

# Luochen ZHAO

## CONTACT INFORMATION

---

Morningside Center of Mathematics  
Chinese Academy of Sciences  
No. 55, Zhongguancun East Road  
Haidian District, Beijing, 100190, PRC

Office: 505 Morningside Building  
✉ [luochenzhao@amss.ac.cn](mailto:luochenzhao@amss.ac.cn)  
🌐 <https://luochenzhao.github.io>

## EMPLOYMENT

---

### Morningside Center of Mathematics

Postdoctoral member  
Mentor: Xin Wan

Beijing, China

Sept 2024 – Now

### Hebrew University of Jerusalem

Postdoctoral member under the ERC grant *Arithmetic of Curves and Jacobians*  
Mentor: Ari Shnidman

Jerusalem, Israel

Sept 2023 – Aug 2024

## ACADEMIC VISITS

---

### University of Ottawa

Host: Antonio Lei; supported by the Visiting Researchers Program of the University of Ottawa

Ottawa, Canada

Nov 2025

### Morningside Center of Mathematics

Host: Xin Wan

Beijing, China

Nov 2023 – Aug 2024

## EDUCATION

---

### Johns Hopkins University

Ph.D 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 – May 2023

### 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

---

### 7. On the Bernoulli–Hurwitz periods

In preparation; available upon request.

### 6. On the structure of the Bloch–Kato Selmer groups of modular forms over anticyclotomic $\mathbb{Z}_p$ -towers

(with A. Lei, L. Mastella) Preprint; second referee report received from *Annales de l'Institut Fourier*.

📄 <https://arxiv.org/pdf/2409.11966>.

### 5. On a product formula of bivariate $p$ -adic Gamma values

Preprint; submitted. 📄 <https://arxiv.org/pdf/2311.04805>.

### 4. On the BDP Iwasawa main conjecture for modular forms

(with Antonio Lei) *Manuscripta Mathematica* 173, 867–888 (2024).

📄 <https://doi.org/10.1007/s00229-023-01485-4>; 📄 <https://arxiv.org/pdf/2211.04377>.

### 3. Sum expressions for $p$ -adic Hecke $L$ -functions of totally real fields

*Pure and Applied Mathematics Quarterly*, Vol. 19, No. 2, 597–639, 2023.

↗ <https://doi.org/10.4310/PAMQ.2023.v19.n2.a7>; ↗ <https://arxiv.org/pdf/2204.07364>.

### 2. 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>.

### 1. 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>.

## GRANTS

### Visiting Researchers Programme – CAS and C9 League

co-investigator on a research collaboration program valued \$5,000 CAD

University of Ottawa, 2025

## 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 arithmetic of Bernoulli–Hurwitz periods

Morningside Center of Mathematics, Chinese Academy of Sciences

Beijing, China

Sept 2025

### Explicit period formulas of the Bernoulli–Hurwitz measure

Workshop on Frontiers in Number Theory, Tianyuan Mathematics Research Center

Kunming, China

May 2025

### On the structure of anticyclotomic Selmer groups of modular forms

BIMSA-YMSC Tsinghua Number Theory Seminar

Beijing, China

Apr 2025

### On the structure of anticyclotomic Selmer groups of modular forms

Young researchers in Galois Representations and related topics

Genova, Italy

Jan 2025

### On the structure of anticyclotomic Selmer groups of modular forms

Morningside Center of Mathematics, Chinese Academy of Sciences

Beijing, PRC

Oct 2024

### Explicit differentiation of totally real $p$ -adic Hecke $L$ -functions

Morningside Center of Mathematics, Chinese Academy of Sciences

Beijing, China

Nov 2023

### 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

<b>Construction of <math>p</math>-adic <math>L</math>-functions attached to modular forms via modular symbols</b>	Online
Guest lecture for the graduate topic course <a href="#">MAT7395</a> of Université Laval	November 2021
<b>Sum expressions for Kubota-Leopoldt <math>p</math>-adic <math>L</math>-functions</b>	Online
Maine-Québec Number Theory Conference	October 2021

## TEACHING EXPERIENCE

<b>Teaching assistant</b>	Peking University
Summer school in algebra and number theory	Summer 2025
<b>Teaching assistant</b>	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 (online)	Fall 2021
AS.110.601 Algebra (online)	Fall 2021
AS.110.201 Linear Algebra (online)	Spring 2021
AS.110.413 Introduction to Topology (online)	Spring 2021
AS.110.106 Calculus I for Biology and Social Sciences (online)	Fall 2020
AS.110.411 Honors Algebra I (online)	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
<b>Teaching assistant</b>	Rutgers-New Brunswick
01:640:152 Calculus II for Mathematical and Physical Sciences	Spring 2019
01:640:151 Calculus I for Mathematical and Physical Sciences	Fall 2018

## PEER REVIEWS

Referee for *Journal of Number Theory* (twice), *Research in Number Theory* and *Journal de Théorie des Nombres de Bordeaux* (ongoing).

## CONFERENCES ATTENDED

Arithmetic cycles, modular forms and L-functions	Université de Montréal, Montréal, Canada, Aug 2025
Workshop on Frontiers in Number Theory	Tianyuan Math Research Center, Kunming, China, May 2025
Arizona Winter School 2025	University of Arizona, Tuscon, AZ, Mar 2025
Young researchers in Galois Representations and related topics	Università di Genova, Genoa, Italy, Jan 2025
Arithmetic Geometry in Shenzhen	SUSTech, Shenzhen, China, Dec 2024
2024 Chen Jing-Run Prize Conference	Morningside Center of Mathematics, Beijing, China, Jul 2024
Development of Iwasawa theory (Kurihara60)	Keio University, Hiyoshi, Japan, Jul 2024
Special values of L-functions	TSIMF, Sanya, China, Jan 2024
JHU-UMD Algebra and Number Theory Day	Johns Hopkins, Baltimore, MD, Apr 2023
Shimura Varieties and L-Functions	MSRI/SLMath, Berkeley, CA, Mar 2023
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
Current Development in Mathematics	Harvard University, Cambridge, MA, Nov 2017

## 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