

Luochen ZHAO

CONTACT INFORMATION

Department of Mathematics
Johns Hopkins University
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EDUCATION

Johns Hopkins University

Ph.D candidate in mathematics

Thesis advisor: Antonio Lei Department advisor: Yiannis Sakellaridis

Research area: Number theory, p -adic L -functions, Iwasawa theory, p -adic analysis

Baltimore, MD, USA

Sept 2019 – Now

Rutgers, The State University of New Jersey

Ph.D candidate in mathematics

New Brunswick, NJ, USA

Sept 2017 – Aug 2019

Peking University

Bachelor of Science in mathematics

Supervisor: Ruochuan Liu

Beijing, China

Sept 2013 – Jul 2017

PUBLICATIONS & PREPRINTS

On the BDP Iwasawa main conjecture for modular forms

(with Antonio Lei) Preprint, submitted.

📄 <https://arxiv.org/pdf/2211.04377.pdf>.

Sum expressions for p -adic Hecke L -functions of totally real fields

Preprint, submitted to *Pure and Applied Mathematics Quarterly*.

📄 <https://arxiv.org/pdf/2204.07364.pdf>.

Sum expressions for Kubota-Leopoldt p -adic L -functions

Proceedings of the Edinburgh Mathematical Society 65 (2022), no. 2, 460–479.

🔗 <https://doi.org/10.1017/S0013091522000177>; 📄 <https://arxiv.org/pdf/2201.08870.pdf>.

Note on p -adic local functional equation

p-Adic Numbers, Ultrametric Analysis and Applications, 2022, Vol. 14, No. 3, pp. 238–264.

🔗 <https://doi.org/10.1134/S2070046622030037>; 📄 <https://arxiv.org/pdf/2201.08874.pdf>.

SCHOLARSHIPS

Professor Joel Dean Award

for excellence in the teaching of mathematics

Johns Hopkins, 2022

Academic Excellence Award

for passing written qualifying exams on arrival

Rutgers, 2017

Chun-Tsung Endowment

researched on the Erdős-Szemerédi problem supervised by Prof. Rongquan Feng

Peking University, 2015-2016

Undergraduate Young Talent Project in Pure Mathematics

mentored by Prof. Ruochuan Liu on algebraic number theory

Peking University, 2014-2017

PRESENTATIONS

On the BDP Iwasawa main conjecture for modular forms Johns Hopkins Junior Number Theory Days 2022	Baltimore, MD Dec 2022
Fourier transform according to Cartier Rutgers Graduate Algebra and Representation Theory Seminar (GARTS)	Piscataway, NJ Oct 2022
Explicit period formulas for totally real p-adic L-functions, à la Cassou-Noguès The Ohio State University Number Theory Seminar	Online Sept 2022
Explicit period formulas for totally real p-adic L-functions, à la Cassou-Noguès Philadelphia Area Number Theory Seminar	Swarthmore, PA Sept 2022
Construction of p-adic L-functions attached to modular forms via modular symbols Guest lecture for the graduate topic course MAT7395 of Université Laval	Online November 2021
Sum expressions for Kubota-Leopoldt p-adic L-functions Maine-Québec Number Theory Conference	Online October 2021

INFORMAL TALKS

Special fibre of Drinfeld's upper half plane ULaval learning seminar on p -adic uniformization of Shimura curves	Online Spring 2023
Outline of "Kolyvagin's work on modular elliptic curves" by Gross Johns Hopkins number theory learning seminar	Baltimore, MD Fall 2022
Deducing the Brumer-Strak conjecture from the main theorem Galois cohomology classes associated to modular forms ULaval learning seminar on the Brumer-Stark conjecture	Online Online Spring 2022
Generalities on the modular curve of level N ULaval learning seminar on Eisenstein ideals	Online Fall 2021
"Formal complex multiplication in local fields" by Lubin-Tate Johns Hopkins classic papers in number theory learning seminar	Online Spring 2021
"p-divisible groups" by Tate Johns Hopkins classic papers in number theory learning seminar	Online Fall 2020
Introduction to rigid analytic geometry JHU number theory learning seminar	Baltimore, MD Fall 2019
Structure theorem for reductive groups (absolute theory), I Rutgers Graduate Algebra and Representation Theory Seminar (GARTS)	Piscataway, NJ Spring 2019

TEACHING EXPERIENCE

Teaching assistant	Johns Hopkins University
AS.110.401 Introduction to Abstract Algebra	Fall 2022
AS.110.601 Algebra	Fall 2022
AS.110.202 Calculus III	Spring 2022
AS.110.202 Calculus III	Fall 2021
AS.110.601 Algebra	Fall 2021
AS.110.201 Linear Algebra	Spring 2021
AS.110.413 Introduction to Topology	Spring 2021
AS.110.106 Calculus I (Biology and Social Sciences)	Fall 2020
AS.110.411 Honors Algebra I	Fall 2020
AS.110.405 Real Analysis I	Spring 2020
AS.110.445 Mathematical and Computational Foundations of Data Science	Spring 2020
AS.110.411 Honors Algebra I	Fall 2019
AS.110.422 Representation Theory	Fall 2019

Teaching assistant

01:640:152 Calculus II for Mathematical and Physical Sciences

01:640:151 Calculus I for Mathematical and Physical Sciences

Rutgers-New Brunswick

Spring 2019

Fall 2018

CONFERENCES ATTENDED

Connections & Introductory Workshops: Algebraic Cycles, L-Values, and Euler Systems	MSRI/SLMath, Berkeley, CA, Jan 2023
Johns Hopkins Junior Number Theory Days 2022	Johns Hopkins, Baltimore, MD, Dec 2022
A Pair of Automorphic Workshops in 2022	University of Oregon, Eugene, OR, Jul 2022
2021 CMS Winter Meeting	Online, Dec 2021
Junior Number Theory Days	Johns Hopkins, Baltimore, MD, Dec 2021
Maine-Québec Number Theory Conference	Online, Oct 2021
Elliptic curves and the special values of L -functions	Online, ICTS, Aug 2021
JHU-UMD Algebra and Number Theory Day	University of Maryland, College Park, MD, Nov 2019
Sphericity 2019	CIRM, Luminy, France, Jan 2019
Sixth Abel Conference: A Mathematical Celebration of Robert P. Langlands	Minneapolis, MN, Nov 2018
Arithmetic algebraic geometry on the occasion of the 70th birthday of Rapoport	Bonn, Germany, Oct 2018
Connecticut Summer School in Number Theory	University of Connecticut, Storrs, CT, May-Jun 2018
Old and New themes in p -adic Cohomology	University of Arkansas, Fayetteville, AR, Apr 2018

SERVICES

Organizer of a learning seminar on characteristic classes	Rutgers, Spring 2019
Organizer of a student learning seminar on abelian varieties	Rutgers, Spring 2019
Co-organizer of a student learning seminar on linear algebraic groups	Rutgers, Fall 2018

LANGUAGES

English - proficient
Chinese - native
French - limited proficiency
Japanese - limited proficiency