Curriculum Vitae

Shelly Harvey
Department of Mathematics
Rice University
Herman Brown Hall 446
shelly@rice.edu http://math.rice.edu/~shelly

Appointments

Associate Dean for Academic Affairs in the Wiess School of Natural Sciences (Deputy in 26-27) beginning July 1, 2026. Professor, Rice University, 2016–present.
Associate Professor, Rice University, 2009–2016.
Assistant Professor, Rice University, 2005–2009.
C.L.E. Moore Instructor, Massachusetts Institute of Technology, 2002–2005 (on leave 2002–2003).
National Science Foundation Mathematical Sciences Postdoctoral Research Fellow
- · Massachusetts Institute of Technology, 2003-2005.
- · University of California at San Diego, 2002–2003.

Education

Ph.D. Mathematics, Rice University, May 2002.
B.S. Mathematics, California Polytechnic State University, San Luis Obispo, June 1997.

Honors, Special Lectures, and Fellowships

2026 Rice University Marjorie Corcoran Award for the advancement of women and underrepresented minorities in STEM.
2025 Plenary speaker for the Nebraska Conference for Undergraduate Women in Mathematics, January 31 – February 1, 2025.
2021 International plenary speaker, WIMSIG (Women in Mathematics Special Interest Group of the Australian Mathematical Society) Conferenence 2021, a Celebration of Women in Australian Mathematical and Statistical Sciences, October 1, 2021.
2014 Simons Fellow in Mathematics
2012 Fellow of the American Mathematical Society (inaugural class)
2011 Invited Address, AMS Southeastern Sectional Meeting in Winston-Salem, NC
2010 Member of Mathematical Sciences Research Institute, Berkeley, CA
Program: Homology Theories of Knots and Links, spring semester
2008 NSF Faculty Early Career Development (CAREER) Award
2006 Alfred P. Sloan Fellow
2004 FEW Distinguished Lecturer, University of Pennsylvania
2002 NSF Mathematical Sciences Postdoctoral Research Fellow
2002 Finalist for the American Institute of Mathematics Postdoctoral Research Fellowship

Research Support

National Science Foundation Grant (Principal Investigator), Knot and link concordance, DMS-2109308, 2021–2024 (no cost extension until 2026).
National Science Foundation Grant (Principal Investigator), RTG: Building Communities in the Mathematical Sciences at Rice University, DMS-1745670, 2019–2024 (no cost extension until 2026).
National Science Foundation, 2022 Texas Women in Math Symposium (Principal Investigator), 2022 Texas Women in Math Symposium (conference grant), DMS–2139109, 2021–2022.
National Science Foundation Grant (Principal Investigator), Knot Concordance and Metric Spaces, DMS-1613279, 2016–2019.
National Science Foundation Grant (Principal Investigator), Noncommutative and Heegaard Floer

Methods in Low-Dimensional Topology, DMS-1309070, 2013–2016.
National Science Foundation Grant (Principal Investigator), 3-Manifolds: Heegaard Splittings, the Curve Complex, and Hyperbolic Geometry (conference grant), DMS-1308209, 2013–2014.
National Science Foundation Grant (Principal Investigator), CAREER: Algebraic Methods in Low-Dimensional Topology, DMS-0748458, 2008–2013.
National Science Foundation Grant (Principal Investigator), Applications of Noncommutative Algebra to Low-Dimensional Topology, DMS-0539044, 2005–2008.
National Science Foundation Mathematical Sciences Postdoctoral Research Fellow, University of California at San Diego, 2002-2003, MIT 2003–2005, NSF DMS-0202488.

Member of the following professional organizations

1. American Mathematical Society (AMS) – a non-profit professional organization whose aim is to further the interests of mathematical research and scholarship through its publications, meetings, advocacy and other programs.

2. Association for Women in Mathematics (AWM) – a non-profit professional organization whose mission is to create a community in which women and girls can thrive in their mathematical endeavors, and to promote equitable opportunity and treatment of women and others of marginalized genders and gender identities across the mathematical sciences.

3. National Association of Mathematics (NAM) – a non-profit professional organization in the mathematical sciences whose mission and purpose is to promoting excellence in the mathematical sciences and promote the mathematical development of all underrepresented minorities.

