

# ELIZABETH J DENNE

## CURRICULUM VITAE 2022

### CURRENT ADDRESS

Washington & Lee University  
Department of Mathematics  
Lexington VA 24450  
Email: [dennee@wlu.edu](mailto:dennee@wlu.edu) Phone: (540) 458-8064  
<https://elizabethdenne.academic.wlu.edu/>

**CITIZENSHIP** (dual) USA and Australia.

### POSITIONS HELD

**Professor** June 2022 – present  
Washington & Lee University, Department of Mathematics  
**Associate Professor** June 2015 – May 2022  
Washington & Lee University, Department of Mathematics  
**Assistant Professor** July 2012 – May 2015  
Washington & Lee University, Department of Mathematics  
**Assistant Professor** July 2007 – June 2012  
Smith College, Department of Mathematics & Statistics  
**Benjamin Peirce Assistant Professor** July 2004 – June 2007  
Harvard University, Department of Mathematics

### ACADEMIC DEGREES

**Ph.D. Mathematics** University of Illinois, Urbana-Champaign. Aug. 1998 – May 2004  
Thesis Advisor: Professor John M. Sullivan  
Thesis Title: *Alternating Quadriseccants of Knots*  
**B.Sc. (Hons)** University of Sydney, Australia. First class Honours. Feb. 1993 – Dec. 1997  
Thesis Advisor: Dr Donald Cartwright  
Honours Thesis: *The Uniformization Theorem for Riemann Surfaces*

### RESEARCH

**Published** Also found on the [math arXiv](#)

- (1) *Quadriseccants give new lower bounds for Ropelength*, with Y. Diao, J.M. Sullivan. *Geometry and Topology* **10** (2006), 1–26
- (2) *Convergence and Isotopy for Graphs of Finite Total Curvature*, with J.M. Sullivan. In *Discrete Differential Geometry*, Birkhäuser, (2008). 163–174
- (3) *The distortion of a knotted curve*, with J.M. Sullivan. *Proc. Amer. Math. Soc.* **137** (2009) no. 3, 1139–1148
- (4) [Knots, Molecules and the Universe: an Introduction to Topology](#), with Erica Flapan & 17 other members of the Undergraduate Faculty Program at PCMI (July 2011). This is an introductory undergraduate textbook on topology. American Mathematical Society, 2016.

- (5) *Ribbonlength of folded ribbon unknots in the plane*, with Mary Kamp, Rebecca Terry and Xichen (Catherine) Zhu. Published in the AMS Contemporary Mathematics Vol 689: *Knots, Links, Spatial Graphs, and Algebraic Invariants*, edited by E. Flapan, Allison Henrich, A. Kaestner, and S. Nelson (2017) 37–51. <http://dx.doi.org/10.1090/comm/689/13855>
- (6) *Quadriseccants and essential secants of knots: with applications to the geometry of knots*. Published in *New directions in Geometric and Applied Knot Theory*, edited by Simon Blatt, Philipp Reiter, and Armin Schikorra. De Gruyter (2018).
- (7) *Folded Ribbon Knots in the Plane* has been published in the *Encyclopedia of Knot Theory* edited by Colin Adams, Erica Flapan, Allison Henrich, Louis Kauffman, Lew Ludwig, and Sam Nelson. Published by CRC/Taylor & Francis (2020).
- (8) *The Mathematics of Tie Knots*, with C. Joireman, Allison Young. Published in *Involve*, Vol. 14 (2021) No. 2, pp 241–270. DOI: [10.2140/involve.2021.14.241](https://doi.org/10.2140/involve.2021.14.241)
- (9) *Ribbonlength and crossing number for folded ribbon knots*. Published in *Journal of Knot Theory and Its Ramifications*, Vol. 30, No. 4, 2150028 (2021) DOI: [10.1142/S0218216521500280](https://doi.org/10.1142/S0218216521500280)
- (10) *Configuration Spaces, Multijet Transversality, and the Square-peg Problem*, with Jason Cantarella and John McCleary. Published in the Illinois Journal of Mathematics vol. 66, no. 3 pages 385–420, September 2022. <https://doi.org/10.1215/00192082-10120454>
- (11) *Families of similar simplices inscribed in most smoothly embedded spheres*, with Jason Cantarella and John McCleary. Published in Forum of Mathematics, Sigma, Volume 10, 2022, e101. DOI: <https://doi.org/10.1017/fms.2022.88>
- (12) *Ribbonlength of families of folded ribbon knots*, with J.C. Haden, T. Larsen. Published in *Involve, a journal of mathematics* 15-4 (2022), 591–628. DOI [10.2140/involve.2022.15.591](https://doi.org/10.2140/involve.2022.15.591)

