

DAVID MEHRLE

(he/him/his)

(614) 458-8176

davidm@uky.edu

davidmehrle.com

EMPLOYMENT

- 2022 – 2026 **University of Kentucky**, Postdoctoral Scholar.
2023 – 2025 **electronic Computational Homotopy Theory (eCHT)** Research Training Group (RTG), National Science Foundation RTG Postdoctoral Researcher.

EDUCATION

- May 2022 **Cornell University**, Ithaca, New York.
Ph.D. in Mathematics
Advisor: Inna Zakharevich
Thesis: Commutative and Homological Algebra of Incomplete Tambara Functors
Master of Science in Mathematics (May 2018)
June 2016 **Cambridge University**, Cambridge, England.
Master of Advanced Study, Part III Mathematics.
Graduated with distinction.
May 2015 **Carnegie Mellon University**, Pittsburgh, Pennsylvania.
Master of Science in Mathematics, Bachelor of Science in Mathematics

PAPERS AND PREPRINTS

- [8] **Pathological computations of Mackey functor-valued Tor over cyclic groups**
With J.D. Quigley and Michael Stahlhauer.
Submitted (2024). [\[arXiv\]](#)
[7] **Koszul resolutions over free incomplete Tambara functors for cyclic p -groups**
With J.D. Quigley and Michael Stahlhauer.
Submitted (2024). [\[arXiv\]](#)
[6] **On the image of the total power operation for Burnside rings**
With Nate Cornelius, Lewis Dominguez, Lakshay Modi, Millie Rose, and Nat Stapleton.
Submitted (2024). [\[arXiv\]](#)
[5] **The homotopy of the KU_G -local equivariant sphere spectrum**
With Tanner Carawan, Rebecca Field, Bert Guillou, and Nat Stapleton.
Journal of Homotopy and Related Structures **18** (2023), no. 4, 543-561. [\[journal\]](#) [\[arXiv\]](#)
[4] **Free incomplete Tambara functors are almost never flat**
With Mike Hill and J.D. Quigley.
International Mathematical Research Notices (2023), no. 5, 4225-4291. [\[journal\]](#) [\[arXiv\]](#)

UNDERGRADUATE PAPERS

- [3] **Constructing Families of Moderate-Rank Elliptic Curves over Number Fields**
With Steven Miller, Tomer Reiter, Joe Stahl, and Dylan Yott.
Minnesota Journal of Undergraduate Mathematics **2** (2017), no. 1. [\[journal\]](#) [\[arXiv\]](#)
[2] **Newman's Conjecture in Function Fields.**
With Alan Chang, Steven Miller, Tomer Reiter, Joe Stahl, and Dylan Yott.
Journal of Number Theory **157** (2015), 154-169. [\[journal\]](#) [\[arXiv\]](#)

- [1] **Walk Modularity and Community Structure in Networks.**
With Amy Strosser and Tony Harkin.
Network Science 3 (2015), no. 3, 348-360. [\[journal\]](#) [\[arXiv\]](#)

AWARDS

- 2022 **Gitner Prize for Teaching Assistants**, *Cornell University*. A university-wide award for outstanding teaching assistants across all departments.
- 2021 **Eleanor Norton York Award**, *Cornell University*. For academic achievements.
- 2018 **Mathematics Graduate Student Teaching Award**, *Cornell University*. For teaching friendly and engaging courses and for excellence in course administration.

INVITED TALKS

- 2025 Special Session on Homotopy Theory, *Joint Mathematics Meetings*.
Special Session on Homotopical Combinatorics, *Joint Mathematics Meetings*.
Special Session on Using 3D-printed and Other Digitally Fabricated Objects in the Mathematics Classroom, *Joint Mathematics Meetings*.
- 2024 Colloquium, *Reed College*.
Topology Seminar, *University of Illinois Urbana-Champaign*.
Midwest Topology Seminar Conference, *Loyola University Chicago*.
Topology Seminar, *Michigan State University*.
Special Session on Equivariant Algebra, *Joint Mathematics Meetings*.
- 2023 Topology Seminar, *Indiana University Bloomington*.
Special Session on Homotopy Theory, *AMS Central Sectional Meeting*.
Research Seminar, *electronic Computational Homotopy Theory (eCHT) Research Group*. (Online)
- 2022 Topology Seminar, *University of Virginia*.
Topology Seminar, *State University of New York at Binghamton*.
- 2021 Topology Seminar, *University of California, Los Angeles*. (Online)
Research Seminar, *Cut-and-paste K-Theory Focused Research Group*. (Online)
Topology Seminar, *University of Rochester*.
Topology Seminar, *Johns Hopkins University*.

