

Christine Breiner

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Education

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| <i>Johns Hopkins University</i> , Ph.D in Mathematics | May 2009 |
| Advisor: William P. Minicozzi, II | |
| Thesis Title: Embedded Minimal Surface of Finite Topology and One End | |
| <i>Johns Hopkins University</i> , M.A. in Mathematics | May 2005 |
| <i>Kenyon College</i> , Bachelor of Arts with Highest Honors in Mathematics | May 1999 |

Publications and Current Work

Distortions of the Helicoid, with J. Bernstein, *Geometriae Dedicata* **137** (2008), no. 1, 143-147.
Online version available at <http://www.mathematics.jhu.edu/breiner/Distortions.pdf>.

Helicoid-Like Embedded Disks and Uniqueness, with J. Bernstein. Submitted for publication. Preprint available at <http://www.mathematics.jhu.edu/breiner/Embedded.pdf>.

Conformal Structure of Minimal Surfaces with Finite Topology, with J. Bernstein. Submitted for publication. Preprint available at <http://www.mathematics.jhu.edu/breiner/Conformal.pdf>.

Research

Research Interests: Minimal Surfaces, Geometric Analysis, PDE

Current Work: I am using the fundamental work of Colding and Minicozzi to determine compactness results for the space of embedded minimal surfaces of finite topology and one end. These results should help to determine geometric rigidity of such surfaces. In addition, I expect it will help us answer the question of uniqueness of the genus-one helicoid.

In work that uses similar tools to those exploited in the work above, I hope to show embedded implies properly embedded for minimal surfaces of finite genus (with no assumption on the number of ends).

Presentations and Conference Participation

Invited Talks

“Conformal Structure of Minimal Surfaces with Finite Topology”

- Indiana University, Bloomington, IN, April 17, 2009
- University of Georgia, Athens, GA, April 5, 2009
- University of Warwick, Coventry, UK, January 20, 2009

Other Talks

“The Geometry of Embedded Minimal Surfaces with Finite Topology” (poster session)

- Joint Math Meetings, Washington, D.C., January 8, 2009

Conference Participation

Nonlinear Geometric Analysis Conference to honor Alice Chang and Paul Yang – Princeton University, Fall 2008

Fourth Yamabe Symposium – University of Minnesota, Fall 2008

Geometry Festival – Duke University, Spring 2008

Geometry Festival – University of Maryland, Spring 2007

Bloomington Geometry Workshop – Indiana University, Spring 2007

Christine Breiner

Awards

- NSF Mathematical Sciences Postdoctoral Research Fellow – Award begins July 2009
Award to be used while at Massachusetts Institute of Technology.
- Math Department Excellence in Teaching Award, JHU – 2007
This award is given “in recognition of valuable contributions to undergraduate teaching in the Department of Mathematics by a graduate student.”
- William Kelso Morrill Teaching Award, JHU – 2005
For the graduate student who best displays “love of teaching, love of mathematics, and concern for students.”
- Apgar Teaching Award, RPCS – 2003
This prize goes to the teacher with five or fewer years of experience who demonstrates a love of teaching and concern for student success.
- Honors Scholar, Kenyon – 1995 – 1999
Honors Scholarships are awarded to students who represent excellence in the liberal arts.
- Elmer A. Graham Endowed Scholarship Fund Award Winner, Kenyon – 1998
This award provides a full scholarship for the senior year. Criteria for selection include high academic achievement, demonstrated leadership in the college community, and active participation in the life and work of the college.
- Reginald B. Allen Prize in Mathematics, Kenyon – 1997, 1998
This prize is “awarded to the student who has shown unusual promise in mathematics.”
- Phi Beta Kappa (liberal arts and sciences) – 1998 to present

References

- William Minicozzi – Krieger-Eisenhower Professor, Johns Hopkins University
minicozz@math.jhu.edu, 410-516-6656
- Joel Spruck – Professor, Johns Hopkins University
js@math.jhu.edu, 410-516-5118
- Tobias Colding – Professor, Massachusetts Institute of Technology
colding@math.mit.edu, 617-253-3215

Employment

CLE Moore Instructor – Fall 2009-Spring 2012. Massachusetts Institute of Technology

Instructor

- New Teacher Project, Summer 2007, 2008. Prepared adults to take Praxis II Math test in their training for teaching high school math in the fall.*
- Johns Hopkins University, Fall 2005. Taught Introduction to Calculus. Lectured, assigned homework, wrote and graded exams.*
- Roland Park Country School, Fall 1999- Spring 2004. Taught courses in algebra, geometry, probability and statistics. Developed interdisciplinary projects with a physics teacher to promote a better understanding of both disciplines.*
- Johns Hopkins University, Summer 2005, 2006. Instructed fifth and sixth grade students through Center for Talented Youth. Directed individually paced mathematics programs.*

Teaching Assistant

Johns Hopkins University, Fall 2004 – Spring 2005, Spring 2006-Spring 2008, Spring 2009. Taught sections of Calculus I, II and III, Analysis, Honors Analysis, and Linear Algebra. Graded exams and homework assignments. Held office hours.

Mathematics Course Work

Real Analysis I and II, Algebra I and II, Complex Analysis, Differential and Riemannian Geometry, Complex Geometry, Riemann Surfaces, Partial Differential Equations, Topics in Minimal Surfaces, Topics in Partial Differential Equations, Topics in Mean Curvature Flow