### Accepted

- (1) *Linking number and folded ribbon unknots*, with Troy Larsen. Accepted by the Journal of Knot Theory and its Ramifications (Nov 22, 2022). Preprint [arXiv:2208.03239](https://arxiv.org/abs/2208.03239) (math GT) 36 pages, 21 figures.

### Submitted

- (1) *Square-like quadrilaterals inscribed in embedded space curves*, with J. Cantarella and J. McCleary. Preprint: [ArXiv: 2103.13848](https://arxiv.org/abs/2103.13848) (11 pages, 2 figures).

### In Preparation

- (1) *Quadriseccants and unknotting number of knots*. In preparation.
- (2) *Structure and interpretation of the medial axis in  $\mathbb{R}^2$* , with J.M. Sullivan and N. Wrinkle. In preparation.
- (3) *Ribbonlength for knot diagrams*, with J.M. Sullivan and N. Wrinkle. In preparation.

### Unpublished

- (1) *Alternating Quadriseccants of Knots*. Preprint <https://arxiv.org/abs/math/0510561> (37 pages, 22 figures).
- (2) *On the Total Curvature of a Nonplanar Knotted Curve* by Istvan Fàry. Translated from French. Original paper: Sur La Courbure Totale D'une Courbe Gauche Faisant un Noeud. Bull. Soc. Math. France. Vol 77, 1949 128–138.
- (3) *An Elementary Geometric Property of Links and Knots* by Erika Panwitz. Translated from German (with Thomas Kuhnt). Original paper: Eine elementargeometrische Eigenschaft von Verschlingungen und Knoten. Math. Annal. 108 (1933), 629–672.

### 3D MATH VISUALIZATION

**Thingiverse:** The files for all my 3D printed mathematical models can be found at

<http://www.thingiverse.com/dennedesigns/>

**Blog:** *Visions in Math* <http://mathvis.academic.wlu.edu/>

Entries describe how models were made, including how design & print problems were solved.

**Webpage:** <https://elizabethdenne.academic.wlu.edu/mathematical-visualization/>

Contains a description of all 3D printed models, instructions files on how to make models, *Mathematica* notebooks, etc.

#### Math, Art and Museum Exhibitions:

- (1) **Taping Shape 2.0: Why Knot?** at the Fleet Science Center, San Diego, CA (Feb 22 – Sep 30, 2018). Co-developed this mathematical museum exhibit about knots and topology.
- (2) **Taping Shape** exhibit at the Rueben H. Fleet Science Center in San Diego, California (Jan 30 – Sep 5, 2016). Created the Schwarz P surfaces, Schwarz P soap film frame, and Pair-of-pants surfaces.
- (3) *Technical Tools for 3D Printing* January 5, 2017. MAA Invited Paper Session at the Joint Math Meetings, Atlanta GA. About 30 different models from my Calculus II, Multivariable Calculus, Geometry & Topology, and Knots & Links collections.
- (4) *Unknot Conference III*, at Dennison University, Ohio, Jul 31 – Aug 3, 2016. About 30 different models from my Calculus II, Multivariable Calculus, Geometry & Topology, and Knots & Links collections.
- (5) *Illustrating Mathematics, ICERM* (Institute for Computational and Experimental Research in Mathematics) at Brown University, Providence RI, Feb 25 – Mar 6, 2016. About 25 different models from my Calculus II, Multivariable Calculus, Geometry & Topology, and Knots & Links collections.

