

## M. Kate Kearney

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**EDUCATION** *Indiana University*, Bloomington, IN  
PhD Mathematics, September 2011  
Advisor: Charles Livingston  
Thesis Title: *An Obstruction to Knots Bounding Mobius Bands in  $B^4$*   
MA Mathematics 2007

*Grinnell College*, Grinnell, IA  
BA Mathematics 2005  
Advisor: Emily Moore

**EMPLOYMENT** **Gonzaga University**, Spokane, WA  
Assistant Professor, 2014-present  
*Parental Leave (Fall 2017)*

**Louisiana State University**, Baton Rouge, LA  
VIGRE Postdoctoral Researcher, 2011-2014

**Indiana University**, Bloomington, IN  
Associate Instructor, 2005-2011

**RESEARCH INTERESTS** Geometric Topology, Knot Theory, Knot Concordance, Knotoids

- PUBLICATIONS**
- **Linking Number of Klein Links**, Steven Beres, Vesta Coufal, Kate Kearney, Ryan Lattanzi, and Hayley Olson, *submitted*
  - **Concordance Groups, Slice Knots and Ribbon Knots** chapter in *A Concise Encyclopedia of Knot Theory*, Kate Kearney, *CRC Press*, *accepted for publication*
  - **Knots Related by Knotoids**, Colin Adams, Allison Henrich, Kate Kearney, and Nicholas A. Scoville, *to appear in American Mathematical Monthly*, 2019
  - **A Classification of Klein Links as Torus Links**, Steven Beres, Vesta Coufal, Kaia Hlavacek, M. Kate Kearney, Ryan Lattanzi, Hayley Olson, Joel Pereira and Bryan Strub, *Involve: a Journal of Mathematics*, Vol. 11 (2018), No. 4, 609-624, <https://msp.org/involve/2018/11-4/p05.xhtml>
  - **Math Horizons Bookshelf: Creating Symmetry: The Artful Mathematics of Wallpaper Patterns**, by Frank A Farris, book review by M. Kate Kearney, *Math Horizons*, April 2016
  - **Stable Concordance Genus of Knots**, M. Kate Kearney, *New York J. of Mathematics* 20, (2014) 973-987, <http://nyjm.albany.edu/j/2014/20-47.html>
  - **The Concordance Genus of 11-crossing Knots**, M. Kate Kearney, *J. Knot Theory Ramifications* 22, 13 (2013), arxiv:1208.5059
  - **Unoriented Genus of Knots: An Obstruction to Knots Bounding Mobius Bands in  $B^4$** , M. Kate Kearney, *PhD Thesis*

**HONORS  
and  
AWARDS**

- **Project NExT National Fellow**, *Mathematics Association of America*, 2014
- **Project NExT Regional Fellow**, *Mathematics Association of America, Pacific Northwest Section*, 2014
- **Outstanding Research Award**, *First place in Math and Technology Category*, Women in Science Research Conference, Indiana University, March 2010
- **Rothrock Teaching Award**, Indiana University Mathematics Department, 2009
- **Hazel King Thompson Fellowship**, Indiana University Mathematics Department, 2005

**TEACHING  
EXPERIENCE**

**Gonzaga University, 2014-present:**

Fundamentals of Mathematics, Math 301 (2 sections, Spring 2016; 2 sections, Spring 2018; 2 sections, Spring 2019)  
Complex Variables, Math 417 (Spring 2019)  
Geometry, Math 341 (Fall 2014; Fall 2018)  
Discrete Structures, Math 231 (Spring 2017; 2 sections, Fall 2018)  
Calculus I, Math 157 (2 sections, Fall 2014; Summer 2016; Summer 2018)  
Ordinary Differential Equations, Math 260 (Summer 2018)  
Linear Algebra, Math 339 (Spring 2015, Spring 2018)  
Calculus III, Math 259 (2 sections, Spring 2017)  
Topology, Math 459 (Fall 2016)  
Calculus II, Math 258 (2 sections, Spring 2015; 2 sections, Fall 2016)  
Topics in Knot Theory, Math 361 (Spring 2016)  
Combinatorics and Graph Theory, Math 351 (Fall 2015)