4. Spectra – the association for LGBTQ+ Mathematicians.

Research Publications and Preprints

1. Concordance to boundary links and the solvable filtration (with C. Davis and J.H. Park), submitted (2023), arXiv:2305.11268
2. Co-rank of weakly parafree 3-manifold groups (with E. Tweedy),*Groups Geom. Dyn*, Volume 14, Issue 1, 2020, pp. 25–39.
3. The Geometry of Knot Concordance Spaces (joint with T. Cochran), *Algebr. Geom. Topol.*, Volume 18, Number 5 (2018), 2509–2540.
4. Heegaard Floer Homology of Spatial Graphs (joint with D. O'Donnol), *Algebr. Geom. Topol.* 17 (2017), 1445–1525.
5. Grope Metrics on the Knot Concordance Set (joint with T. Cochran and M. Powell), *J. Topol.* 10 (2017), 669–699.
6. The Geometry of the Knot Concordance Space (joint with T. Cochran), Workshop on "Algebraic Structures in Low-Dimensional Topology," *Oberwolfach Reports*, Volume 11, Issue 2 (2014), 1428.
7. Filtering Smooth Concordance Classes of Topologically Slice Knots (joint with T. Cochran and P. Horn), *Geom. Topol.* 17 (2013), 2103–2162.
8. Higher-order Signature Cocycles for Mapping Class Groups and Homology Cylinders (joint with T. Cochran and P. Horn), *Int. Math. Res. Not. IMRN* (2012), no. 14, 3311–3373.
9. Combinatorial Spatial Graph Floer Homology (joint with D. O'Donnol), Workshop on "Four-Dimensional Manifolds," *Oberwolfach Reports*, Volume 9, Issue 2 (2012), 1740–1743.
10. 2-Torsion in the n-Solvable Filtration of the Knot Concordance Group (joint with T. Cochran and C. Leidy), *Proc. London Math. Soc.*, (3) 102 (2011), no. 2, 257–290.
11. Primary Decomposition and the Fractal Nature of Knot Concordance (joint with T. Cochran and C. Leidy), *Mathematische Annalen* Math. Ann. 351 (2011), no. 2, 443–508.
12. Derivatives of Knots and Second-Order Signatures (joint with T. Cochran and C. Leidy), *Algebr. Geom. Topol.*, 10 (2010), 739–787.
13. Homological Stability of Series of Groups (joint with T. Cochran), *Pacific J. Math.*, Vol. 31 (2010), No. 1, 31–47.
14. Knot Concordance and Higher-Order Blanchfield Duality (joint with T. Cochran and C. Leidy), *Geom. Topol.* 13 (2009), no. 3, 1419–1482.

15. On Transverse Knots and Branched Covers (joint with K. Kawamuro and O. Plamenevskaya), *Int. Math. Res. Not. IMRN* (2009), no. 3, 512–546.
16. Link Concordance and Generalized Doubling Operators (joint with T. Cochran and C. Leidy), *Algebr. Geom. Topol.*, 8 (2008), 1593–1646.
17. Homology and Derived p-Series of Groups (joint with T. Cochran), *J. Lond. Math. Soc.*, Vol. 8 part 3 (2008), 677–692.
18. Homology Cobordism Invariants and the Cochran-Orr-Teichner Filtration of the Link Concordance Group, *Geom. Topol.*, Vol. 12 (2008), 387–430.
19. Homology and Derived Series of Groups II: Dwyer's Theorem (joint with T. Cochran), *Geom. Topol.*, Vol. 12 (2008), 199–232.
20. Non-commutative Multivariable Reidemeister Torsion and the Thurston Norm (joint with S. Friedl), *Algebr. Geom. Topol.*, Vol. 7 (2007), 755–777.
21. New Phenomena in Knot and Link Concordance (joint with T. Cochran and C. Leidy), Workshop on "Four-Dimensional Manifolds," *Oberwolfach Reports*, Volume 3, Issue 3 (2006), 2154–2157.
22. Monotonicity of Degrees of Generalized Alexander Polynomials of Groups and 3-Manifolds, *Math. Proc. Cambridge Philos. Soc.* 140 (2006), no. 3, 431–450.
23. Homology and Derived Series of Groups (joint with T. Cochran), *Geom. Topol.*, Vol. 9 (2005) no. 49, pp. 2159–2191.
24. Higher-Order Polynomial Invariants of 3-Manifolds Giving Lower Bounds for the Thurston Norm, *Topology*, Vol. 44, Iss. 5 (2005), 895–945.
25. On the Cut Number of a 3-Manifold, *Geom. Topol.*, Vol. 6 (2002) Paper no. 15, pp. 409-424.

Other Publications

1. Tim Cochran (joint with J. E. Grigsby, K. Orr, and D. Ruberman), *J. Knot Theory Ramifications* Vol. 26, Issue 2 (2017) pp. 1–6.
2. A Research Experience for Undergraduates (joint with A. Ritter), *Notices*, Vol. 45, No. 2 (1998) pp. 267-269.

Papers in Preparation

1. Link solvability, strong algebraic slicessness, and Blanchfield forms (with C. Leidy)
2. Jones and Alexander nullities of links
3. Pure braids and filtrations of the link concordance group (with J. Park, and A. Ray)
4. Tower Metrics on the Smooth Concordance Space of Knots (with T. Cochran, M. Powell, and A. Ray), in preparation.

Research Students and Postdoctoral Fellows

Graduate students, thesis advisor

1. Carolyn Otto, Ph.D. 2011 – The (n)-solvable filtration of the link concordance group and Milnor's invariants.
2. Taylor Martin, Ph.D. 2013 – Lower order solvabilty of links.
3. Taylor McNeill, Ph.D. 2013 – A new filtration of the Magnus kernel.
4. Katherine Poulsen, Ph.D. 2016 – Tau invariants of spatial graphs.
5. Jung Hwan Park, Ph.D. 2017 – Derivatives of genus one and three knots.
6. Anthony Bosman, Ph.D. 2017 – Shake slice and shake concordant links.
7. Miriam Kuzbary, Ph.D. 2018 – Link concordance and groups.
8. Sarah Seger, Ph.D. 2018 – Lower order solvability, Seifert forms, and Blanchfield forms of links.
9. Shawn Williams, Ph.D. 2022 – Extensions of the Fox-Milnor conditions for knots and links.
10. Alex Manchester, Ph.D. 2024 – Satellite constructions and topological concordance.
11. Brennan Richardson, Ph.D. expected 2029 – TBA.