#### Outreach

- (1) July 2020 Advisor and mentor for BEAM's career days. **BEAM (Bridge to Enter Advanced Mathematics)** is an organization dedicated to bringing underserved students into advanced mathematics.
- (2) June 2020 Interviewed by Kevin Hartnett from Quanta Magazine about new work on the *inscribed rectangles problem*. Comments found in [New Geometric Perspective Cracks Old Problem About Rectangles](#).
- (3) *Meet the Mathematician* at Fleet Science Center, San Diego CA (Feb 23, 2018). I talked to the general public about the mathematics behind the Taping Shape 2.0 exhibit.
- (4) Double Helix STEAM school in Athens GA (Apr 27, 2016). I gave a short talk titled *Different kinds of geometry*, then spent the rest of the class helping the students build a paper model of a hyperbolic plane.
- (5) *Meet the Mathematician* at the Fleet Science Center, San Diego CA (April 17, 2016). I talked to the general public (everyone from toddlers to grandparents) about mathematics, topology and minimal surfaces.

#### GRANTS and AWARDS

- Summer 2013 – 20, 2022 **Lenfest Grant** for faculty research, Washington & Lee University.
- June 2019 **co-PI** with Armin Schikorra (U Pittsburgh, where the grant is based), Simon Blatt (U Salzburg) and Philipp Reiter (U Georgia, Athens) on \$50,000 **NSF conference grant** to support graduate students and postdocs to attend BAGEL19, a two week summer school and

- conference at the IMA (Institute for Mathematics and its Applications) Minneapolis MN, June 17 – 28, 2019.
- Nov. 2014 **co-PI** on a **Simons Center for Geometry and Physics Grant** to hold a workshop I co-organized titled *Symplectic and Algebraic Geometry in the Statistical Physics of Polymers* at the center during October 12–16, 2015.
  - Spring 2010 **Picker Fellowship** for faculty research, Smith College.
  - Summer 2008 **AWM Mentoring Fellowship**. Association for Women in Mathematics.
  - Spring 2004 **Bourgin Fellowship**. Math Department, University of Illinois, Urbana-Champaign. Awarded to top student in topology or geometry.
  - April 2002 **Liberal Arts and Sciences Award for Excellence in Undergraduate Teaching**. University of Illinois, Urbana-Champaign. (Awarded to 6 out of 1000 LAS College TAs.)
  - May 2000 **Mathematics Instructional Award** for excellence in teaching, UIUC.
  - Dec. 1994 **Placed on Dean's Honour List** in the Faculty of Science, University of Sydney.
  - Dec. 1994 **Barker Scholarship Number 1** awarded to the student with the best results in two of either Statistics or Pure and Applied Mathematics, University of Sydney.

## THESES and RESEARCH EXPERIENCES for UNDERGRADUATES

- **Research Experiences**
  - **Washington & Lee University**
    - Summer 2020 John Carr Haden '22, Troy Larsen '22 on *Minimizing ribbonlength for folded ribbon knots*.
    - Summer 2018 Corinne Joireman '21, Allison Young '20 on *Knot theory and tie knots*.
    - Summer 2015 Emily Jaekle '16, Ryan McDonnell '17 on *Mathematics & 3D printing*.
    - Summer 2014 Mary Kamp '15, Xichen Zhu '17 on *Folded ribbon knots in the plane*.
  - **Previous institutions**
    - Fall 2011 Smith College. Eleanor Conley, Emily Meehan, Rebecca Terry on *Folded ribbon knots in the plane*.
    - Summer 2009 Smith College. Shivani Aryal, Shorena Kalandarishvili, on *Knots and flat-ribbons*.
    - Summer 2005 & 2006 Harvard University. Advisor to Gerardo con Diaz, a Mellon Mays Undergraduate Fellow, on *Knots and supercrossing number*.
    - Summer 2001 & 2002 mentor at Illimath 2001 & 2002, Mathematics Department, University of Illinois, Urbana-Champaign.
- **Honors Thesis advisor Smith College**
  - Emma Schlatter. (Smith '10) *Knot theory and classifying 3-manifolds*.
  - Regin McNeill. (Smith '08) *Knots and the Alexander Polynomial*.
- **Special Studies advisor Smith College** — both reading courses and research experiences.
  - Spring 2011 Viktoria Pardey. *Advanced Algebraic Topology*.
  - Fall 2009 Emma Schlatter, Nicole Vitale. *Introduction to Algebraic Topology*.
  - Spring 2008 Rosanna Speller. *The Minimum Distance Energy of Knots*.

