

Garrett Credi

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Education

Mathematics Ph.D.

August 2024 – Current

University of Minnesota Twin Cities

Advisor: Prof. Mike Hill

- Awarded Masters in Science Jan. 2026
- Researching stable homotopy theory with specific interests in synthetic methods in the Adams(-Novikov) spectral sequence, spectral algebraic geometry, and equivariant algebra via incomplete Mackey and Tambara functors
- Enrolled in several ECHT programs, such as their Stable Homotopy Course in Spring 2025 and their Secondary Steenrod Algebra reading seminar in Fall 2025

Bachelor of Science in Liberal Arts and Sciences | *Mathematics - Doctoral Prep*

Aug. 2020 – May 2024

University of Illinois Urbana-Champaign

- With Minors in Computer Science and Creative Writing
- Overall GPA: 3.99
- Major GPA: 3.98
- Mathematics Graduate Coursework GPA: 4.00
- Graduated with highest distinction

PCMI Undergraduate Summer School

July 2021

Institute of Advanced Study | Park City Mathematics Institute

- Studied Quadratic Forms, Milnor K-Theory, and the Siegl Mass Formula
- Collaborated with other students to complete weekly problem sets

Research

Distinguishing $\mathcal{N}_\infty$ Operads via Cotangent Complexes

Jan. 2025 – Current

University of Minnesota Twin Cities

Mentor: Prof. Mike Hill

- Studying the structure of equivariant stable categories built from different $\mathcal{N}_\infty$ operads $\mathcal{O}, \mathcal{O}'$

Mathematics REU at Texas A&M University - Algorithmic Algebraic Geometry

Summer 2022

Texas A&M University

Mentor: J. Maurice Rojas

- Investigated methods to efficiently compute the number of points on curves over $\mathbb{Z}/p^n\mathbb{Z}$
- Produced multiple LaTeX presentations and reports detailing project progress
- Learned about Weil Cohomology theories, the Lefschetz Fixed-Point theorem, and their ability to count points on curves over finite fields
- Experimented with a SageMath notebook in order to develop novel ideas and strengthen understanding of established results

Homotopy, Modular Forms, and the Spectrum $Q(\ell)$

Spring 2021 – Spring 2022

University of Illinois Urbana-Champaign

Mentor: Vesna Stojanoska

- Computed pages of the Bockstein Spectral Sequence associated to $Q(2)$ by investigating kernels and co-kernels of maps on rings of modular forms
- Proved many of the main theorems of the project, and collaborated with team members and the graduate student advisor to work through flaws and roadblocks
- Devised algorithms to compute bases of relevant kernels and cokernels
- Worked with MAGMA to discover the structure of the objects of interest

Conference Presentations

Undergraduate Research Symposium University of Illinois Urbana-Champaign	April 2023
Texas A&M REU Miniconference Texas A&M University	July 2022
International Conference for Students of Analytic Philosophy University of Belgrade, Geneva	June 2021
Undergraduate Research Symposium University of Illinois Urbana-Champaign	April 2021

Talks

Fibrations and Straightening/Unstraightening in ∞-categories Seminar on “Descent Spectral Sequences Through Synthetic Spectra” by Carrick et. al.	Feb. 2026
Basic Equivariant Homotopy Theory UMN Seminar on HHR’s proof of the Kervaire Invariant Problem	Feb. 2026
The Descent Spectral Sequence for Topological Modular Forms UMN ArXiv Seminar Talk on the paper of the same name by Carrick et. al.	Dec. 2025
(Homotopy) Limits and Colimits in ∞ categories UMN Infinity-Categories Reading Group	Apr. 2025
Topology Goes to Therapy - A Survey of Stability in (and beyond) Homotopy Theory UMN Student Topology and Geometry Seminar	Jan. 2025
Adams’ On The Image $J(X)$ IV Kan Seminar ran by Prof. Charles Rezk	April 2023
The Periodicity Theorem UIUC Chromatic Homotopy Theory Reading Group	March 2023
Adams’ Vector Fields on Spheres Kan Seminar ran by Prof. Charles Rezk	March 2023
MU Theory UIUC Chromatic Homotopy Theory Reading Group	February 2023
The Serre Spectral Sequence and $H^*(BU(n))$ Final Presentation for Math 533	December 2022

Extracurriculars

Seminar on “Descent Spectral Sequences through Synthetic Spectra” Organizer University of Minnesota Twin Cities	Jan. 2026 – May 2026
Seminar on HHR’s Proof of the Kervaire Invariant Problem Organizer University of Minnesota Twin Cities	Jan. 2026 – May 2026
Directed Reading Program Mentor University of Minnesota Twin-Cities	Aug. 2025 – Current
• Mentors several undergraduate students on advanced mathematical concepts of their choice • In Fall 2025, mentored two students in computational algebraic geometry. In Spring 2026, mentored one student on elliptic curve cryptography	
Student Topology and Geometry Seminar Organizer University of Minnesota Twin-Cities	Jan. 2025 - Current
• Serves as organizer for the seminar, involving scheduling talks, updating the website, managing mailing-list software, and giving talks	

Chromatic Homotopy Theory Reading Group

Spring 2023

University of Illinois Urbana-Champaign

- Read from Ravenel's *Nilpotence and Periodicity in Stable Homotopy Theory* and *Complex Cobordism and Stable Homotopy Groups of Spheres* and Lurie's *Chromatic Homotopy Theory*, among other sources
- Gave talks on MU -theory and its connection to formal group laws and nilpotence phenomena, and on the Periodicity Theorem

Twoples Mentee

Fall 2022

Online

Mentor: Chris Grossack (UC Riverside)

- Studied Homotopy Type Theory and its connection to Infinity Categories
- Utilized Agda to gain hands-on experience with the logic of Homotopy Type Theory

Teaching

Graduate Teaching Assistant

August 2024 – Current

Department of Mathematics at the University of Minnesota Twin Cities

- Taught discussion sections for MATH 1271 Calculus I in Fall 2024, and MATH 3283W Sequences, Series, and Foundations in Fall 2025 and Spring 2026
- Developed software to provide granular information about students' performance on exams
- Organized class-wide review session for each exam

CS 340 Systems Programming Course Assistant

January 2023 – May 2023

Department of Computer Science at the University of Illinois Urbana-Champaign

- Held regular office hours 6 hrs/week
- Extended auto grader in order to provide more accurate and robust feedback for assignments
- Created new programming assignments to provide students with hands on experience with networking and threads in C
- Completed university training to learn new techniques for both teaching students and for creating an inclusive and diverse environment

CS 225 Data Structures Course Assistant

August 2021 – December 2022

Department of Computer Science at the University of Illinois Urbana-Champaign

- Held regular office hours 15 hrs/week
- Strengthened students' understanding of fundamental data structures
- Developed a Discord Bot to improve peer-to-peer interaction and to automate Github repository creation
- Assisted with and independently held lab sections
- Strengthened debugging capabilities as a part of assisting students during office hours

Assistant Instructor for the Summer Illinois Mathematics Camp

June 2021

University of Illinois Urbana-Champaign

- Instructed 8-12th graders on Topological Invariants
- Prepared notes and activities to teach students about the Euler Characteristic, Three Utilities Problem, and the Hairy Ball and Poincare-Hopf Index Theorem
- Designed animations to illustrate homeomorphisms and homotopies between spaces