum Computing*, Ball State Undergraduate Mathematics Exchange, Fall 2003, Vol. 1, No. 1.

Undergraduate Research Experiences

REU Internship June 2004 - August 2004
Supervisor: Dr. Kurt Bryan Rose-Hulman Institute of Technology
Develop an algorithm for solving an inverse problem relating to the two-dimensional heat equation with Cauchy and Neumann boundary data. Write a program that will numerically solve the given inverse problem by implementing the above algorithm.

ERULF Internship with D.O.E. May 2003 - August 2003
Supervisor: Dr. Dmitry Karpeev Argonne National Labs
Develop systems of autonomous differential equations to model aspects of cellular metabolism in cyanobacteria. Numerically solve systems that fellow researchers and I developed and compare the results to expectations from experiment.