## TEACHING

**Washington & Lee University** July 2012 – present.

- Math 101 Calculus I (Fall 2018, 2019, 2022)
- Math 102 Calculus II (Fall 2012, 2014, 2016, 2017; Winter 2013, 15, 20, 22, 23)
- Math 221 Multivariable Calculus (Fall 2012, 2013, 2017, 2021; Winter 2016)
- Math 222 Linear Algebra (Fall 2016, Winter 2018, 2023)
- Math 301 Fundamental Concepts of Mathematics (Spring 2015, 2017, 2019)
- Math 309 Probability (Fall 2018)
- Math 310 Statistics (Winter 2019)
- Math 311 Real Analysis (Fall 2013, 2019, 2022)
- Math 341 Introduction to Topology (Fall 2014)
- Math 342 Modern Geometry (Winter 2013, 2019)
- Math 343 Geometry (Winter 2020, Fall 2021)
- Math 345 Calculus on Manifolds (Winter 2015, 2018)
- Math 393 Topics in Geometry (Winter 2022)
- Math 401 GRE preparation course (Fall 2012, 2013, 2014, 2016, 2017, 2021)
- Math 401 Introduction to Knot Theory (Winter 2017)

**Smith College.** July 2007 – June 2012.

- Math 114 Calculus II (Fall 2007, 2008; Spring 2008, 2012)
- Math 211 Introduction to Linear Algebra (Fall 2009; Spring 2008, 2009, 2011)
- Math 212 Multivariable Calculus (Fall 2008)
- Math 225 Advanced Calculus (Spring 2009, 2011, 2012)
- Math 301 Research for Undergraduates (Fall 2011)
- Math 342 Introduction to Topology (Fall 2007, 2009)
- Math 342 Introduction to Differential Geometry (Fall 2011)
- Math 343 Differential Topology (Spring 2010)

**Harvard University.** July 2004 – June 2007.

- Introduction to Knot Theory (Spring 2007)
- Calculus on Manifolds (advanced calculus/differential geometry) (Fall 2004, 2006)
- Math 25: Honors Multivariable Calc, Analysis & Linear Algebra (AY 2005–06)
- Introduction to Linear Algebra (Spring 2005, Fall 2006)
- Multivariable Calculus (Fall 2004)

**University of Illinois, Urbana-Champaign.** Aug. 1998 – May 2004.

- Instructor with full responsibility for classes: Calculus I (one semester), Calculus II (three semesters), Multivariable Calculus taught (one semester) using *Calculus & Mathematica* and (three semesters) at Unit One Allen Hall (providing a small liberal arts college environment within UIUC).

## SERVICE

- **Washington & Lee University** Department of Mathematics
  - AY 2021-23 Course Scheduling Committee for the Mathematics Department
  - AY 2021-23 Colloquium Chair for the Mathematics Department
  - Winter 2022 Member of the subcommittee to review Math 201 prerequisites
  - Winter 2014 – present Maintain the Math Department's webpage & Facebook page