Postdoctoral fellows and instructors, career mentor

1. Keiko Kawamuro, G.C. Evans Instructor, 2006–2009.

2. Elena Pavelescu, G.C. Evans Instuctor, 2008–2011.
3. Danielle O'Donnol, G.C. Evans Instructor, 2008–2011.
4. Prudence Heck, VIGRE Lovett Instructor, 2009-2012.
5. Eamonn Tweedy, G.C. Evans Instructor, 2011–2014.
6. Ina Petkova, G.C. Evans Instructor, 2012–2015.
7. Allison Moore, RTG Lovett Instructor, 2013–2016.
8. David Krcatovich, G.C. Evans Instructor, 2014–2017.
9. Neil Fullarton, G.C. Evans Instructor, 2016–2018.
10. Allison Miller, NSF Postdoctoral Fellow and G.C. Evans Instructor, 2018 – present.
11. Jason Joseph, RTG Lovett Instructor, 2020 – 2023.
12. Nickolas Castro, Instructor, 2021 – present.

Graduate students, PhD thesis committee

1. Jamie Jorgenson, Ph.D. 2008 – Surface Homeomorphisms That Do Not Extend to Any Handlebody and the Johnson Filtration.
2. Peter Horn, Ph.D. 2009 – Higher-order Analogues of Genus and Slice Genus of Classical Knots.
3. Andrew Elliot, Ph.D. 2010 – State Cycles, Quasipositive Modification and Constructing H-thick Knots in Khovanov Homology.
4. Christopher Davis, Ph.D. 2012 – First Order Signatures and Knot Concordance.
5. Bridget Franklin, Ph.D. 2012 – Obstructions to the Concordance of Satellite Knot.
6. James Cooper, Ph.D. 2014 – Two mod-p Johnson filtrations.
7. Arunima Ray, Ph.D. 2014 – Casson towers and filtrations of the smooth knot concordance group.
8. Diego Vela, Ph.D. 2015 – Infection by a string link.
9. Kenan Ince, Ph.D. 2016 – The untwisting number of a knot.
10. Corey Bregman, Ph.D. 2017 – Automorphisms of nonpositively curved cube complexes, right-angled Artin groups, and homology.
11. Bilyana Tzolova, Ph.D 2025 (Computational Applied Mathematics & Operations Research, Rice) – Coupled flow and transport in an organ and its vasculature.

Graduate students, advanced exam or dissertation proposal committee

1. Raven Johnson (Computational Applied Mathematics & Operations Research, Rice)
2. Olivia Del Guercio
3. Bilyana Tzolova (Computational Applied Mathematics & Operations Research, Rice)
4. Tam Cheetham-West
5. Connor Sell
6. Will Stagner
7. Kenan Ince
8. Diego Vela
9. Arunima Ray
10. Bridget Franklin
11. Christopher Davis
12. Shuijing Li

Conferences and Meetings

1. Co-organizer of the special session on Knots, 3-manifolds, and Their Invariants at the JMM, January 2025.
2. Co-organizer of the special session on Early Career Showcase in Low-Dimensional Topology at the Joint Meeting of the New Zealand, Australian, and American Math Societies, December 2024.
3. Co-organizer for the workshop on "Mentoring in the Mathematical Sciences," Rice University, November 4–5, 2023,
4. Co-organizer for "Texas Women in Mathematics Symposium, " Rice University, February 5–6, 2022.
5. Co-organizer for AMS Special Session on "Knots, links, 3-manifolds,... and 4-manifolds" at the Joint Mathematical Meetings, January 2021 (postponed to April 2021, due to COVID).

6. Co-organizer of AIM workshop on "Distinguishing smooth concordance classes of topologically slice knots and links," June 3–7, 2019.
7. Co-organizer AWM biennial Research Symposium 2019, Rice University, April 6-7, 2019.
8. Lead organizer of "Topology in Dimension 3.5: A conference in memory of Tim Cochran," Rice University, June 1–4, 2016.
9. Member of the organizing committee for the AWM Research Symposium 2015, University of Maryland, College Park, April 11–12, 2015.
10. Co-organizer of the Special Session on Low-Dimensional Topology at the AWM Research Symposium, University of Maryland, College Park, April 11–12, 2015.
11. Co-organizer of the AMS Special Session on Knot Theory at the Joint Math Meetings, San Antonio, TX, January 12–13, 2015.
12. Co-organizer of "3-Manifolds: Heegaard Splittings, the Curve Complex, and Hyperbolic geometry" (in honor of John Hempel), Rice University, April 19-21, 2013.
13. Co-organizer of the Special Session on Low-Dimensional Topology at the AWM Research Symposium, Santa Clara, CA, March 16–17, 2013.
14. Co-organizer of the AMS Special Session on Knot Theory at the Joint Math Meetings, Boston, MA, January 4–7, 2012.
15. Co-organizer of the Special Session on Low Dimensional Topology and Geometry at the AMS Fall Southeastern Section Meeting, Wake Forest University, Winston-Salem, NC, September 24–25, 2011.
16. Co-organizer of the AMS Special Session on Knot Theory at the Joint Math Meetings, New Orleans, LA, January 8–9, 2011.
17. Co-organizer of the Special Session on Low Dimensional Topology at the AMS Fall Eastern Section Meeting, Middletown, CT, October 11–12, 2008.
18. Co-organizer of the Third Louisiana Texas Topology Retreat (LTTR) held at Rice University, February 9–10, 2008.
19. Co-organizer of the Second Louisiana Texas Topology Retreat (LTTR) held at Louisiana State University, February 3–4, 2007.
20. Co-organizer of the Fall 2006 Texas Geometry and Topology Conference (TGTC) held at Rice University, October 27–29, 2006.

