

YUNHAN (ALEX) SHENG

University of Chicago, IL 60637 \diamond yhsheng@uchicago.edu

Personal website: <https://yunhansheng.github.io/>

EDUCATION

University of Chicago

September 2020 - June 2024 (expected)

B.S. in Mathematics with honors \diamond Minor in Germanic Studies \diamond GPA: 3.74/4.00

RESEARCH EXPERIENCE

The University of Chicago Mathematics REU 2022

June 2022-August 2022

- \circ Mentor: Wei Yao & Pallav Goyal
- \circ Expository Paper: *Complex Multiplication of Elliptic Curves and Abelian Varieties*. [PDF](#)
- \circ Participant talk: *On the complex multiplication of elliptic curves*. [PDF](#)

The University of Chicago Mathematics REU 2021

June 2021-August 2021

- \circ Mentors: J. Peter May & Xiaolin Danny Shi
- \circ Expository Paper: *On Realizing Rational and Polynomial Cohomology Rings*. [PDF](#)

RELEVANT COURSEWORK

- \circ MATH 37392 Arithmetic Geometry*, Winter 2023, in progress
- \circ MATH 29700 Proseminar in Mathematics (scheme theory), Winter 2023, in progress
- \circ MATH 31800 Topology and Geometry II (differential topology)*, Winter 2023, in progress
- \circ MATH 29700 Proseminar in Mathematics (characteristics classes and K-theory), Grade: A
- \circ Preliminary Arizona Winter School 2022: Heights in Diophantine geometry

Sophomore year

- \circ MATH 27400 Introduction to Differentiable Manifolds and Integration on Manifolds, Grade: A-
- \circ MATH 25700 Honors Basic Algebra I, Grade: A
- \circ MATH 25800 Honors Basic Algebra II, Grade: A
- \circ MATH 32600 Algebra II (commutative algebra)*, Grade: B+
- \circ MATH 32700 Algebra III (algebraic number theory)*, Grade: A
- \circ MATH 38511 Brownian Motion and Stochastic Calculus*, Grade: A-
- \circ MATH 31700 Topology and Geometry I (algebraic topology)*, Grade: A-
- \circ Direct Reading Program: classical invariant theory of finite groups

Freshmen year

- \circ MATH 20250 Abstract Linear Algebra, Grade: A
- \circ MATH 20310 Analysis in \mathbb{R}^n I (accelerated), Grade: A-
- \circ MATH 20410 Analysis in \mathbb{R}^n II (accelerated), Grade: A-
- \circ MATH 20510 Analysis in \mathbb{R}^n III (accelerated), Grade: A
- \circ STAT 38300 Measure-Theoretic Probability II*, Grade: A
- \circ Direct Reading Program: fundamental groups and homology

* indicates graduate courses

EXPOSITORY WRITINGS

Elements of Complex K-theory. [PDF](#)

December 2022

Final project for the course *Proseminar in Mathematics* with Prof. Akhil Mathew.

Commutative ring theory. [PDF](#)

March 2022

Class notes for *Algebra II (commutative algebra)** with Prof. Ngo Bao Chau.

Brownian motion and stochastic calculus. [PDF](#)

December 2021

Class notes for *Brownian Motion and Stochastic Calculus** with Prof. Gregory Lawler.

TEACHING EXPERIENCE

MATH 24400 Introduction to Algebraic Geometry \diamond Reader	Winter 2022
MATH 25400 Basic Algebra I \diamond Super reader	Autumn & Winter 2022
MATH 15300 Calculus III \diamond Grader (VCA)	Spring 2022
MATH 15200 Calculus II \diamond Grader (VCA)	Autumn & Winter 2021

Note: readers and super readers are teaching assistant positions.

MISCELLANEOUS

Music: I am passionate about classical music. I am a classically trained pianist and organist. I also play the carillon. To access my recordings and writings, please go to my [homepage](#).

Languages: native fluency in Mandarin and English, can read basic German (still learning), Python.

Citizenship: Chinese