- AY 2020-21 Job search committee (1 tenure-track & 1 visiting assistant professor)
- AY 2019-20 Colloquium Chair for the Mathematics Department
- Fall and Winter 2019 Job search committee for Target of Opportunity Hire & 1 visiting assistant professor
- AY 2018-19 Colloquium Chair for the Mathematics Department
- Winter 2018 Data collector for FM courses and Algebra/Analysis courses
- AY 2017-18 Job search committee (1 tenure-track & 1 visiting assistant professor)
- Winter 2017 Committee for 10 year review
- AY 2014-15 Colloquium chair for the Mathematics Department
- Spring 2014 Job search committee (2 visiting assistant professors)
- Winter 2013 Job search committee (2 tenure-track assistant professors)
- Winter 2013 Calculus textbook committee
- July 2012 Job search committee (1 visiting assistant professor)
- **Washington & Lee University** University service
  - AY 2018-2023 Faculty Mentor to new faculty
  - AY 2021-2023 Co-organizer of WiMSE (Women in Math, Science and Engineering) faculty cohort
  - AY 2021-2026 Member of Academic Calendar, Scheduling & Registration Committee
  - AY 2021-2022 Member of the Peer Mentor Working Group
  - AY 2021-2022 Member of Fellowships Committee (1 year sabbatical replacement)
  - Summer 2021 Member of the Advising Team for incoming first year students.
  - AY 2019-2020 Member of UCICC (University Committee on Inclusiveness and Campus Climate)
  - March 2013, 2017, 2018, 2019, 2020 Faculty interviewer for the Johnson Scholarship Competition
  - AY 2018-2019 Co-organizer of WiMS (Women in Math and Science) faculty cohort
  - AY 2018-2019 Member of UCICC (University Committee on Inclusiveness and Campus Climate)
  - AY 2018-2019 Member of the SSA (Science, Society and the Arts) organizing committee
  - AY 2018-2019 Member of the Public Functions Committee
  - AY 2017-2018 Co-organizer of WiMS (Women in Math and Science) faculty cohort
  - AY 2014/15 Member of the W&L Historic Preservation Committee
- **Smith College** Department of Mathematics & Statistics.
  - July 2007 – June 2012 Advising premajor, major and postbac students.
  - July 2007 – June 2012 Career and graduate school advising
  - May 2011 – June 2012 Calculus Placement Tool: responsibility for editing & maintaining the tool, education in its use, and studies on effectiveness of tool.
  - Fall 2011 Chair committee on text and curriculum for Calculus I.
  - Spring 2011, Fall 2011 Coordinator of interdepartmental discussions on the curriculum: including updates on course changes, and coordinating course offerings.
  - Fall 2011, Spring 2012 Organizer invited lectures for faculty.
  - Spring 2011, Fall 2011 Coordinator refurbishing the math forum and classrooms.
  - Spring 2010 Calculus subcommittee on Calculus II students, curriculum and text.
  - Fall 2009, 2011, Spring 2010, 2011 Minute Taker Departmental meetings.

- July 2007 – June 2011 Course Assignment Committee.
- Fall 2009, Spring 2010 Steering Committee on the Curriculum included: department-wide survey on teaching & curriculum, and long term planning.
- Spring 2008 – Spring 2010 Departmental representative consulting with architects on remodeling Sabin-Reed/Burton Hall. Department of Mathematics & Statistics.
- Fall 2008, 2009 Organizer *Life as a graduate student* session for the Women in Math in New England conferences, Smith College, MA.
- Fall 2008 Committee on refurbishing the math forum.
- **Harvard** Mathematics Department.
  - June 2005 – June 2007 Assistant to the Director of Graduate Studies.
  - August 2005 and 2006 Coordinator of the Graduate student orientation session.
  - Spring 2005, 2006, 2007 Member of the Graduate Admissions Committee.
- **University of Illinois, Urbana-Champaign** Mathematics Department.
  - Spring 2002 Organizer Graduate Student Research Seminar.
  - Spring 2001, 2002 Member then Chair of the TA Teaching Awards Committee.
  - Fall 2000, Spring 2001 Student Representative Graduate Affairs Committee.

## PROFESSIONAL ACTIVITIES and SERVICE

July 2007 – present **Referee** for articles in various mathematics journals. These include:

Algebraic and Geometric Topology, Journal of Geometry Geometry and Topology, Topology and its Applications, Journal of Knot Theory and its Ramifications, Kobe Journal of Mathematics, Involve – a Journal of Mathematics, Rose Hulman Undergraduate Mathematics Journal.

Jan 2014 – Jan 2020 **Member** of the editorial board for the Dolciani book series at the Mathematical Association of America.

June 17 – 28, 2019 **Co-organizer** of BAGEL, a two week summer school and conference on Geometry and Knot Theory held at the Institute for Mathematics and its Applications, Minneapolis, MN.

January 16–19, 2019 **Co-organizer** of Not Knerds: a Community for Knot Theory an AMS Special Session titled held at the Joint Mathematics Meeting in Baltimore MD.

Mar. 2017 **Co-organizer** of a special session on *Knot Theory and its Applications* at the AMS sectional meeting, College of Charleston, Charleston SC.

Jan. 2017 **Co-organizer** of a Mathematical Association of America Invited Paper session on *Technical tools for 3D printing*, at the Joint Mathematics Meeting, Atlanta GA.

