

ZACHARY BERENS

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EDUCATION

Mathematics (B.S.) Duke University (Durham, NC) GPA: 3.975	August 2021 - May 2025
Concurrent Enrollment University of Utah (SLC, UT) GPA: 4.000; I took four math courses and an organic chemistry course.	August 2020 - May 2021
High School Diploma and IB Diploma West High School (SLC, UT)	August 2017 - June 2021

AWARDS

University Scholars Program Scholarship Duke University Full-ride merit scholarship awarded to students with a strong interest in interdisciplinary research, collaborative thinking, and innovative academic pursuits. I was one of five students in the Class of 2025 who received the scholarship.	August 2021 - May 2025
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RESEARCH PROJECTS

PRUV Program: Étale Reconstruction Duke University • PRUV is a summer REU in Duke's math department in which students are paired with professors to do research. I proved part of a conjecture of Grothendieck concerning the reconstruction of schemes from their étale sites. In particular, by adapting methods of Voevodsky, I showed that morphisms out of perfections of finite type $\mathbb{F}_p(t)$ -schemes can be reconstructed from morphisms out of their étale sites.	May 2024 - July 2024
PRUV Program: Perfectoid Spaces Duke University • I wrote an expository paper on the sheafyness of perfectoid spaces and the reinterpretation of affinoid spaces and Berkovich spaces in the language of adic spaces.	May 2023 - July 2023
Two Proofs of the Gerritzen-Grauert Theorem Duke University • I wrote a more readable version of BGR's proof of the Gerritzen-Grauert theorem. I also compared their proof to Temkin's more recent proof.	Spring 2023

WORK EXPERIENCE

Grader Duke Math Department • Grader for MATH 627: Algebraic Geometry (Fall 23 and 24), MATH 602: Commutative Algebra (Spring 23), and part of MATH 501: Abstract Algebra I (Fall 23).	Spring 2023 - PRESENT
Tutor The Fundamentals Project • I started a math YouTube channel geared towards exposing high-school students to basic proofs. I provided free math tutoring to high school students through my website. I tutored 5 students in BC calculus.	December 2020 – October 2021
Data Miner Earthdiver, LLC. • I used proprietary software to create programs that mined web data.	June 2020 - August 2020
Founder Act 3 Theatre, LLC. • I founded and ran a non-profit theatre company. I directed, choreographed, and designed a production of Sweeney Todd which was performed to audiences averaging over 100 people. COVID put an end to other planned productions.	October 2018 - March 2020

ACTIVITIES

Founder and President Duke Undergraduate Math Seminar • Students learn collaboratively by giving expository and research talks.	October 2023 - PRESENT
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TALKS/PRESENTATIONS

Research Poster Duke Math Department • I presented my research on étale reconstruction to the Duke math community.	September 2024
Expository Talk Duke Undergraduate Math Seminar • I gave an expository talk on limits and colimits.	January 2024
Expository Talk Duke Undergraduate Math Seminar • I gave an expository talk on sheaves and affine schemes.	November 2023
Expository Talk Duke Math Department • I presented my expository project on perfectoid spaces to the Duke math community.	September 2023