Service to the Profession

1. Editor for the Proceedings of the American Mathematical Society, February 1, 2020 – January 31, 2029.
2. Member of the Association for Women in Mathematics (AWM) "Dissertation Award Selection Committee," March 7 2022 – January 31, 2025 (chair in 2024–2025).
3. Member of the Spectra Political Committee, 2022–2023.
4. Panelist for the Joint Committee on Women's panel "Intersectionality" at the AMS Joint Mathematics Meetings, January 6, 2022 (postponed due to COVID).
5. Editor for the Houston Journal of Mathematics, October 11, 2019 – October 10, 2024.
6. Member of the AMS Nominating Committee, January 1, 2017 – December 31, 2019
(chair of the committee from January 1, 2018 – December 31, 2018).
7. Panelist in the panel on "Recruitment, Retention, and Mentorship" at the TPSE (Transforming Post-Secondary Education in Mathematics) Workshop on Graduate Education – September 14, 2019.
8. AMS Representative to the Joint Committee on Women in the Mathematical Sciences, February 1, 2017 – January 31, 2020.
9. Panelist for the Mentoring Workshop for Graduate Advisors in Mathematics, University of Michigan, May 13–14, 2017.
10. Editor for a special issue of the Journal of Knot Theory and Its Ramifications in memory of Tim Cochran, Vol. 26, Issue 2 (2017).
11. Mentor for the AWM workshop at the AMS/MAA Joint Math Meetings, Boston, MA, January 6, 2012.
12. Member of the Project NExT panel, "Building a Tenure Portfolio," AMS/MAA Joint Math Meetings, Boston, MA, January 6 – 7, 2012.
13. Invited lecturer at More Examples of Groups, a NSF sponsored summer school to familiarize graduate students with classes of groups that appear in geometric group theory, Ohio State University, May 11–16,

2009. Gave two lectures on *Groups associated to knots and 3-manifolds.*
14. Mentor for the Association for Women in Mathematics Mentor Network, 2007-2008.
15. Inaugural Undergraduate Colloquium Speaker at University of Pennsylvania, October 2004, *Knot Theory and Twisting of 3-Dimensional Spaces.*
16. Mentor for the Student Teaching Mentoring Program at MIT, Fall 2003.
17. Invited speaker, Arkansas Women in Statistics and Mathematics, April 2003, *Becoming a successful woman in mathematics.*

Ongoing
18. Frequent panelist for the National Science Foundation
19. Refereed papers or given quick opinions for the following journals: Geometry and Topology, Journal of Topology, Mathematiche Annalen, Duke Mathematical Journal, Journal of the American Mathematical Society, Proceedings of the London Mathematical Society, American Journal of Mathematics, Algebraic and Geometric Topology, Transactions of the American Mathematical Society, Proceedings of the American Mathematical Society, Quantum Topology, Bulletin of the London Mathematical Society, Pacific Journal of Mathematics, and Nagoya Mathematical Journal.

Service to the University

Committees
1. Member of the Rice General Education Reform Committee, 2025 – 2027.
2. Member of the Faculty Senate and Executive Committee of the Faculty Senate, 2024 – present.
3. Ad hoc Convenor of Appeals and Grievances, fall 2025.
4. Teaching Professor Promotion Committee in the Natural Sciences, fall 2025.
5. Parliamentarian of Faculty Senate, 2024 –2025.
6. Co-Chair of the Faculty and Staff Benefits (University Committee), 2013 – 2014, 2020 – 2023.
7. Member of the Wiess School of Natural Sciences Diversity, Equity, and Inclusion (DEI) Committee, fall 2022 – spring 2023.
8. Member of the Wiess School of Natural Sciences Awards Committee, spring 2022 – spring 2023.
9. Mathematics department liason for an NSF funded project focused on NTT faculty and undergraduate STEM education at Rice, spring and fall 2022.
10. Member of the Graduate Council (University committee), 2019 – 2020.
11. Member of the Committee on Faculty and Staff Benefits (University committee), 2009 – 2014, 2015 – 2020.
12. Member of the Teaching Professor Committee in Natural Sciences, 2018, 2019.
13. Member of the Dean of the Wiess School of Natural Sciences Search Committee, 2013 – 2014.
14. Member of the NSF ADVANCE Recruitment Committee, 2010 – 2011.
15. Member of the NSF ADVANCE Retention and Climate Committee, 2007 – 2010.
16. Member of the Dean of the Wiess School of Natural Sciences Search Committee, 2007 – 2008.
17. Member of the NSF ADVANCE committee to establish a mentoring program, 2006 – 2007.

Other
18. Faculty sponsor for the Spectra Student Chapter, spring 2024 – present.
19. Faculty sponsor for the Queer Graduate Student Association, 2016 –2023.
20. Faculty sponsor of the Rice University Association of Women in Mathematics chapter, 2011 – 2014, 2015 – spring 2023 (on sabatical fall 2023).
21. External member of the CAAM Appointments committee, 2017–2018.
22. Faculty sponsor for the Gender and Sexually Diverse Graduates and Postdocs, 2015 – 2016.
23. Faculty mentor for the Rice Empowering Leadership Alliance, 2010–2014.
24. Faculty Associate of Brown College, 2006-2010.
25. Member of the Rice Ally Program, providing support to GLBT persons, 2005-present.
26. Freshman orientation week advisor, Fall 2006 and 2007.