Oct 2015 **Co-organizer** of a weeklong workshop *Symplectic and Algebraic Geometry in the Statistical Physics of Polymers* at the Simons Center for Geometry and Physics, NY.

The other organizers are Professors Jason Cantarella, Alexander Grosberg, Tetsuo Deguchi and Clayton Shonkwiler.

Nov 2014 **Co-organizer** Special session on *Knot Theory and its Applications*, at the fall southeastern AMS sectional meeting, Greensboro NC.

Spring 2013 **Reviewer** for a book proposal for Edward Dunne at the AMS.

Fall 2009 **Co-organizer** Geometry and Topology seminar UMass, Amherst.

## PROFESSIONAL SOCIETIES

Aug. 1998 – present **American Mathematical Society**  
Aug. 2001 – present **Association for Women in Mathematics**  
Aug. 2004 – present **Mathematical Association of America**  
July 2016 – June 2017 **Society for Industrial and Applied Mathematics**

## LETTERS OF REFERENCE

Professor Alan McRae: Washington & Lee University [McRaeA@wlu.edu](mailto:McRaeA@wlu.edu)  
Professor John McCleary: Vassar College [mccleary@vassar.edu](mailto:mccleary@vassar.edu)  
Professor Colin Adams: Williams College [Colin.Adams@Williams.edu](mailto:Colin.Adams@Williams.edu)  
Professor Cliff Taubes: Harvard University [chtaubes@math.harvard.edu](mailto:chtaubes@math.harvard.edu)

## INVITED TALKS — conferences

Oct 15, 2022 **Applied Knot Theory** AMS Special Session at the University of Tennessee at Chattanooga, Chattanooga, TN. *Linking number and folded ribbon unknots*

Jan 8, 2021 **Invariants of Knots and Links** AMS Special Session at the virtual Joint Mathematics Meetings. *Crossing number and ribbonlength of folded ribbon knots.*

November 23–27, 2020 **Nonlocal Analysis and the Geometry of Embeddings**, a hybrid mini-workshop at Oberwolfach, Germany. *Ribbonlength of folded ribbon knots.*

October 10–11, 2020. **Special Session on Applied Knot Theory** at the virtual AMS sectional meeting, formerly Chattanooga, TN. *Ribbonlength and crossing number of folded ribbon knots.*

July 19-21, 2019 **UnKnot IV**, University of Washington, Bothell, WA.  
*The Mathematics of tie knots.*

Jan 19, 2019 **Not KNERds: a Community for Knot Theory** AMS Special Session at the Joint Mathematics Meetings in Baltimore MD. *Folded ribbon knots in the plane.*

Nov 3, 2018 **Geometry of Curves and Applications** special session of the AMS sectional meeting in Arkansas. *The mathematics of tie knots.*

Sept 15, 2018 **WINRS (Women’s Intellectual Network Research Symposium)** held at UVA, Charlottesville VA. I gave a workshop: *3D Printing and Illustrating Mathematics.*

July 17–20, 2018 **33rd Summer Conference on Topology and its Applications** held in Bowling Green Kentucky. *Folded ribbon knots in the plane.*

Jan. 2017 **Technical Tools for 3D printing**, an MAA Invited Paper Session at the Joint Mathematics Meeting, Atlanta, GA. *Using Cinema 4D to create Calculus models.*

Sep. 2016 **Enhancing Mathematical Learning with 3D printing**, SIAM ED 16 Conference, Philadelphia, PA. *Calculus, Topology and 3D printing.*

July 2016 **Unknot III Conference** Dennison University, Ohio.  
*Folded Ribbon Knots in the Plane: undergraduate research problems.*

Apr. 2016 **Knots in the Triangle** North Carolina State University, NC.  
*Smooth Ribbon Knots in the Plane*

Nov. 2015 **Knots and Spatial Graphs 2015** KAIST, Daejong, Korea.  
*Folded Ribbon Knots in the Plane.*

Oct. 2015 **AMS Sectional Meeting** California State University, Fullerton CA  
Special Session on Algebraic and Combinatorial Structures in Knot Theory.  
*Folded Ribbon Knots in the Plane.*

Aug. 2015 **Geometric Energies with Links to Applications, Topology and Open problems.**  
Workshop on Knots in Theory and in the Sciences University of Basel, Switzerland.



