Jae Hyung (John) Sim

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Education

Ph.D. Mathematics [Candidate] — 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

Papers

Explicit Cocycle of the Dedekind-Rademacher Cohomology Class and the Darmon-Dasgupta Measures
- Preprint uploaded to the Arxiv on July 1, 2023

Seminars

Learning Seminar on p-adic Geometry - Spr 2023
- Talk given on Foundations of Adic Spaces.

Boston University Number Theory Expository Seminar (BUNTES)
- Organizer in Spr 2022 on Class Field Theory.
- Organizer in Aut 2020 on Complex Multiplication.
- Talks Given:
  - Tate Algebras - Spr 2023
  - Stark's Conjectures - Spr 2022
  - Explicit and Cohomological Hilbert Symbol - Spr 2022
  - Introduction to Class Field Theory - Spr 2022
  - 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
- AMS New England Graduate Student Conference - Apr 2023
  - Talk given: "The Missing Theory of RM Elliptic Curves."
- Spring School on Non-archimedean geometry and eigenvarieties - Mar 2023
- 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

Instructor of Record at Boston University – (†) indicates use of ungrading assessment system.
- MA 341 Elementary Number Theory - Sum1 2023 (†)
- MA 242 Linear Algebra - Sum1 2022 (†)
- MA 113 Elementary Statistics - Sum1 2021

- MA 225 Multivariate Calculus - Sum1 2020

Teaching Fellow at Boston University
- MA 581 Probability - Spr 2023
- MA 123 Calculus I - Aut 2022
- 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

PROMYS
- Assistant to David Fried for Returning Student and Returning Teacher Labs - 2023
- Assistant to David Fried for Returning Student Labs - 2022
- Teacher's Teacher (T^2) for PROMYS for Teachers - 2020

BU Center for Teaching and Learning Alternative Grading Project [Link]
- Contributed in project to create an introductory webpage for instructors interested in alternative grading - Summer 2022

Course Organizer
- Assisted in creating an asynchronous online course (MA 113) for BU - Sum 2021

Non-academic

GirlsGetMath@BU August 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 2022 - Mentored on Algebraic Number Theory.
- Aut 2021 - Mentored 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.
- Aut 2019 - Mentored on Algebraic Number Theory.

Graduate Student Organization Representative September 2021 - Current
Boston University Boston, MA
- Representative for Math and Stats Department

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

Undergraduate Experience

Number Theory Reading Course — April 2018 - June 2019
University of Chicago — Chicago, IL

- Reading course with Professor Emerton on local and global class field theory
- Reading course with Professor Emerton on elliptic curves and CM fields

REU in Mathematics — June - August 2018
University of Chicago — Chicago, IL

- Talk: "Introduction to p-adic Numbers and Their Use in Algebraic Number Theory" - 2018
- Authored: "The p-adic numbers and a proof of the Kronecker-Weber theorem" [link] - 2018
- Authored: "The Fundamental Group and CW Complexes" - 2016

Department Reader — September 2017 - June 2019
University of Chicago — Chicago, IL

- Graded MATH 19620 in Fall 2017, Winter 2018 and MATH 20410 in Winter 2019

Miscellaneous Skills

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