Panels
27. Panelist for Joint Committee on Women Panel Discussion on Intersectionality at the JMM, April 2022 (postponed from January to April due to COVID).

28. Member of LGBTQ Professor in STEM Panel, February 19, 2019.
29. Panel member for the STEM Women's Lunch Series at Rice, November 28, 2016.
30. Panel member of the Rice University, Women in Science and Engineering panel on "Where are all the Women? A Panel Discussion on Gender Differences in Science and Engineering," February 23, 2012.
31. Panel member of the School of Natural Sciences Vision 2012 recruitment panel, February 13, 2012.
32. Panel member of the NSF ADVANCE workshop "Building Your Lab and Getting the Most from a Mentor" during the conference "Negotiating the Ideal Faculty Position," Fall 2006.

Service to the Department

1. Member of the Graduate Committee, fall 2005 – spring 2006, fall 2012 – spring 2013, fall 2021 – present.
2. Member of the Undergraduate Committee, 2025 – present.
3. Organizer of Current Mathematics Seminar, 2025 – present.
4. Member of the Appointments Committee, fall 2009 – spring 2014, fall 2015 – spring 2023.
5. Chair, Instructorship hiring committee, fall 2005 – spring 2012, fall 2021 – spring 2022.
6. Director of Graduate Studies, spring 2013 – spring 2014, fall 2015 – spring 2021.
7. Chair, Wolfe lectures committee, fall 2006 – spring 2007, fall 2018 – 2019.
8. Chair, Appointments Committee, 2018 – 2019.
9. Coordinator for the Women in Mathematics group, fall 2005 – spring 2011.
10. Chair, Bochner lectures committee, fall 2005 – spring 2009.

Service to the Community

1. Rice University School Math Project Advisory Board, 2015 – 2025.
2. Interviewed for Girls Math Camp podcast at Wake Forest University, July 2024.
3. Met and had lunch with undergraduate students (all women interested in STEM) in a Research Seminar funded by an MAA Tensor Grant at University of South Alabama, November 22, 2022.
4. Presenter in the West Harris County Branch AAUW Expanding Your Horizons in Science and Mathematics Workshop for middle school girls "All Tied up in Knots," February 2019, 2018, 2017, 2016, 2008, 2007, 2006. 2006
5. Panel member of "Preparing Students for Success in Mathematics; What Does It Take?" at the RUSMP 30th Anniversary Spring Networking Conference, February 6, 2016.
6. Director of the Rice University Mathematical Institute for Young Women; a summer math enrichment program for rising 10^{th} and 11^{th} grade girls from the greater Houston community, 2008-2013.
7. Gave an interactive presentation on "Rational Tangles," showing how simple arithmetic is related to the complex nature of knot theory, to a group of high school teachers from Galveston, TX, August 2011.
8. Panelist on the University and District-Level Panel at NSF and Rice sponsored Mathematics Leadership Institute Lessons Learned Conference, June 24, 2009, Pin Oak Middle School.
9. Presented lectures to the lead high school teachers on "Knot Theory," "Braid Theory," "Rational Tangles" at the NSF and Rice sponsored Mathematical Leadership Institute Summer Lecture Series, June 2005, June 2007 and June 2009.
10. Presenter in Rice University's Summer Math Days, a fun and educational program for all high school students entering grades 10-12, June 29– July 1, 2009. Title: All Tangled Up In Knots.
11. Plenary lecturer at the Sonya Kovalevsky High School Mathematics Day held at Indiana University, Bloomington, March 8, 2009.
12. Presented a lecture to 70 undergraduate and faculty at Sam Houston State University on "Knots in 4-Dimensional Space" in the Piney Woods Lecture Series (funded by the Tensor Foundation and the Mathematical Association of America) and met with prospective undergraduate women math majors at SHSU, September 12, 2007.

Invited Talks

1. Complexes of Surfaces in Low-Dimensional Topology at Casa Matemática Oaxaca, *Knot concordance and height n surfaces complexes*, May 18, 2026.

