Nick Meyer

Assistant Professor of Mathematics

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About

I am an Assistant Professor of Mathematics at Winona State University specializing in low-dimensional topology. I'm primarily interested in knot theory and manifold decompositions in dimensions three and four.

Experience

Assistant Professor of Mathematics | Winona State University — Winona, MN
August 2026 – Present

Assistant Professor of Mathematics | University of Central Missouri — Warrensburg, MO
August 2024 – June 2026

Graduate Assistant | University of Nebraska — Lincoln — Lincoln, NE
August 2018 — July 2024

Education

University of Nebraska — Lincoln | Lincoln, NE ..... August 2018 – July 2024

Ph.D. in Mathematics | Advisor: Alex Zupan
July 2024
Dissertation: *Torus Surgery, Fibrations, Multisections, and Spun 4-Manifolds*.

M.S. in Mathematics ..... May 2020

Winona State University | Winona, MN ..... August 2015 – May 2018

B.S. in Mathematics | Minor in Physics
May 2018

Courses Taught

- Topology I and II
- Multivariable Calculus
- Discrete Mathematics
- Foundations of Geometry
- Calculus I and II
- Number Theory
- Graph Theory
- Linear Algebra

Awards and Fellowships

Section NExT Fellow | Mathematical Association of America — North Central Section
October 2026

Section NExT Fellow | Mathematical Association of America — Missouri Section
April 2025

Student Advising and Mentoring

Parker Smiley | University of Central Missouri
January 2025 – May 2026
Master's Thesis: *Vanishing Obstructions to Sliceness of Weaving Links*

Bethany Harms | University of Central Missouri
January 2026 – May 2026
Master's Project: *Polynomial Invariants of Knots and Links*

Polymath Jr. REU 2021
June 2021 – August 2021
Mentored for an undergraduate research program with Alex Zupan on bridge trisections and knotted surfaces

Selected Talks

Conference Talks

Telling the Warp from the Weft | MAA NCS Sectional
October 2026

Extending Fibrations of the 3-Torus and Applications to Torus Surgery in 4-Manifolds | AMS Western Sectional
March 2026

Torus surgeries on the Hopf surface | AMS Central Sectional
October 2023

Meier-Zupan Square Links and The Andrews-Curtis Conjecture | New Developments in Four Dimensions
June 2022

Seminar Talks

Telling the Warp from the Weft | University of Arkansas Topology Seminar
March 2026

Morse Theory in Dimensions One and Two | Kappa Mu Epsilon Seminar, University of Central Missouri
November 2024

Group Deficiencies from a 4-manifolds perspective | UNL Groups, Semigroups and Topology Seminar
March 2023

The Casson-Gordon signature invariant and sliceness obstructions | UNL Groups, Semigroups and Topology Seminar
September 2022

Slice Knots and Classical Sliceness Obstructions | Graduate Students Talking Groups, Semigroups, and Topology Seminar, UNL
August 2022

A quest for residual finiteness: Geometrization and the word problem for 3-manifolds | UNL Groups, Semigroups and Topology Seminar
February 2022

A Geometric Introduction to Heegaard Splittings and Trisections | Graduate Online Seminar Series
June 2021

Publications

Pre-Prints

An Obstruction to Realizing Aspherical 3-Manifold Groups via Torus Surgery | arXiv:2611.18461
November 2026

Extending Fibrations of the 3-Torus and Applications to Torus Surgery in 4-Manifolds | arXiv:2512.17595
December 2025

Peer Reviewed

Pants distances of knotted surfaces in 4-manifolds | *Mathematical Research Letters*. Accepted.
June 2026

Joint work with R. Aranda, S. Blackwell, D. Gulati, H. Karimi, G. Kim, and P. Pongtanapaisan.

Tri-plane Diagrams for simple surfaces in S^4 | *Journal of Knot Theory and its Ramifications*.
doi.org/10.1142/S0218216523500414
June 2023
Joint work with W. Allred, M. Aragón, Z. Dooley, A. Goldman, Y,. Lei, I. Martinez, D. Peters, S. Warrander, A. Wright, and A. Zupan.

Other Publications

Torus Surgery, Fibrations, Multisections, and Spun 4-Manifolds | Ph.D. Dissertation
July 2024

ProQuest

Service to the Profession

Committee for Minority Participation in Mathematics (CMPM) | Mathematical Association of America
July 2025 – June 2028

Chair of Awards Committee | Kappa Mu Epsilon Regional Convention
April 2026

Vice Chair | Mathematical Association of America — Missouri Section
April 2025 – March 2026

Reviewer | *Algebraic & Geometric Topology*
December 2025 – Present

Technical Skills

Languages: LaTeX, Python, R, Go, HTML, JavaScript
Infrastructure & Tools: Hugo, Desmos, SageMath, Docker, Git
Software: RStudio, Microsoft Office

Conferences and Workshops

MAA-NCS Sectional | University of Minnesota — Morris
October 2026

Kappa Mu Epsilon Regional Convention | Washburn University
April 2026

MAA Missouri Sectional | Columbia College
March 2026

AMS Western Sectional | Boise State University
March 2026

Trisectors Workshop 2025 | University of Texas, Austin
June 2025

MAA Missouri Sectional | St. Louis University
April 2025

Kappa Mu Epsilon National Convention | Truman State University
March 2025

Joint Mathematics Meeting | Seattle, WA
January 2025

Trisectors Workshop 2024 | University of Nebraska – Lincoln
June 2024

New Developments in Four Dimensions | University of Victoria
June 2022

Junior Trisectors Retreat | University of Central Florida
June 2022

Gauge Theory in Geometry and Topology | MSRI
July 2021

Trisectors Workshop 2021 | Virtual
June 2021

Winter Trisectors Workshop | Virtual
December 2020

Midwest Geometry Conference | Iowa State University
September 2019