- Folded ribbon knots in the plane.*
- Aug 2015 **Mathfest 2015** Washington D.C.  
 What Can a Mathematician Do with a 3D printer? Themed contributed session.  
*Topology, Calculus, and 3D visualization.*
- Mar. 2014 **Curvature, Applications, Knots, Energies Conference** Max Plank Institute in  
 Leipzig, Germany. *Flat ribbons for knot diagrams.*
- Aug. 2013 **Mathfest 2013** Hartford, CT.  
 Open and accessible problems in knot theory session — *Folded ribbon knots in the plane.*
- Aug. 2012 **Knots and Spatial Graphs 2012** KAIST, Daejeon, Korea.  
*Quadriseccants of knots and links, and Quadriseccants and the geometry of knots.*
- July 2012 **UnKnot Conference** Denison University, Granville, OH.  
*Folded ribbon knots in the plane.*
- Jan. 2012 **Configuration spaces, braids and applications** mini-conference Tulane University,  
 New Orleans LA. *Transversality theorems for configuration spaces and applications to  
 the square-peg problem.*
- Jan. 2012 **Joint Math Meetings** Boston, MA.  
*Transversality Theorems and applications to the square-peg problem.*
- Sept. 2011 **AMS Sectional Meeting** Wake Forest University, Winston-Salem, NC.  
 Geometric Knot Theory Special Session — *Square-pegs and Inscribed Polygons.*
- March 2011 **Topological Problems in Molecular Biology Conference** Iowa City, IA.  
*Flat ribbon links in  $\mathbb{R}^2$  and the medial axis.*
- Jan. 2011 **Joint Math Meetings** New Orleans, LA.  
 AMS Special Session on Measures of Entanglement — *Flat ribbon links in  $\mathbb{R}^2$ , an update.*
- April 2010 **AMS Sectional Meeting** Macalester College, St Paul, MN.  
 Physical Knotting and Linking Special Session — *Flat ribbon links in  $\mathbb{R}^2$ .*
- July 2009 **Unknot Conference** Denison University, Granville, OH.  
*How much string do you need to tie your shoelaces?*
- Sept. 2008 **AMS Sectional Meeting** Wesleyan University, Middletown CT.  
 Low dimensional topology Special Session — *Further results on the square-peg problem.*
- Nov. 2007 **AMS Sectional Meeting** Murfreesboro, Tennessee.  
 Physical Knots and Links Special Session — *Further results on the square-peg problem.*
- May 2007 **Southeast Geometry Seminar** Georgia Institute of Technology, Atlanta GA.  
*The distortion of a knotted curve.*
- Oct. 2006 **AMS Sectional Meeting** Cincinnati, OH.  
 Knot Theory Special Session — *Convergence and isotopy type of knotted graphs.*
- Mar. 2005 **AMS Sectional Meeting** Bowling Green, KY.  
 Knot Theory and its Applications Special Session — *The distortion of knotted curves.*
- Mar. 2004 **AMS Sectional Meeting** Tallahassee, FA.  
 Knot Theory Special Session — *Quadriseccants give new lower bounds for ropelength.*
- Jan. 2004 **AMS Joint Meeting** Phoenix, AZ.  
 Low-Dimensional Topology Special Session — *Geometric knot theory.*
- Apr. 2002 **Southeast Geometry Conference** University of Georgia, Athens, GA.  
*Quadriseccants of Knots.*