2. Colloquium, University of Melbourne Colloquium, *Obstructions to a knot being ribbon*, September 5, 2025.
3. Topology Seminar, University of Melbourne, *Algebraic concordance of boundary links*, September 1, 2025.
4. 2025 Plenary speaker for the Nebraska Conference for Undergraduate Women in Mathematics, *Jones vs Alexander nullity of links*, January 31 – February 1, 2025.
5. Texas Geometry and Topology Conference, *Metric spaces on concordance classes of knots*, Texas A&M, November 2024.
6. Plenary lecture at the Spectra Survey of Mathematics Conference 2024, *Musings on the ribbon-slice conjecture*, July 6–7, 2024.
7. Conference on Low-Dimensional Topology at Indian Institutes of Science Education and Research (IISER) Pune, India, *Ribbon obstructions for knots from the Jones nullity*, September 29, 2023.
8. (Inaugural speaker) Distinguished Lectures in Geometry and Topology, Rutgers Newark, *Linking in 4-dimensions*, February 28, 2023.
9. Colloquium speaker, University of South Alabama, *Linking in 3.5 Dimensions*, November 10, 2022.
10. Colloquium speaker, Weslayan University, *Knotting and linking in 4-dimensions*, October 20, 2022.
11. Topology Seminar, Louisiana State Univesity, *Knotting and linking in 4-dimensions*, Febuary 9, 2022.
12. Plenary speaker, WIMSIG (Women in Mathematics Special Interest Group of the Australian Mathematical Society) Conferenence 2021, a Celebration of Women in Australian Mathematical and Statistical Sciences, *Knotting and linking in 4-dimensions*, October 1, 2021.
13. Plenary speaker, 6th annual Graduate Student Conference in Algebra, Geometry, and Topology, *When are links concordant to boundary links*, May 21–22, 2021.
14. Geometry and Topology Seminar, Michigan State University, Deb 5, 2019, *Pure braids and link concordance.*
15. Colloquium, University of Iowa, November 29, 2018, *Pure braids and link concordance.*
16. Colloquium, University of San Diego, November 16, 2018, *Pure braids and link concordance.*
17. Colloquium, Dartmouth University, October 5, 2018, *Largeness of 3-manifold groups that resemble free groups.*
18. Topology Seminar, Dartmouth University, October 4, 2018, *A non-discrete metric on the group of topologically slice knots.*
19. Colloquium, University of Houston, September 26, 2018, *Fractal nature of the knots.*
20. Conference on The topology and geometry of low-dimensional manifolds: a celebration of the mathematics of Bob Gompf, University of Texas at Austin, July 15, 2018, *A non-discrete metric on the group of topologically slice knots.*
21. Conference on Topology in dimensions 3, 3.5, and 4: A conference in honor of Abby Thompson, Marty Scharleman, and Rob Kirby, University of California at Berkeley, June 27, 2018, *A non-discrete metric on the group of topologically slice knots.*
22. Colloquium, Monash University, Melbourne, Australia, March 15, 2018, *Fractal nature of the space of knotted curves.*
23. Topology Seminar, Monash University, Melbourne, Australia, March 14, 2018, *Largeness of 3-manifold groups that are close to being free.*
24. Colloquium, UC Berkeley, February 1, 2018, *Largeness of 3-manifold group that resemble free groups.*
25. "Virginia Topology Conference 2017: Hyperbolic 3-manifolds and beyond," University of Virginia, November 10-12, 2017, *Co-rank of 3-manifold groups G with $H_2(G) = 0$.*
26. Mini-Workshop on "Interactions between Low-dimensional Topology and Complex Algebraic Geometry" Mathematische Forschungsinstitut, Oberwolfach, Germany, October 22-28, 2017, *Pure braids, Whitney towers, and 0-solvability.*
27. Colloquium, Wesleyan University, October 5, 2017, *Co-rank of 3-manifold groups G with $H_2(G) = 0$.*
28. Topology Seminar, Wesleyan University, October 4, 2017, *Braids, gropes, Whitney towers, and solvability of links.*
29. Keynote speaker at the inaugural Texas Women in Mathematics Symposium, University of Texas at Austin, November 5, 2016, *Using gropes to define a non-discrete metric on the knot concordance group.*
30. Seminar on knot concordance and 4-manifolds, Hausdorff Research Institute for Mathematics, Bonn, Germany, October 24, 2016, *Cut number of homology handlebodies.*

31. Conference on 4-manifolds and knot concordance, Max-Planck-Institut für Mathematik, Bonn, Germany, October 20, 2016, *A rational valued metric on the knot concordance group coming from gropes.*
32. Special Session on Spatial Graphs, AMS Fall Western Sectional Meeting, Fullerton, CA, October 24, 2015, *Heegaard Floer homology of spatial graphs.*
33. Brandeis Topology Seminar, April 14, 2015, *A rational valued metric on the knot concordance group coming from gropes.*
34. Colloquium, Syracuse University, March 6, 2015, *A rational valued metric on the knot concordance group coming from gropes.*
35. UT Austin Topology Seminar, October 27, 2014, *A rational valued metric on the knot concordance group coming from gropes.*
36. Special Session on Knot Concordance and 4-Manifolds, AMS Fall Central Sectional Meeting, Eau Claire, WI, September 20, 2014, *The Geometry of knot concordance spaces.*
37. Plenary speaker at Knots and Low Dimensional Manifolds: a Satellite Conference of Seoul ICM 2014, August 24, 2014.
38. Workshop on "Algebraic Structures in Low-Dimensional Topology," Mathematische Forschungsinstitut, Oberwolfach, Germany, May 26 – 30, 2014, *The geometry of the knot concordance space.*
39. Special Session on Invariants in Low-Dimensional Topology, AMS Spring Eastern Sectional Meeting, Baltimore, MD, March 30, 2014, *Metric aspects of knot concordance.*
40. "Rolfsenfest" Conference on Low Dimensional Topology, Knots, and Orderable Groups in honor of Dale Rolfsen, Luminy-Marseille, France, July 1–5, 2013, *Non-commutative knot Floer homology.*
41. Midwest Topology Conference, Michigan State University, October 27, 2012, *Filtering smooth concordance classes of topologically slice knots.*
42. Michigan State University Topology Seminar, October 31, 2012, *Combinatorial spatial graph Floer homology.*
43. Special Session on Knot Theory and 4-Manifolds at the Fall AMS Central Sectional Meeting, Akron, OH, October 20, 2012. *Combinatorial spatial graph Floer homology.*
44. Special Session on Combinatorial Methods in Knot Theory at the Fall AMS Southeastern Sectional Meeting, Tulane University, New Orleans, LA, October 13, 2012, *Combinatorial Spatial Graph Floer Homology.*
45. Workshop on "Invariants in Low-Dimensional Topology and Knot Theory," Mathematische Forschungsinstitut, Oberwolfach, Germany, June 3 – 9, 2012, *Combinatorial spatial graph Floer homology.*
46. Colloquium, University of Iowa, May 3, 2012, *4-Dimensional equivalence relations on knots.*
47. Berkeley Topology Seminar, UC Berkeley, April 14, 2012, *Filtering smooth concordance classes of topologically slice knots.*
48. Columbia Symplectic Geometry, Gauge Theory, and Categorification Seminar, Columbia University, March 30, 2012, *Combinatorial spatial graph Floer homology.*
49. Special session on Low-Dimensional Topology at the 2012 AMS Spring Southeastern Sectional Meeting at the University of South Florida, Tampa, FL March 10 – 11, 2012, *Filtering smooth concordance classes of topologically slice knots.*
50. The Tech Topology Conference, Georgia Institute of Technology, December 9 – 11, 2011, *Filtering smooth concordance classes of topologically slice knots.*
51. Special session on Invariants in Knot Theory and Low-Dimensional Topology at the 2011 AMS Central Sectional Meeting in Lincoln, NE, October 2011, *Combinatorial Floer homology for spatial graphs.*
52. Invited Address, AMS Southeastern Sectional Meeting in Winston-Salem, NC, September 2011, *4-dimensional equivalence relations on knots.*
53. Special Session on Knots, Surfaces and 3-manifolds at the 2011 AMS Western Sectional Meeting in Las Vegas, NV, April 2011, *Filtering smooth concordance classes of topologically slice knots.*
54. Semi-plenary speaker at the 45^{th} Spring Topology and Dynamics Conference, Tyler, TX, March 2011, *Filtering smooth concordance classes of topologically slice knots.*
55. Knot Concordance and Homology Cobordism Workshop, Wesleyan University, July 19–23, 2010, *Towards a p-primary decomposition of the n-solvable quotients of the knot concordance group.*
56. Connections for Women: Homology Theories of Knots and Links at Mathematical Sciences Research Institute, Berkeley, CA, January 21–22, 2010, *Knot and Link Concordance.*