**Louisiana State University, 2011-2014:**

Differential Geometry and Topology, 7550 (Spring 2014)  
Discrete Problem Solving, 2020 (Fall 2013)  
Geometry, 4005 (Spring 2013)  
Braids and Braid Groups, 7590 (Fall 2012)  
Introduction to Graph Theory, 4171 (Spring 2012)  
Calculus II, 1552 (Fall 2011)

**Indiana University, 2005-2010:**

Finite Mathematics, M118 (Fall 2010, Fall 2009, Fall 2008), and D116 (Spring 2008)  
Problem Solving, J110 (Summer 2010, Summer 2009, Summer 2008, Summer 2007)  
Precalculus, M025 (Spring 2008, Spring 2007)  
Precalculus with Trigonometry, M027 (Fall 2007, Fall 2006, Spring 2006, Fall 2005)

**UNIVERSITY  
and  
DEPARTMENTAL  
SERVICE**

• **Service to Gonzaga:**

Writing Enriched Teaching Circle, creator and coordinator (Fall 2018-present)  
SIRC Planning Committee (Fall 2018-present)  
Hiring Committee for Associate Vice President of Human Resources (Fall 2018)  
–Completed Search Committee training (Fall 2018)  
Faculty Senator for the Mathematics Department (Spring 2018-present)  
–Finance Committee (Fall 2018-present)  
–Subcommittee on Handbook Revisions on Reappointment and Tenure sections (Spring 2018-present)  
Taskforce on Innovative Teaching (2015-16)  
–Coordinator of the Teaching Squares program (Fall 2016)  
Core Executive Committee (2015-17)

- Subcommittee on Appeals (Spring/Summer 2016)
- Subcommittee on Course approval and Interface with Curriculum Committees (Spring 2015 and Fall 2015)
- Subcommittee on Student Transition to the New Core (Fall 2015)
- Member of the Herak Safety Committee (2014)
- LGBT Safe Space trained (2014)

- **Service to the Mathematics Department:**

- Student Research Committee, Chair (2018-present)
- New Faculty Mentor (Fall 2018-present)
- Departmental Assessment Committee (Fall 2018-present)
- Hiring Policies Committee (2017-present)
- Saturday Math Tutoring Program (2014-16, 2018-present)
- Hiring Committee for Lecturer Positions (Spring 2018)
- Spokane Regional Mathematics Colloquium (Spring 2018)
- Planning Committee for MAA Meeting (2015-17)
- Local Arrangements Coordinator for Section NeXT (2017)
- Hiring Committee for Tenure Track Position (Fall 2016)
- Hiring Committee for Lecturer Position (Summer 2016)
- Committee to Review the Mathematics Major, Chair (2016-2017)
- Advising Liaison for the New Core (2015-18)
- Putnam Exam (2014-2016)
- Math Club (2015)
- Math-Free Coffee Hour (2015)
- Core Assessment Committee for Coordinating Math Proposals (2014)
- Core Assessment Group for Math 157 - Calculus (2014)
- co-Liaison for Education (2014, 2018-present)
- co-Liaison to the Career Center (2014)

- **Service to the Mathematics Community:**

- MAA Committee on Early Career Mathematicians (2018-present)
- Mentor Facilitator for ECM and Project NExT mentoring: Iowa, PNW, and Rocky Mountain sections (2018)
- Co-organizer of a panel discussion on Hiring Policies and Procedures, *PNW-MAA NExT meeting, Seattle University* (April 2018)
- Co-organizer of Special Session on Mathematics, *SIRC, Whitworth University* (April 2016)
- Co-organizer of Special Session on Junior Faculty Research, *PNW-MAA meeting, Oregon State University* (April 2016)
- Co-coordinator for Project NExT Sessions, *Mathfest, Washington DC* (August 2015)