**INVITED TALKS — colloquia and seminars**

Oct. 2022 **Algebraic and Geometric Topology Seminar**, Tulane University, New Orleans, LA.  
 Mar. 2022 **Geometry/Topology Seminar**, UC Davis, CA.  
 Aug. 2021 **Knots and Representation Theory seminar**, Moscow, Russia.  
 May 2021 **Knot Theory Graduate Seminar** by Ian Agol, UC Berkeley, CA.  
 Apr. 2016 **Geometry & Topology seminar** University of Georgia, Athens, GA.  
 Apr. 2016 **Mathematics Colloquium** Vassar College, Poughkeepsie NY.  
 Apr. 2016 **Mathematics Colloquium** San Diego State University, San Diego, CA.  
 Oct. 2015 **Geometry & Topology seminar** and **SUMS seminar** at North Carolina State University, Raleigh, NC.  
 Feb. 2015 **Geometry Seminar** at University of Virginia, Charlottesville, VA.  
 Apr. 2014 **Geometry Seminar** University of Georgia, Athens, GA.  
 Apr. 2012 **Mathematics Colloquium** Wellesley College, Wellesley MA.  
 Mar. 2012 **Geometric Topology Seminar** Columbia University, New York NY.  
 Oct. 2009 **Mathematics Colloquium** Central Connecticut State University, Hartford CT.  
 July 2009 **Prime Time Talk** Hampshire College Summer Studies in Mathematics, Hampshire College, MA.  
 Apr. 2009 **Topology et al. seminar** Wesleyan University, Middletown CT.  
 Dec. 2008 **Geometry Seminar** University of Massachusetts, Amherst MA.  
 Dec. 2007 **Geometry and Topology seminar** Dartmouth College, Hanover NH.  
 Apr. 2007 **Geometry and Topology seminar** Toronto University, Toronto Canada.  
 Dec. 2006 **Gauge Theory and Topology seminar** Harvard University, Cambridge MA.  
 Nov. 2006 **Geometry Seminar** University of Georgia, Athens, GA.  
 Oct. 2006 **Geometry Seminar** University of Connecticut, Storrs, CT.  
 Oct. 2006 **Valley Geometry Seminar** University of Massachusetts, Amherst, MA.  
 Mar. 2006 **Topology Seminar** Brown University, Providence, RI.  
 Nov. 2005 **Topology Seminar** Brandeis University, Boston, MA.  
 Oct. 2005 **Geometric Topology Seminar** Columbia University, New York, NY.  
 Sept. 2005 **Topology Seminar** Yale University, New Haven, CT.  
 Aug. 2005 **VIGRE seminar** University of Georgia, Athens, GA.  
 Oct. 2004 **Gauge Theory and Topology Seminar** Harvard University, MA.  
 Oct. 2004 **Colloquium** Vassar College, Poughkeepsie, NY.  
 April 2004 **Geometric Potpourri Seminar** University of Illinois, Urbana-Champaign, IL.  
 April 2004 **Graduate Student Seminar** University of Illinois, Urbana-Champaign, IL.  
 Sept. 2003 **Geometric Potpourri Seminar** University of Illinois, Urbana-Champaign, IL.  
 Feb. 2003 **VIGRE Seminar and Geometry Seminar** University of Georgia, Athens, GA.

## RESEARCH PROGRAMS & WORKSHOPS

Sep. 2019 **Invited participant** at the [Illustrating Geometry and Topology](#) workshop at ICERM (Institute for Computational and Experimental Research in Mathematics), Brown University, Providence RI.  
 June 2016 **Invited Participant:** Workshop on *Illustrating Mathematics* at ICERM (Institute for Computational and Experimental Research in Mathematics), Brown University, Providence, RI.  
 Oct. 2015 **Co-organizer:** Workshop on *Symplectic and Algebraic Geometry in the Statistical Physics of Polymers* at the Simons Center for Geometry and Physics, Stony Brook University.

Dec. 2013 **Invited Participant:** *Workshop on Topological Structures in Computational Biology*  
Institute for Mathematics and its Applications, Minneapolis, MN.

April 2013 **Invited Participant:** *Workshop on Geometric Knot Theory.*  
Institute for Mathematical Research, Oberwolfach, Germany.

July 2011 **Participant:** *Park City Mathematics Institute* Undergraduate Faculty Program, UT.

Spring 2010 **Participant:** *Homology Theories of Knots and Links program* MSRI, Berkeley, CA.  
Visited program regularly, and attended the three conferences: Connections for Women,  
Introductory Workshop, and Research Workshop.

May 2007 **Invited participant:** *The Mathematics of Knotting and Linking in Polymer Physics  
and Molecular Biology* workshop at Banff International Research Station, Banff Canada.

Jan. 2006 **Invited participant:** *Moduli spaces of knots* ARCC workshop  
American Institute of Mathematics, Palo Alto, CA.