

# 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

- [7] **Koszul resolutions over free incomplete Tambara functors for cyclic  $p$ -groups**, 2024. With J.D. Quigley and M. Stahlhauer. [\[arXiv\]](#) *Submitted*.
- [2] **On the image of the total power operation for Burnside rings**. 2024. With N. Cornelius, L. Dominguez, L. Modi, M. Rose, and N.J. Stapleton. [\[arXiv\]](#) *Submitted*.
- [6] **The homotopy of the  $KU_G$ -local equivariant sphere spectrum**. *Journal of Homotopy and Related Structures* **18**, 2023. With T.N. Carawan, R. Field, B.J. Guillou, and N.J. Stapleton. [\[Journal\]](#) [\[arXiv\]](#)
- [4] **Free incomplete Tambara functors are almost never flat**. *International Mathematical Research Notices*, 2022. With M.A. Hill and J.D. Quigley. [\[Journal\]](#) [\[arXiv\]](#)

## UNDERGRADUATE PAPERS

- [3] **Constructing Families of Moderate-Rank Elliptic Curves over Number Fields**. *Minnesota Journal of Undergraduate Mathematics* **2**, 2017. With A. Chang, S.J. Miller, T. Reiter, J. Stahl, and D. Yott. [\[Journal\]](#) [\[arXiv\]](#)
- [2] **Newman's Conjecture in Function Fields**. *Journal of Number Theory* **157**, 2015. With A. Chang, S.J. Miller, T. Reiter, J. Stahl, and D. Yott. [\[Journal\]](#) [\[arXiv\]](#)
- [1] **Walk Modularity and Community Structure in Networks**. *Network Science* **3**, 2015. With A. Strosser and A. Harkin. [\[Journal\]](#) [\[arXiv\]](#)

## 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.

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### **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.

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### **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*.

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## 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.