**TALKS  
and  
PRESENTATIONS**

- **Mastery Based Testing in Calculus**, Innovative Teaching Methods session, MAA-PNW Sectional Meeting, Seattle University, April 2018
- **Linking Number of Klein Links**, Junior Faculty Research session, MAA-PNW Sectional Meeting, Seattle University, April 2018
- **The Stable Concordance Genus of Knots**, Special Session on Women in Topology, AMS-MAA Joint Math Meetings, Atlanta, January 2017
- **Knots, Concordance, and Genus** Cascade Topology Seminar, Seattle University, November 2016

- **An Obstruction to Bounding Mobius Bands in  $B^4$**  Junior Faculty Research Session, MAA-PNW Sectional Meeting, Oregon State University, April 2016
- **Coloring Book Mathematics** Spokane Regional Mathematics Colloquium, Gonzaga University, February 2016
- **Stable Concordance Genus of Knots** Special Session on Knots in Washington (State), AMS-MAA Joint Math Meetings, Seattle, January 2016
- **The Stable Concordance Genus** Special Session on Interactions Between Knots and Manifolds, AMS Sectional Meeting, San Francisco State University, October 2014
- **The Stable Concordance Genus** Junior Faculty Research Session, MAA-PNW Sectional Meeting, University of Montana, June 2014
- **The Stable Concordance Genus** Knots in Washington, George Washington University, January 2014
- **An Obstruction to Bounding Mobius Bands in  $B^4$** , Special Session on Algebraic Structures Motivated by Knot Theory, AMS-MAA Joint Meetings, Baltimore, January 2014
- **The Concordance Genus and Stable Concordance Genus** Lloyd Roeling UL-Lafayette Mathematics Conference, University of Louisiana-Lafayette, November 2013
- **Knots and Concordance** Mathematics seminar, Grinnell College, November 2013
- **The Concordance Genus of Knots** Colloquium, UL-Lafayette, November 2012
- **The Concordance Genus of 11-Crossing Knots**, AMS Sectional meeting, Tulane, October 2012
- **An Obstruction to Bounding Mobius Bands in  $B^4$** , Program for Women and Mathematics, Institute for Advanced Study, May 2012
- **An Obstruction to Bounding Mobius Bands in  $B^4$** , AMS Sectional meeting, Tampa, March 2012
- **Knot Invariants of Interest**, BRYTRR, Louisiana State University, January 2012
- **Concordance Genus of Knots**, USTARS, University of Iowa, April 2011
- **Concordance Genus of Knots**, Women in Mathematics Symposium Poster Session, Institute for Pure and Applied Mathematics, February 2011
- **Obstructions to a Knot Bounding a Mobius Band in  $B^4$** , Rice University Topology Seminar, January 2011
- **Concordance Genus of Knots**, AMS special session on Differential Topology, AMS-MAA Joint Meetings, New Orleans, January 2011
- **Obstructions to a Knot Bounding a Mobius Band in  $B^4$** , University of Iowa Topology Seminar, December 2010
- **Concordance Genus of Knots**, Knot Concordance and Homology Cobordism Workshop, Wesleyan University, July 2010
- **Knot Genera**, Graduate Student Topology Conference, University of Michigan, April 2010
- **Concordance Genus of Knots**, Women in Science Research Conference, Indiana University, March 2010

- **A Knotty Group**, Summer Program for Women in Math Reunion, AMS-MAA Joint Meetings, San Francisco, January 2010
- **The Concordance Genus of 11-Crossing Knots**, Women in Science Research Conference, Indiana University, March 2009
- **Analysis Situs: A discussion of Poincare's Homology 3-sphere**, Graduate Student Topology Conference, University of Illinois at Urbana-Champaign, March 2008

