Jae Hyung (John) Sim

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Education

Ph.D. Mathematics [In Progress] — Started September 2019
Boston University — Boston, MA
Advisor: Glenn Stevens

B.A. Mathematics with Honors; Minor in Computer Science — Completed June 2019
University of Chicago — Chicago, IL

High School Diploma — Graduated June 2015
Milton Academy — Milton, MA

Graduate Experience

Seminars

Boston University Number Theory Expository Seminar (BUNTES)

- Organizer in Spr 2022 on Class Field Theory.
- Organizer in Aut 2020 on Complex Multiplication.
- Talks Given:
  - Complex Multiplication for Shimura Varieties - Aut 2021
  - Introduction to Quaternion Algebrais and Shimura Curves - Aut 2021
  - Lefschetz Fixed Point Formula in Étale Cohomology - Spr 2021
  - H^1 and Torsors - Spr 2021
  - Étale Maps - Spr 2021
  - Coates-Wiles Complex Multiplication and BSD - Aut 2020
  - Intro and Overview of Complex Multiplication - Aut 2020
  - Raynaud's Generic Fiber - Spr 2020
  - Ramification of Curves - Spr 2020
  - Kolyvagin's Work - Aut 2019
  - Modular Curves Background I - Aut 2019

Conferences Attended

- Arizona Winter School: Automorphic Forms Beyond GL2 - Mar 2022
- Tenth Annual Upstate Number Theory Conference (hosted by Union College) - Oct 2021
- Elliptic Curves and the Special Values of L-functions (hosted virtually by ICTS) - Aug 2021
- paraDIGMS (hosted virtually by AMS) - Apr 2021

Teaching Experience

Teaching Fellow at Boston University

- MA 123 Calculus I - Spr 2022
- MA 541 Abstract Algebra - Aut 2021
- MA 442 Linear Algebra - Spr 2021
- MA 121 Calculus - Aut 2020
- MA 225 Multivariate Calculus - Sum 2020
- MA 122 Calculus for Social Sciences - Spr 2020
- MA 225 Multivariate Calculus - Aut 2019

Instructor at Boston University

- MA 113 Elementary Statistics - Sum1 2021
- MA 225 Multivariate Calculus - Sum1 2020

T^2 at PROMYS

- Teacher's Teacher for PROMYS for Teachers Summer 2020 held virtually

Course Organizer
- Assisted in formulating and organizing an asynchronous online course for MA 113 for BU's summer session II

Undergraduate Experience

Number Theory Reading Course April 2018 - June 2019
University of Chicago Chicago, IL
- Reading course with Professor Matthew Emerton on local and global class field theory following *Algebraic Number Theory: Proceedings of an Instructional Conference* by Cassels and Frohlich throughout 2018
- Reading course with Professor Matthew Emerton on elliptic curves and CM fields loosely following *Arithmetic of Elliptic Curves* by Silverman

REU in Mathematics June - August 2018
University of Chicago Chicago, IL
- Summer research in Algebraic Number Theory and Local Fields with Professor Matthew Emerton
- Presented talk titled "Introduction to p-adic Numbers and Their Use in Algebraic Number Theory"
- Authored "The p-adic numbers and a proof of the Kronecker-Weber theorem" [link]

REU in Mathematics June - July 2016
University of Chicago Chicago, IL
- Summer research program in advanced topics in mathematics such as graph theory and topology
- Authored "The Fundamental Group and CW Complexes"

Department Reader September 2017 - June 2019
University of Chicago Chicago, IL
- Grader for undergraduate mathematics courses
- Graded MATH 19620 in Fall 2017, Winter 2018 and MATH 20410 in Winter 2019

Outreach

GirlsGetMath@BU September 2022
Boston University Boston, MA
- Five-day mathematics program for high schoolers regardless of gender.
- Teaching Fellow - Aug 2022

Directed Reading Program September 2019 - Current
Boston University Boston, MA
- Reading program for undergraduates to work with a graduate mentor in studying higher level mathematics
- Steering Committee Member - Spr 2020 - Current.
- Aut 2021 - Mentoring on Riemann Surfaces and Complex Analysis.
- Spr 2021 - Mentored on Group Theory.
- Aut 2020 - Mentored on basics of Machine Learning and CNN.
- Spr 2020 - Mentored on elliptic curve cryptography following Hoffstein, Pipher, and Silverman's "An Introduction to Mathematical Cryptography."
- Aut 2019 - Mentored on algebraic number theory following Serre's "A Course in Arithmetic," culminating on a proof of the sum of three squares.

Maroon Tutor Match January 2016 - June 2019
University of Chicago Chicago, IL
- Educational program providing affordable one-to-one tutoring for K-12 students in the Hyde Park neighborhood of Chicago
- Weekly tutoring three students in high school mathematics
- Tutoring undergraduates as a department tutor within University

Miscellaneous Skills

- Proficient with Sage, C++, HTML, and LaTeX
- Event planning and coordination
- Fluent in Korean
- Breakdancing