

# MICHAEL (BRAD) HENRY

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## EDUCATION

### Washington University in St. Louis, St. Louis, Missouri

- Ph.D., Mathematics, expected August 2009  
Advisors: Rachel Roberts and Joshua Sabloff
- A.M., Mathematics, December 2005

### University of Texas at Austin, Austin, Texas

- Visiting graduate student. Fall 2006 - Spring 2007

### Augustana College, Rock Island, Illinois

- A.B., *Summa cum Laude*, May 2003  
Majors: Mathematics, Computer Science/Mathematics, Minor: Philosophy

## FELLOWSHIPS, SCHOLARSHIPS, AND HONORS

### Washington University in St. Louis

- Dissertation Fellowship, Fall 2008 - Spring 2009
- NSF Research Fellowship, Fall 2006 - Spring 2008
- GAANN Fellowship, Fall 2004 - Spring 2006
- University Fellowship, Fall 2003 - Spring 2004

### Augustana College

- President's Scholar, 1999-2003, full tuition to those who "have demonstrated exemplary academic performance in a challenging academic program, as well as outstanding out-of-classroom involvement, good character and citizenship."
- A. W. Williamson Award, 2003, an award given annually to one graduating mathematics major.
- Earl Beling Scholar in Mathematics, 2002, an opportunity to do undergraduate research with Prof. Thomas Bengtson and present that research at the 2003 MAA Mathfest.

**Phi Beta Kappa**, Zeta of Illinois Chapter, inducted Spring 2003

**Pi Mu Epsilon**, Eta of Illinois Chapter, inducted Spring 2003

## RESEARCH

**Interests:** Low-dimensional topology, Legendrian knot theory, contact topology, Legendrian invariants, generating families, contact homology.

AMS 2000 Subject Classification: 57M, 57R, 53D

**Ph.D. Dissertation:** Invariants of Legendrian knots and surfaces from generating families.

## PRESENTATIONS AND TALKS (ORGANIZED BY AUDIENCE)

### Researchers and Graduate Students:

Selected talks from 2003-2008, 19 total.

- “Extending the normal ruling invariant to Legendrian surfaces”  
American Institute of Mathematics, Fall 2008
- “Generating families, normal rulings and Legendrian knots”  
Washington University Combinatorics and Topology Seminar, Spring 2008
- “The Jones polynomial as an Euler characteristic of a knot homology invariant”  
Washington University Graduate Organized Seminar, Fall 2007
- “Open books, fibered links and the Murasugi sum”  
University of Texas at Austin Junior Topology Seminar, Spring 2007

### Undergraduates, Middle School Students, and Middle School Educators:

Selected talks from 2002-2008, 9 total.

- “How to Play (and Win) Connect Four”  
Washington University Math Circles, Fall 2008
- “The Difficult Task of Ensuring Fair Elections”  
Washington University Teachers’ Circle, Spring 2008
- “Mathematical Elegance in an Art Museum”  
Washington University Undergraduate Math Club, Fall 2007
- “The Illustrated Analyst”  
Mathfest MAA Student Presenter, Burlington, Vermont, Summer 2002

## CONFERENCES ATTENDED

Legendrian and Transverse Knots Workshop, American Institute of Mathematics, September 2008

Illinois Indiana Symplectic Geometry Conference, IUPUI, March 2008

Geometry and the Imagination, Bill Thurston’s 60th birthday conference, Princeton, June 2007

Low Dimensional Topology Summer School, IAS/Park City Mathematics Institute, July 2006

Mathfest, MAA National Meeting, Boulder, Colorado, August 2003

Illinois MAA Section Meeting, Illinois College, March 2003

Mathfest, MAA National Meeting, Burlington, Vermont, August 2002

## TEACHING EXPERIENCE

**Instructor:** Duties included choosing textbooks, designing syllabi, writing and grading homework and exams, lecturing and leading class discussions, and holding office hours.

- *Math 309, Matrix Algebra*, Washington University, Summer 2007
- *Math 220, Finite Mathematics*, Washington University, Summer 2006.  
Co-taught with graduate student Scott Cook.

**Teaching Assistant:** Duties included leading recitation sections, grading quizzes and exams, and holding office hours.

- *Math 131, Calculus I*, Washington University, Fall 2004, Fall 2005

**Grader:** Duties included grading weekly homework sets.

- *Math 266, Mathematics for Elementary School Teachers*, Washington University, Spring 2005

**Math Education Research Assistant:** During the spring 2005 semester, I assisted Prof. David Kirshner of Louisiana State University in an evaluation study of the lab component of the Calculus II curriculum at Washington University. Duties included interviewing Calculus II students to determine their understanding of specific topics in the curriculum and writing assessment reports.

## EDUCATIONAL TRAINING

**Washington University Teaching Center Workshops**, Attendee.

- “Designing a Course,” Spring 2008
- “Teaching Today’s Undergrads,” Spring 2008
- “Teaching with Lectures,” Fall 2007
- “Teaching with Discussion Groups,” Fall 2007

**Graduate Teaching Seminar**, Attendee, Washington University, Spring 2004.

- A semester long course designed to introduce first-year graduate students to various teaching methods and the practicalities and logistics of teaching undergraduates.

## UNDERGRADUATE RESEARCH EXPERIENCE

**REU Participant**, University of Illinois at Urbana/Champaign, Summer 2002

- Participated in the REU in Geometric Visualization under the direction of program director Prof. George Francis and mentor Prof. Karen Shuman.
- Created *The Illustrated Analyst*, a piece of software that provides 3-dimensional, graphical information on a variety of functions, Fourier transforms, and convolutions.
- Presented the software at the 2002 MAA Mathfest conference.

## DEPARTMENT AND COMMUNITY SERVICE

**Advisory Board of Directors**, Board Member, PACE Universal, August 2008 - Present

- PACE Universal is a non-profit charitable foundation with the goal of educating girls in impoverished areas around Calcutta, India. <http://www.paceuniversal.com>

**Math Circles Outreach Program**, Presenter, Washington University, Fall 2008, Spring 2008, Fall 2007, Spring 2005

- The Math Circles program gathers middle school students from surrounding St Louis schools to explore interesting mathematics in an interactive environment.

**Math Teachers’ Circles Outreach Program**, Presenter, Washington University, Spring 2008

- Mathematicians and math educators lead discussion sections focused on developing critical thinking and problem solving skills. Participants are St Louis area middle school teachers.

**Proofreader**, July 2007 - March 2008

- Proofread the manuscript for J. Sabloff’s graduate text, “Invariants for Legendrian Knots from Contact Homology.”

**Combinatorics and Topology Seminar**, Organizer, Washington University, Spring 2008

- Scheduled speakers for a weekly meeting of department researchers in combinatorics and topology.

**Web Authors Guild**, President, Augustana College, Spring 2000 - Fall 2002

- The Web Authors Guild provides low cost web development services to non-profit organizations and free web authoring seminars. <http://www.augustana.edu/webguild/>