57. Los Angeles Joint Topology Seminar (at Caltech), December 4, 2009, *Filtrations of the Knot Concordance Group.*
58. Cascade Topology Seminar (bi-annual meeting), University of Oregon, October 24–25, 2009, *Torsion in the knot concordance group.*
59. 2009 Georgia International Topology Conference, May 18–29, 2009, *Torsion in the knot concordance group.*
60. More Examples of Groups, Ohio State University, May 11–16, 2009, *Groups associated to knots and 3-manifolds.*
61. 10^{th} annual CombinaTexas: Combinatorics in the South-central US conference, University of Houston, April 25–26, 2009, *A survey of knot theory and its combinatorial invariants.*
62. Colloquium, University of Indiana, Bloomington, March 7, 2009, *Subgroups of the mapping class group and higher-order signature cocycles.*
63. 2009 Spring Texas Geometry and Topology Conference, University of Houston, February 20–22, 2009, *Subgroups of the mapping class group and higher-order signature cocycles.*
64. Colloquium, University of California, Riverside, December 3, 2008, *Filtrations of the Knot Concordance Group.*
65. Topology Seminar, Brandeis University, November 11, 2008, *Signature Cocycles for the Torelli Group.*
66. Conference on "Fifty Years Since Fox and Milnor: A Conference on Knot Concordance in Honor of the Memory of Jerry Levine," Brandeis University, June 4, 2008, *Filtrations of the Knot Concordance Group.*
67. Special Session on Geometric Group Theory at the 2008 AMS Spring Southeastern Meeting, Baton Rouge, LA, March 30, 2008, *Higher-Order Signature Cocycles for Subgroups of the Torelli Group.*
68. Special Session on Knot and 3-Manifold Invariants at the 2008 AMS Spring Southeastern Meeting, Baton Rouge, LA, March 28, 2008, *The (n)-Solvable Filtration of the Knot Concordance Group.*
69. Topology Seminar, UT Austin, November 26, 2007, *Infinite Generation in the COT Filtration of the Knot Concordance Group.*
70. MIT Geometry Seminar, October 22, 2007, *Structure in the Knot Concordance Group.*
71. Colloquium, Weslayen University Math Department, October 18, 2007, *On the Enormity of the Knot Concordance Group.*
72. Columbia University Geometric Topology Seminar, October 12, 2007, *Knot Concordance and Blanchfield Duality.*
73. William Rowan Hamilton Geometry and Topology Workshop, Hamilton Mathematics Institute, Trinity College, Dublin, Ireland, September 7, 2007, *Iterated Torsion-Free Abelian Covers and L^2-Betti Numbers of 3-Manifolds.*
74. Workshop on 3-Manifold Geometry and Topology, Warwick Mathematics Institute, Coventry, England, July 10, 2007, *Homology and Derived p-Series of Groups.*
75. Geometric Topology Conference, Peking University, Beijing, China, June 19, 2007, *Classical Knot Concordance and Blanchfield Duality* .
76. University of Chicago Geometry and Topology Seminar, May 24, 2007, *Knot Concordance and Blanchfield Duality.*
77. Louisiana Texas Topology Retreat, February 3, 2007, *The (n)-Solvable Filtration of the Knot Concordance Group.*
78. Workshop on "4-Dimensional Manifolds," Mathematische Forschungsinstitut, Oberwolfach, Germany, August 7, 2006, *New Phenomena in Knot and Link Concordance.*
79. Conference on "Knots, Groups and 3-Manifolds," Marseille, France, May 22, 2006, *Group Theoretic Invariants of Links and 3-Manifolds.*
80. Workshop on "3-manifolds After Perelman," Edinburgh, Scotland, March 2006, *Group Theoretic Invariants of Links and 3-Manifolds.*
81. Plenary Lecture Series at the Third KAIST Geometric Topology Fair, Gyeongju, South Korea, June 2005, *I. Non-commutative Invariants of 3-manifolds giving Lower Bounds for the Thurston Norm II. Homology and Derived Series of Groups and Rank Invarants of Links III. Homology Cobordism of Invariants of Links and 3-manifolds via L^2-ρ Invariants.*
82. Conference on "Submanifolds, Singular Varieties and Stratified Spaces" in honor of Julius Shaneson, Courant Institute, March 2005, *Homology Cobordism of Manifolds and L^2-Signatures.*