**SEMINAR  
PARTICIPATION**

- Spokane Regional Mathematics Colloquium (2014-2018)
- Virtual Topology Seminar, LSU (2011-2014)
- Junior Topology Seminar, LSU (2011-2014)
- GEAX Program for incoming Graduate Students, LSU (2013)
- Math Circle Summer Program, LSU (2012, 2013)
- Topology Seminar, Indiana University (2005-2011)
- Graduate Student Seminar, Indiana University (2010-2011)
- Math Seminar, Grinnell College (2003-2005)

**CONFERENCES,  
WORKSHOPS,  
and  
SUMMER  
SCHOOLS**

- PNW NExT Workshop, MAA Sectional Meeting, Seattle University, April 2018
- PNW NExT Workshop, MAA Sectional Meeting, Gonzaga University, June 2017
- AMS-MAA Joint Meetings, Atlanta, January 2016
- Cascade Topology Seminar, Seattle University, November 2016
- PNW NExT Workshop, MAA Sectional Meeting, Oregon State University, April 2016
- AMS-MAA Joint Meetings, Seattle, January 2016
- Project NExT Workshop, MAA Mathfest, Washington DC, August 2015
- Project NExT Workshop, AMS-MAA Joint Meetings, San Antonio, January 2015
- Project NExT Workshop, MAA Mathfest, Portland, August 2014
- PNW NExT Workshop, MAA Sectional Meeting, University of Montana, June 2014
- AMS-MAA Joint Meetings, Baltimore, January 2014
- Lloyd Roeling UL Lafayette Mathematics Conference, University of Louisiana-Lafayette, November 2013
- AMS-MAA Joint Meetings, San Diego, January 2013
- AMS Sectional Meeting, Tulane University, October 2012
- CAST (Contact and Symplectic Topology) Summer School and Conference, Renyi Institute of Mathematics, Hungary, July 2012
- Moab Topology Conference, Utah State University - Moab, May 2012
- Program for Women and Mathematics (at the Institute for Advanced Study), May 2012
- AMS Sectional Meeting, Tampa, March 2012
- Baton Rouge Young Topologists Research Retreat (co-organizer), Louisiana State University, January 2012
- AMS-MAA Joint Meetings, Boston, January 2012

- Tech Topology Conference, Georgia Institute of Technology, December 2011
- Swiss Knots, Thun, Switzerland, May 2011
- USTARS, University of Iowa, April 2011
- Women in Mathematics Symposium, Institute for Pure and Applied Mathematics, February 2011
- AMS-MAA Joint Meetings, New Orleans, January 2011
- Concordance, Wesleyan University, July 2010
- Low-Dimensional Topology and Categorification, Stony Brook University, June 2010
- Graduate Student Topology Conference, University of Michigan, April 2010
- Introductory Workshop: Homology Theories of Knots and Links, Mathematical Sciences Research Institute, January 2010
- Connections for Women: Homology Theories of Knots and Links, Mathematical Sciences Research Institute, January 2010
- AMS-MAA Joint Meetings, San Francisco, January 2010
- First National Forum for Young Topologists, Tulane University, November 2009
- Graduate Student Topology Conference, University of Wisconsin-Madison, April 2009
- Knots in Washington, the George Washington University, January 2009
- AMS-MAA Joint Meetings, Washington DC, January 2009
- Program for Women and Mathematics (at the Institute for Advanced Study), May 2008
- AMS Sectional Meeting, Indiana University, April 2008
- Graduate Student Topology Conference, University of Illinois, Urbana-Champaign, March 2008
- AMS Sectional Meeting, Miami University of Ohio, March 2007
- Graduate Student Topology Conference, University of Chicago, March 2007
- Midwest Topology/Opera Conference, Indiana University, October 2006
- Graduate Student Topology Conference, Indiana University, April 2006

