

YUNHAN (ALEX) SHENG

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EDUCATION

University of Chicago September 2020 - June 2024 (expected)
B.A. in Mathematics with honors ◊ Major GPA: 3.86/4.00 ◊ Overall GPA: 3.73/4.00

RESEARCH EXPERIENCE

The PCMI Undergraduate Summer School 2023 July 2023-August 2023
◊ Group project: *Phylogenetic treespace*. [PDF](#)

The University of Chicago Mathematics REU 2023 (Mentor: J. Peter May) June 2023-August 2023
◊ Expository writing: *Cofreeness of Lubin-Tate theory*. [PDF](#)

The University of Chicago Mathematics REU 2022 (Mentor: Wei Yao) June 2022-August 2022
◊ Expository writing: *Complex multiplication of elliptic curves and abelian varieties*. [PDF](#)

The University of Chicago Mathematics REU 2021 (Mentor: XiaoLin Danny Shi) June 2021-August 2021
◊ Expository writing: *On realizing rational and polynomial cohomology rings*. [PDF](#)

SELECTED COURSEWORK

MATH 38511 Brownian Motion and Stochastic Calculus*, A-
MATH 37392 Arithmetic Geometry*, A
MATH 36206 Algebraic Number Theory*, A
MATH 32600 Algebra I* (representation theory), in progress
MATH 32700 Algebra III* (number theory), A
MATH 31700 Topology and Geometry I* (algebraic topology), A-
MATH 31800 Topology and Geometry II* (differential topology), A
◊ Final project: *Kähler manifolds and Hodge theory*. [PDF](#)

MATH 29700 Proseminar (real orientations of Lubin-Tate spectra), Autumn 2023, in progress
MATH 29700 Proseminar (chromatic homotopy theory), Spring 2023, A
◊ Expository writing: *Power operations and HKR character theory*. [PDF](#)

MATH 29700 Proseminar (scheme theory), Winter 2023, A
MATH 29700 Proseminar (characteristics classes and K-theory), Autumn 2022, A
◊ Expository writing: *Elements of Complex K-theory*. [PDF](#)

MATH 25700-25800 Honors Basic Algebra I/II, A/A
STAT 38300 Measure-Theoretic Probability II*, A

* indicates graduate courses

The eCHT Reading Seminar (algebraic vector bundles), Autumn 2023
The IWoAT Summer School 2023 (operads, spectra, and multiplicative structures), Summer 2023
Directed Reading Program (étale cohomology and the Weil conjectures), Spring 2023
Preliminary Arizona Winter School 2022 (Heights in Diophantine geometry), Winter 2023
Midwest Algebraic Geometry Graduate Conference, Summer 2022

TEACHING EXPERIENCE

MATH 24400 Introduction to Algebraic Geometry ◊ Grader Winter 2022
MATH 25400-25500 Basic Algebra I/II ◊ Course assistant 2022-2023
MATH 15200-15300 Calculus II/III ◊ Grader 2021-2022

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](#).