

# Daniel Carranza

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## Curriculum Vitae

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### Education

- Fall 2023 **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. in Mathematics**, Western University  
Honour's Specialization in Mathematics; minor in Computer Science.

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### Research

#### Papers

- June 2023 **Nonexistence of colimits in naive discrete homotopy theory**, Preprint  
With C. Kapulkin and J. Kim, [arXiv: 2306.02219](https://arxiv.org/abs/2306.02219)
- June 2023 **Calculus of Fractions for Quasicategories**, Preprint  
With C. Kapulkin and Z. Lindsey, [arXiv: 2306.02218](https://arxiv.org/abs/2306.02218)
- June 2023 **Diagonal Lemma for Presheaves on Eilenberg-Zilber Categories**, Preprint  
With C. Kapulkin and L.-Z. Wong, [arXiv: 2306.02217](https://arxiv.org/abs/2306.02217)
- December 2022 **Cofibration category of digraphs for path homology**, Preprint  
With B. Doherty, C. Kapulkin, M. Opie, M. Sarazola, and L.-Z. Wong, [arXiv: 2212.12568](https://arxiv.org/abs/2212.12568)
- July 2022 **The Hurewicz theorem for cubical homology**, Preprint  
With C. Kapulkin and A. Tonks, [arXiv: 2207.12500](https://arxiv.org/abs/2207.12500)
- February 2021 **Cubical setting for discrete homotopy theory, revisited**, Preprint  
With C. Kapulkin, [arXiv: 2202.03516](https://arxiv.org/abs/2202.03516)
- February 2021 **Homotopy groups of cubical sets**, Preprint  
With C. Kapulkin, [arXiv: 2202.03511](https://arxiv.org/abs/2202.03511)
- January 2021 **2-adjoint equivalences in homotopy type theory**, *Logical Methods in Computer Science*  
With J. Chang, C. Kapulkin, and R. Sandford, [arXiv: 2008.12433](https://arxiv.org/abs/2008.12433), <https://lmcs.episciences.org/7124>

## Talks

- April 2023 **Cubical Setting for Discrete Homotopy Theory**, *Math & Statistics Colloquium*, Reed College
- April 2023 **Cubical Setting for Discrete Homotopy Theory**, *Algebraic & Geometric Topology Seminar*, University of Nevada, Reno
- March 2023 **Cubical Setting for Discrete Homotopy Theory**, *AIM Workshop: Discrete and Combinatorial Homotopy Theory*, San Jose, California
- March 2023 **Higher-dimensional calculus of fractions**, *Algebraic Topology Seminar*, UCLA
- November 2022 **Cubical Setting for Discrete Homotopy Theory**, *Berkeley Seminar*, Topos Institute  
<https://youtu.be/Ns1NBLMddps>
- October 2022 **Cubical Setting for Discrete Homotopy Theory**, *AMS Fall Eastern Sectional Meeting*, University of Massachusetts Amherst
- May 2022 **Cubical Setting for Discrete Homotopy Theory**, *Ontario Combinatorics Workshop*, University of Waterloo
- August 2020 **Formal Verification of Mathematics**, *CUMC 2020*, Western University  
<https://youtu.be/LCW682zcEVs>
- August 2020 **Formalizing 2-Adjoint Equivalences in Homotopy Type Theory**, *Western Homotopy Theory Seminar*, Western University  
[https://youtu.be/BIqhGYoo\\_PU](https://youtu.be/BIqhGYoo_PU)

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## 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**

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## 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

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## Other Activities

- 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