

## Karoline Pershell

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Department of Mathematics  
Rice University  
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### Education

Ph.D. Mathematics, Rice University. *Curvature of a group presentation indicates solvability of the word problem*. Thesis advisor: John Hempel, May 2008.

M.A. Mathematics, Rice University. 2007.

B.S. Mathematics, University of Tennessee at Martin. *Mersenne Primes in Imaginary Quadratic Number Fields*. Advisor: Chris Caldwell, 2003.

### Employment

Rice University  
Graduate Student  
Duties: Teaching Assistant, Instructor

Houston, Texas  
August 2003–May 2008

National Security Agency  
Researcher  
Duties: Researcher, Programming

Fort Meade, Maryland  
June 2005–August 2005

### Research Interests

Geometric and Combinatorial Group Theory, Small Cancellation Theory, 3-Manifolds.

### Teaching Experience

Instructor, Single Variable Calculus. Rice University, Spring 2007.

Teaching Assistant, Mathematics Department. Rice University, 2003–2007.

Training, Graduate Teaching Seminar. Rice University, 2003–2007.

Training, Rice University School Mathematics Project. Learning Plan: *Arc Length and Rotational Surface Area*. June 2007.

Instructor, Single Variable Calculus. Rice University, Summer 2006.

Instructor, MD Innovations Actuary Preparation Course: Probability and Statistics. Houston, Texas, May 2006.

Training, “Methods of Teaching Mathematics.” Rice University, Fall 2006.

Training, Certificate Teaching Workshop. Rice University, Fall 2004–Present.

### Professional Development

Member, Baker Institute Student Forum Research Committee. Rice University, 2007–2008.

Member, Provost’s Search Committee for Dean of Natural Sciences. Rice University, Fall 2007.

Math Representative, Graduate Student Association. Rice University, January 2007–Present.

Board Member, Honor Court. Rice University, 2004–2005.

Judge, River Oaks Baptist Science Fair. Houston, Texas, November 2006, December 2007.

Organizer, Mathematics Student-Faculty Bi-weekly Dinners. Rice University, August 2004–May 2007.

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### Presentations

*The 97th Birthday of the Word Problem*, Math Colloquia, Middlebury College, Vermont, November 2007.

*An Introduction to Contact Manifolds*, Current Mathematics Seminar. Rice University, October 2006.

*Grad School 101: Answering the questions you did not even know to ask*, University Mathematics Club, University of Arkansas at Fort Smith, October 2006.

*Using Cayley graphs to understand the word problem*, Mathematics Club Colloquia, University of Arkansas (Fayetteville), October 2006.

*Rohlin's invariant and gauge theory*, Current Mathematics Seminar, Rice University, October 2005.

*Utility Theory* (poster), joint work with Kalatu Davies and Landon Jennings, Rice University VIGRE Open House, Fall 2005.

Presented the Graduate Mathematics Program's summer accomplishments to the Director of the National Security Agency, Fort Meade, Maryland, August 2005.

*An introduction to  $p$ -adic number theory*, Current Mathematics Seminar, Rice University, February 2005.

*Mersenne primes in imaginary quadratic number fields*, Current Mathematics Seminar, Rice University, March 2004.

*A wavelet approach to segmenting handwriting* (with Joanna Papakonstantinou), Park City Mathematics Institute, July 2003.

*Dust Extinction and the Internal Structure of Globule 2 in the Coalsack* (poster), joint work with Lionel Crews and Tracy Huard Annual American Astrophysics Society Meeting, Nashville, May 2003.

*Examining the contraction speed of Vorticella* (research from REU at Florida State University), University of Tennessee at Martin Journal Club, August 2002.

*Mersenne Primes in Imaginary Quadratic Number Fields*, Institute for Advanced Studies Undergraduate Women in Mathematics Conference, Princeton, May 2002.

### Conferences Attended

AMS/MAA Joint Meetings, San Diego, January 2008.

NCTM Regional Conference and EXPO, Houston, November 2007.

*Negotiating the Ideal Faculty Position* Workshop, Rice University, October 2007.

Faculty Horizons Workshop, University of Maryland Baltimore County, June 2007.

Cornell Topology Festival, Cornell University, May 2007.

Texas Geometry and Topology Conference, Rice University, October 2006.

Mini-Courses and Conference on Geometric Group Theory, Centre De Recherches Mathematiques, Montreal, July 2006.

Combinatorial and Geometric Group Theory Conference, Vanderbilt University, May 2006.

31st Annual University of Arkansas Spring Lecture Series in Geometric Group Theory with Martin Bridson, Pricipal Speaker, University of Arkansas, April 2006.

AMS/MAA Joint Meetings, Phoenix, January 2004.

Enhancing Diversity in Graduate Education Continuing Success In Graduate School, Atlanta, June 2004.

Park City Mathematics Institute (Partial Differential Equations), Park City, Utah, July 2003.

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Enhancing Diversity in Graduate Education, Pomona College, June 2003.

Institute for Advanced Studies Undergraduate Women in Mathematics Conference, *An introduction to Fourier Analysis and Wavelets, with some applications*, taught by Dr. Ingrid Daubechies, May 2002.

### **Honors and Awards**

Outstanding Student Award, Rice University School Mathematics Project, June 2007.

President's Fellowship, Rice University, 2003–2007.

Graduate Fellowship, Rice University, 2003–2007.

Summer Research Assistantship, Rice University, 2003–2007.

Dean of Natural Sciences Travel Award, Rice University, 2004, 2006, 2007.

Tennessee State Finalist, Rhodes Scholarship, November 2002.

Louis Knifely Mathematics Scholarship Award, University of Tennessee at Martin, May 2002.

### **References**

Research: John Hempel	Rice University	<a href="mailto:hempel@rice.edu">hempel@rice.edu</a>	(713)-348-5126
Robert Hardt	Rice University	<a href="mailto:hardt@rice.edu">hardt@rice.edu</a>	(713)-348-3280
Teaching: Anne Papakonstantinou	Rice University	<a href="mailto:apapa@rice.edu">apapa@rice.edu</a>	(713)-348-6076
Lissa Heckelman	Rice University	<a href="mailto:heckel@rice.edu">heckel@rice.edu</a>	(713)-348-4727