83. Symplectic Geometry Seminar, Michigan State University, November 2004, *Homology Cobordism of 3-Manifolds.*
84. Conference on Low-Dimensional Topology, University of Virginia, Dec 2004, *Homology Cobordism of 3-Manifolds.*
85. Geometry and Topology Seminar, University of Pennsylvania, October 2004, *Homology and Derived Series of Groups.*
86. BIRS conference on Knots and Their Manifold Stories, May 2004, *Homology Equivalence of Groups and Spaces.*
87. University of Pennsylvania Topology Seminar, March 2004, *New Homology Cobordism Invariants.*
88. Brandeis University Topology Seminar, March 2004, *Homology and Derived Series of Groups.*
89. Rice University Colloquium, February 2004, *Homology Equivalence of Groups and Spaces.*
90. Harvard Gauge Theory Seminar, February 20, 2004, *Algebraic Invariants Obstructing Symplectic Structures.*
91. MIT Algebraic Topology Seminar, December 1, 2003, *HigherOrder Invariants of 3-manifolds.*
92. Brandeis University Topology Seminar, October 2003, *Invariants of 3-manifolds from Noncommutative Algebra.*
93. BIRS (Banff International Research Station) Conference on Topology in and Around Dimension Three, Banff, Canada, Sept 1318, 2003, *Invariants of 3-manifolds from Noncommutative Algebra.*
94. Midwest Geometry Conference, Washington University in St. Louis, May 2003, *Noncommuative generalizations of the Alexander Polynomial of a 3-manifold.*
95. University of Arkansas Spring Lecture Series, The AndrewsCurtis Conjecture and the Poincare Conjecture, April 2003, *Some remarks on the Virtual Betti Number of a 3manifold.*
96. University of California, Santa Barabara, Topology Seminar, February 2003, *Monotonicity of Some 3-manifold Invariants.*
97. Joint Caltech/USC Geometry and Topology Seminar , November 2002, *Higher-order Invariants of 3-manifolds with Applications to 3 and 4-manifolds.*
98. Wasatch Topology Conference, University of Utah, October 2002, *Some 3-manifold invariants and their applications to 4-manifolds.*
99. University of Illinois at Chicago Three Manifolds Seminar, October 2002, *Higher-order 3-manifold Invariants and their Applications.*
100. University of California at San Diego Topology/Geometry Seminar, September 2002, *Higher-Order 3-manifold Invariants and their Applications, Part I, II, III.*
101. ICM 2002 Beijing Satellite Conference in Geometric Topology, Shaanxi Normal University, Xi'an, China, August 2002, *Higher-Order 3-manifold Invariants with Applications to the Thurston Norm and Symplectic 4-manifolds.*
102. Ohio State University Topology Seminar, April 2002, *New Polynomial Invariants of 3-manifolds Using Noncommutative Algebra.*
103. Spring Topology and Dynamics Conference, University of Texas at Austin, March 2002, *On the Cut Number of a 3-manifold.*
104. University of Pennsylvania Geometry/Topology Seminar, February 2002, *New 3-manifold Invariants Giving Lower Bounds for the Thurston Norm.*
105. Columbia Geometric Topology Seminar, February 2002, *New 3-manifold Invariants Giving Lower Bounds for the Thurston Norm.*
106. University of Texas at Austin Geometry/Topology Seminar, February 2002, *A Resolution of the Cut Number Question.*
107. Brown University Colloquium, January 2002, *New 3-manifold Invariants with Applications to the Thurston Norm.*
108. AMS/MAA Joint Mathematical Meetings, San Diego, January 2002, *Higher-Order Polynomial 3-Manifold Invariants Giving Lower Bounds for the Thurston Norm.*
109. 2001 Georgia International Topology Conference, May 21–June 1, 2001, *New Polynomial Invariants of 3-manifolds Giving Lower Bounds for the Thurston Norm.*
110. Lehigh Geometry and Topology Conference, Summer 2001, *Higher-Order 3-Manifold Invariants with Applications to Fibered 3-Manifolds.*
111. Topology Seminar, UC San Diego, Summer 2001, *3-Manifold Invariants Giving Lower Bounds for the*

Thurston Norm.
112. Spring Topology and Dynamical Systems Conference, Morelia, MX, Spring 2001, *Polynomial Invariants of 3-Manifolds Giving Lower Bounds for the Thurston Norm.*