

# DAVID MEHRLE

(he/him/his)

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## 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

- [9] **On the Tambara Affine Line**  
With David Chan, J.D. Quigley, Ben Spitz, and Danika Van Niel.  
*Submitted* (2024). [\[arXiv\]](#)  
[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.