MENTORSHIP

- 2024 **Project Mentor**, University of Kentucky Math Lab Undergraduate Research.
- 2023– **Faculty Advisor**, University of Kentucky Math Club.
- 2019 **Graduate Mentor**, Cornell Summer Program for Undergraduate Research.
- 2018–2020 **Mentor**, Cornell Mathematics Mentorship Program for new Graduate Students.

TEACHING

University of Kentucky

- Fall 2024 Math 654: Algebraic Topology I
- Spring 2024 [Stable Homotopy Theory](#) (online, through eCHT)
- Fall 2023 Math 213: Multivariable Calculus

Spring 2023 Math 352: Knot Theory
 Math 213: Multivariable Calculus
 Fall 2022 Math 322: Matrix Algebra and Applications
Cornell University as Instructor of Record
 Summer 2018 Math 1910: Calculus II for Engineers.
 Spring 2017 Math 1110: Calculus I.

Cornell University as Teaching Assistant

Spring 2022 Math 1920: Multivariable Calculus for Engineers.
 Fall 2021 Math 1910: Calculus II for Engineers.
 Spring 2021 Math 6510: Algebraic Topology.
 Fall 2020 Math 1300: Mathematical Explorations.
 Spring 2020 Math 3340: Abstract Algebra.
 Fall 2019 Head Teaching Assistant, Math 1910: Calculus II for Engineers.
 Fall 2018 Head Teaching Assistant, Math 1910: Calculus II for Engineers.
 Fall 2017 Head Teaching Assistant, Math 1910: Calculus II for Engineers.
 Fall 2016 Math 1910: Calculus II for Engineers.

SERVICE

2025 **Co-organizer**, Special Session on Homotopy Theory and Algebraic K-theory, AMS Central Sectional Meeting
 2024 **Organizer**, University of Kentucky Topology Seminar.
Co-organizer, electronic Computational Homotopy Theory Minicourse.
 2023 **Co-organizer**, electronic Computational Homotopy Theory Research Seminar.
Co-organizer, University of Kentucky Topology Seminar.
Journal Referee.
Reviewer for zbMATH and MathSciNet.
 2021 **Facilitator**, Cornell Mathematics Teaching Assistant Training.
Co-organizer, Electronic Computational Homotopy Theory Equivariant Algebra Reading Seminar.
 2019 **Facilitator**, Cornell Mathematics Teaching Assistant Training.
 2018 **Facilitator**, Cornell Mathematics Teaching Assistant Training.
Co-organizer, Young Topologists' Meeting 2018. University of Copenhagen, Copenhagen, Denmark.
 2017 **Facilitator**, Cornell Mathematics Teaching Assistant Training.
Organizer, Math Explorers' Club. An extracurricular program for high-schoolers.

SELECTED WORKSHOP PARTICIPATION

2024 Collaborative Workshop on Scissors Congruence and Algebraic K-Theory, *Vanderbilt University*.
 AMS Mathematical Research Community: Homotopical Combinatorics.

- 2023 Summer School on Scissors Congruence, Algebraic K-theory, and Trace Methods, *Indiana University*.
- 2022 Research Training Group Collaborative Workshop, *University of Virginia*.
- 2021 Hermitian K-Theory Reading Seminar, *electronic Computational Homotopy Theory Research Group*. (Online)
- 2020 Kervaire Invariant Reading Seminar, *electronic Computational Homotopy Theory Research Group*. (Online)
 Topological Hochschild Homology Reading Seminar, *electronic Computational Homotopy Theory Research Group*. (Online)
- 2019 Kan Seminar, *electronic Computational Homotopy Theory Research Group*. (Online)
 Derived Algebraic Geometry and its Applications, *Mathematical Sciences Research Institute*.
 Arizona Winter School, *University of Arizona*.
 Introductory Workshop: Derived Algebraic Geometry and Birational Geometry and Moduli Spaces, *Mathematical Sciences Research Institute*.
- 2017 Midwest Topology Summer School: Trace Methods, *Indiana University*.

--- **OTHER**

- 2017-2022 **Instructor**, Cornell Outdoor Education. Taught a variety of outdoor courses, including rock and ice climbing, mountain biking, and road biking.
- 2022 **Wilderness First Responder**. Certification expires 2025.