
Education

- 2023–2029 **Ph.D. in Mathematics**, Johns Hopkins University
2022–2023 **Program Associate**, SLMath (formerly MSRI)
2021–2022 **M.Sc. in Mathematics**, University of Toronto
2017–2021 **B.Sc.**, Western University, Mathematics (Honours Spec.); Comp. Sci. (Minor)

Publications

- June 2023 **Nonexistence of colimits in naive discrete homotopy theory**, *Applied Categorical Structures*, 31 (2023), no.5, 41, 6 pp.
With C. Kapulkin and J. Kim
<https://arxiv.org/abs/2306.02219>
<https://link.springer.com/article/10.1007/s10485-023-09746-9>
- June 2023 **Calculus of Fractions for Quasicategories**, Submitted
With C. Kapulkin and Z. Lindsey
<https://arxiv.org/abs/2306.02218>
- June 2023 **Diagonal Lemma for Presheaves on Eilenberg-Zilber Categories**, Submitted
With C. Kapulkin and L.-Z. Wong
<https://arxiv.org/abs/2306.02217>
- December 2022 **Cofibration category of digraphs for path homology**, *Algebraic Combinatorics*, 7 (2024), no. 2, 475–514
with B. Doherty, C. Kapulkin, M. Opie, M. Sarazola, and L.-Z. Wong
<https://arxiv.org/abs/2212.12568>
<https://alco.centre-mersenne.org/articles/10.5802/alco.341/>
- July 2022 **The Hurewicz theorem for cubical homology**, *Mathematische Zeitschrift*, 305, 62 (2023)
With C. Kapulkin and A. Tonks
<https://arxiv.org/abs/2207.12500>
<https://link.springer.com/article/10.1007/s00209-023-03352-0>
- February 2021 **Cubical setting for discrete homotopy theory, revisited**, *Compositio Mathematica* (to appear)

- With C. Kapulkin
<https://arxiv.org/abs/2202.03516>
- February 2021 **Homotopy groups of cubical sets**, *Expositiones Mathematicae*, 41 (2023) 125518, no. 4, 55 pp.
 With C. Kapulkin
<https://arxiv.org/abs/2202.03511>
<https://www.sciencedirect.com/science/article/pii/S0723086923000944>
- January 2021 **2-adjoint equivalences in homotopy type theory**, *Logical Methods in Computer Science*, (2021), no. 1, Paper No. 3, 9 pp.
 With J. Chang, C. Kapulkin, and R. Sandford
<https://arxiv.org/abs/2008.12433>
<https://lmcs.episciences.org/7124>

Talks

- Nonexistence of colimits in naive discrete homotopy theory**
- January 2024 Joint Mathematics Meeting, San Francisco, California
- Calculus of fractions for quasicategories**
- March 2024 AMS Spring Southeastern Sectional Meeting, Florida State University
- December 2023 Canadian Mathematical Society Winter Meeting, Montreal, Quebec
- October 2023 Geometry, Topology and Physics seminar (online), NYU Abu Dhabi
- March 2023 Algebraic Topology seminar, University of California, Los Angeles
- Hurewicz Theorem in Discrete Homotopy Theory**
- November 2023 9th Mexican Workshop on Applied Geometry and Topology, Centro de Investigación en Matemáticas (CIMAT)
- Cubical Setting for Discrete Homotopy Theory**
- December 2023 Geometric, Algebraic, and Topological Combinatorics, Mathematisches Forschungsinstitut Oberwolfach
- April 2023 Math & Statistics Colloquium, Reed College
- April 2023 Algebraic & Geometric Topology Seminar, University of Nevada-Reno
- March 2023 AIM Workshop: Discrete and Combinatorial Homotopy Theory
- November 2022 Berkeley Seminar, Topos Institute
<https://youtu.be/Ns1NBLMddps?si=ILsdvwPuKDbt-o7p>
- October 2022 AMS Fall Eastern Sectional Meeting, University of Massachusetts Amherst
- May 2022 Ontario Combinatorics Workshop, University of Waterloo

Formalizing 2-adjoint equivalences in homotopy type theory

August 2020 Western Homotopy theory seminar, University of Western Ontario
https://youtu.be/BIqhGYoo_PU?si=bTN4uUfenqLyasP0

Formal verification of Mathematics

August 2020 Canadian Undergraduate Mathematics Conference (online)
<https://youtu.be/LCW682zcEVs?si=r5530uP66Ri1dHTU>

Scholarships and Awards

Summer 2021 **NSERC Undergraduate Student Research Award**, *Cubical Methods in Discrete Homotopy Theory*, Western University
Summer 2020 **NSERC Undergraduate Student Research Award**, *2-Adjoint Equivalences in HoTT*, Western University
2018-2021 **Dean's Honor List**
September 2017 **Western Scholarship of Excellence**

Teaching Experience

Teaching Assistant

Winter 2022 **Math Learning Centre**, University of Toronto
Winter 2022 **Engineering Calculus 2**, University of Toronto
Fall 2021 **Engineering Linear Algebra**, University of Toronto

Other Activities

December 2023 **Oberwolfach Workshop 2350: Geometric, Algebraic, and Topological Combinatorics**, *Participant*, Oberwolfach Research Institute for Mathematics
March 2023 **AIM Workshop: Discrete and Combinatorial Homotopy Theory**, *Participant*, San Jose, California
June 2022 **Higher Categories and Categorification, Part Two**, *Participant*, MSRI
February 2020 **Higher Categories and Categorification**, *Research Visit*, MSRI
October 2019 **Midwest Homotopy Type Theory Seminar**, *Conference*, University of Michigan