Jack Wood Sempliner

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EDUCATION

Princeton University

Princeton, NJ

Ph.D. in Mathematics, Advisor: Richard Taylor

2016-2025 (Expected March 2025)

Princeton University

Princeton, NJ

M.A. in Mathematics

2016 - 2017

University of Chicago

Chicago, IL

B.A. in Mathematics

2012-2016

EXPERIENCE

Princeton University

Princeton, NJ

Graduate Student in Mathematics

2016-2021

 Organized, participated in, and co-organized several department seminars and graduate student seminars on topics relating to arithmetic geometry and number theory.

Stanford University

Stanford, CA

Visiting Scholar

September 2018 - February 2019, January 2020-March 2020

 Visited at Stanford University to meet in person with my advisor. While there I participated in several department seminars on topics in arithmetic geometry, representation theory, and number theory.

Imperial College London

London, UK

Research Associate in Number Theory

October 2021 -October 2024

- Research: Postdoc in number theory, supervised by professor Toby Gee.

Papers/Preprints

- [1] J. Sempliner, On uniformization of moduli stacks of shtuka and exotic isomorphisms of igusa varieties (princeton phd thesis), 2025.
- [2] P. van Hoften and J. Sempliner, On exotic hecke correspondences, in the final stages of preparation, 2024.
- [3] P. van Hoften and J. Sempliner, On the piatetski-shapiro construction for integral models of shimura varieties, submitted, 2024. arXiv: 2403.10653 [math.NT].
- [4] J. Sempliner and R. Taylor, Cocycles for kottwitz cohomology, submitted, 2024. arXiv: 2407.06031 [math.NT].
- [5] J. Sempliner and R. Taylor, On the formalism of shimura varieties, preprint available online at https://virtualmath1.stanford.edu/~rltaylor/shim2.pdf, submitted, 2024.

SELECTED TALKS

• On Igusa Varieties for Moduli of Bounded Global G-Shtuka, Berkeley Number Theory Seminar

Fall 2021

• On Exceptional Isomorphisms Between Igusa Varieties, London Number Theory Seminar

Fall 2021

On Exceptional Isomorphisms Between Igusa Varieties over function fields, Cambridge Number Theory Seminar Spring 2022 • On the Formalism of Shimura Varieties, Queen Mary University Number Theory Seminar Spring 2022 On cohomological Jacquet-Langlands for Shimura varieties, University of Manchester Number Theory Seminar 2024 TEACHING • Instructor at Princeton University Fall 2019 Linear Algebra Teaching Assistant at Princeton University Spring 2019 Honors Linear Algebra • Course Lead at Imperial College London Fall 2023 Number Theory SKILLS LANGUAGES • English: Native speaker. • Mathematical Software: Working proficiency with SAGE and MAGMA. • French: Working proficiency. • Italian: B2 Proficiency • Programming: Proficiency in Java, C, Python, Haskell, Javascript. • Swedish: B1 Proficiency Scholarships and Awards • NSF Graduate Research Fellowship 2016-2021 First Year Fellowship, Princeton University 2016-2017 • Paul R. Cohen Memorial Prize, University of Chicago 2016 Conferences/Workshops Attended • Connecticut Summer School in Number Theory Summer 2016 • Arizona Winter School: Perfectoid Spaces March 11-15, 2017 • Barry Charles Mazur: 80th Birthday Conference Summer 2018 Ofer Gabber: 60th Birthday Conference Summer 2018 Summer 2018 Padova school on Serre conjectures and the p-adic Langlands program Summer 2018 Arithmetic Geometry in Carthage

• Geometric realizations of Jacquet-Langlands correspondences, AIM

Fall 2019

• Summer School on the Langlands program, IHES

July 2022

• Iwasawa 2023: in memory of John Coates, Cambridge

July 2023

• Arithmetic of automorphic forms, in honor of Laurent Clozel, Paris Saclay

September 2023

- Arithmetic Geometry A Conference in Honor of Hélène Esnault on the Occasion of Her 70th Birthday, IHES April 2024
- Modular Forms, L-functions, and Eigenvarieties, in memoriam for Joël Bellaiche, ENS Paris

June 2024

• Conference on "Arithmetic Geometry" in Honour of Gerd Faltings' 70th Birthday, Bonn

July 2024

• New Advances in the Langlands Program: Geometry and Arithmetic, Oxford

October 2024

MENTORING

• Mentoring Moebius Program

 Mentored a small group of mathematically inclined undergraduate students once per week as part of Princeton University's mentoring Moebius program. Discussions ranged from concrete topics in mathematics to applying to graduate school.

• Princeton DRP

- Co-founded and was an inaugural participant in the Princeton DRP program. Directed mathematically talented undergraduates in researching a chosen mathematical area.

• Imperial College Graduate Program

Supervised masters students Additi Pandey and Alberto Centelles. Additi Pandey's project focused on class field
theory and genus theory, whereas Alberto Centelles' project was on Mazur's torsion theorem and the geometry of
modular curves.