

KATHERINE SOCHA

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Education

- The University of Texas at Austin, Department of Mathematics, PhD 2002
Dissertation: Modal Analysis of Surface Wave Equations
- Portland State University, Department of Mathematical Sciences, MS 1993
Master's Paper: Stone's Representation Theorem for Boolean Algebras
- Reed College, Department of Mathematics, BA 1990
Senior Thesis: The Categorical Concept of Limit

Current Positions

- Assistant Professor, Department of Mathematics and Computer Science, St. Mary's College of Maryland, 2004-present
- Project Coordinator, www.whydmath.org Project, SIAM, 2004-present

Previous Positions

- Assistant Professor, Lyman Briggs School/Department of Mathematics, (joint appointment), Michigan State University, 2002-2004
- Postdoctoral Fellow, Department of Applied Mathematics, CU Boulder, Summer 2002
- VIGRE Graduate Trainee, Department of Mathematics, UT Austin, 2001-2002

Selected Outreach Activities

- Founder and Faculty Adviser, Women in Science House, SMCM, 2006-present
- Consultant *Change and Motion: Calculus Made Clear*, The Teaching Company, 2001 & 2005
- Faculty Mentor *Rube Goldberg Machine Team*, MSU, 2002-2004
- Coordinator *Saturday Morning Math Group*, UT Austin, 2000-2001
- Mathematics Consultant *Texas Memorial Museum of Science and History*, 1999-2002

Awards and Funding

- PI *SMCM Summer NREUP*, MAA/Summa, 2007 (\$25,000)
- PI *Girls Math/Physics Day Led by WiSH*, MAA/Tensor, 2006 (\$5,000)
- PI *SMCM Summer NREUP*, MAA/Summa, 2006 (\$25,000)
- PI *Faculty Development Grant*, SMCM, 2005 (\$2,500)
- co-PI *IUPUI/SMCM Summer NREUP*, MAA/Summa, 2005 (\$20,000)
- Project NExT Fellow, MAA, 2002-2003

Selected Pedagogy and Outreach Presentations

- *Circles in Circles: Creating a Mathematical Model of Surface Water Waves*, SIAM Annual Meeting, July 2007
- *Sturm and Bond, or how I learned to stop worrying and love linear algebra*, MAA MD-DC-VA Section Meeting, April 2006
- *A Women and Mathematics Poster Series*, MAA MD-DC-VA Section Meeting, April 2006
- *Chaos and Fractals*, Math, Science & Technology Summer Camp (MST at MSU), July 2004
- *Art, Mathematics, and Visualization*, JMM: MAA Session on Math and Art, January 2004
- *Mathematics: Morals and Mortals*, LBS Speaker Series Michigan State University, October 2003

- *Forever and a Day: A Humanities Course on Infinity for Scientists*, Michigan MATYC Fall Conference, October 2003
- *Sturm-Liouville Theory, Parts I and II*, PCMI Undergraduate Faculty Program, July 2003
- *Pitter, Patter, POW! Raindrops and a WWII Sea Battle*, JMM: Contributed Paper Session, January 2003
- *Math in the Bath: High School Outreach at UT Austin*, MathFest: Contributed Paper Session, August 2001
- *Waves and Mathematics; Space Math!; Three-d Space: Not the Final Frontier!*, Expanding Your Horizons Workshops for Middle School Girls, 2000-2002

Publications

- Socha, K.; Bona, J. Lau-Barcilon Analysis of the Regularized Long Wave Equation, in preparation.
- Socha, K. Mixed Messages: Mathematics, mathematical patterns, and popular culture, American Communication Journal, submitted 2006, under review.
- Socha, K. Circles in Circles: Creating a Mathematical Model of Surface Water Waves, American Mathematical Monthly, **114** (2007), no. 3.
- Socha, K.; Tobias, S.; Ward, R. A New Women in Mathematics Poster Series, Association for Women in Mathematics Newsletter, **36** (2006), no. 5.
- Segur, H.; Henderson, D.; Carter, J.; Hammack, J.; Li, C.; Pheiff, D.; Socha, K. Stabilizing the Benjamin-Feir instability, *J. Fluid Mech.*, **532** (2005).
- Socha, K. Mathematics: Morals and Mortals. In *Complexities: Women in Mathematics*, ed. B. Case and A. M. Leggett, Princeton University Press, pp. 393-395, 2005.
- Socha, K. The Poster Project: Artist Takes On Scientists' Bad Rep, *SIAM News*, **36** (2003) no 6
- Socha, K.; Starbird, M. How to Ace Literature: A Streetwise Guide for the Math Student, *Math Horizons*, **11** (2003), no. 1. (Selected for inclusion in *The Edge of the Universe: Celebrating Ten Years of Math Horizons*.)
- Cipra, B.; Socha, K. Mathematics and the Ocean: Theme Essay for the National Mathematics Awareness Month, *SIAM News*, **34** (2001), no. 3. See also the Mathematics Awareness Month
- Socha, K. Luminosity in Linear Colliders, *Spectrum: The Reed College Journal of the Sciences*, **1** (1990), no. 1, 15-16

Selected Research Presentations

- *A Brief History of Tsunamis*, Current Trends in Mathematics: Nonlinear Dispersive Wave Phenomena, July 2005
- *Modal Analysis of Long Wave Equations*, Third IMACS International Conference on Nonlinear Evolution Equations, April 2003
- *Modal Analysis of Nonlinear, Dispersive Evolution Equations*, SIAM Conference on Mathematical and Computational Issues in the Geosciences, March 2003
- *Stability & Instability of Plane Wave Solutions of NLS*, AMS Eastern Section, October 2002
- *Modal Analysis of Surface Wave Equations*, Physical Oceanography Dissertations Symposium, June 2002

Selected Service Activities

- Society for Industrial and Applied Mathematics Committee on Education, 2006-present
- Women, Gender, Sexuality Studies Cross-disciplinary Steering Committee, 2005-present
- Mathematics and Computer Science Department Senator, Faculty Senate, SMCM, 2005-2006
- Music Department Search Committee, SMCM, 2005-2006
- Faculty Ambassador for International Students, SMCM, 2004-present