**PROFESSIONAL  
SERVICE  
and  
OUTREACH**

- **Saturday Math Tutoring** (2014-present)  
*I help run free math tutoring sessions for 1-12 grade students on Gonzaga's campus on Saturday mornings. The tutoring is primarily provided by Gonzaga students, with assistance from faculty as needed. As a faculty assistant, I help match students with tutors, help with tutoring on busy days, organize worksheets and other materials, and assure that the program is running smoothly.*
- **Science outreach at Herzog Family Center** (2017-2018)  
*I have offered supplemental scientific programming at Herzog Family Center, a local daycare and preschool facility where my kids attend school. In summer of 2017 I presented to two classes about astronomy in honor of the solar eclipse. In summer 2018 I assisted several teachers and other parents in hosting a science fair for the kids at the center.*

- **Co-organizer of the Gold ‘14 sessions for the Project NExT Workshop at Mathfest (2015)**  
*With Jeb Collins of West Texas A&M University, I organized the Gold ‘14 sessions for the Project NExT Workshop at Mathfest. After gathering feedback from the Gold ‘14 cohort, Jeb and I chose the topics for the workshop aimed at addressing challenges common to new faculty in Mathematics. We then coordinated a team of 24 Project NExT Fellows to organize six sessions, on topics ranging from “Teaching Students of Mixed Abilities” to “Preparing a Tenure Portfolio”.*
- **Co-organizer of the Baton Rouge Young Topologists Research Retreat (2012)**  
*With Moshe Cohen I organized a research workshop for young topologists held in Baton Rouge in January 2012. We hosted six visitors and had eight local participants. The workshop was focused on providing an environment for young mathematicians to share their research and to study new projects together. We spent the week discussing a variety of topics relating to the dimer construction of the Alexander polynomial and possible consequences or related results.  
URL: <http://web02.gonzaga.edu/faculty/kearney/BRYTRR/index.html>*
- **Math Friend and Reading Friend with the Volunteers in Public Schools in Baton Rouge (2011-2014)**  
*The Volunteers in Public Schools program in Baton Rouge connects local volunteers with programs in the public schools where they can help. I work with two of their programs, EveryOne Counts and EveryBody Reads, which match volunteers with students to work with them on math and reading (resp.). I meet weekly with two students and work with them on projects of my own design.*
- **Co-organizer of Sonia Kovalevsky High School Mathematics Day (2009)**  
*Sonia Kovalevsky High School Mathematics Day is an event hosted at many schools nation wide and sponsored by the Association for Women in Mathematics. We invited high school women from schools in Bloomington and across Indiana to come to campus for a day and participate in activities designed to introduce them to concepts from higher mathematics. We focused on topology and geometry. Activities included workshops on both topics and a lecture from Shelly Harvey (Rice University). Our main goal was to increase awareness of opportunities in mathematics for the young women invited.*
- **Organizer of Women in Math Welcome Luncheon (2006-2010)**  
*Each fall the Indiana University Mathematics Department sponsors a welcome luncheon for new women in the graduate program. The luncheon is intended to encourage support and community amongst the women in the department.*
- **Supervisor for the Preschool Exploration Center at Monroe County Library (2008-2011)**  
*The Preschool Exploration Center is an area of the library designed to facilitate the development of reading, writing, and numerical skills in young children. It is open to the general public during library hours and includes educational games, toys and activities. In my work as a supervisor for the center, I keep the room clean and functional, and interact with both children and parents to help them use the room effectively.*

- **Student Educational Policies Committee**, Member (2003-2005) and Chair (2005), Mathematics Department, Grinnell College

*The Student Educational Policies Committees are the vehicle at Grinnell College for student involvement in academic policy for the department and the school. As a member I participated in faculty hiring and faculty review processes, helped in the planning stages for a major addition to the science building, and helped plan department social activities.*

**WEBSITE**

<http://web02.gonzaga.edu/faculty/kearney/>