Bin Guan

CONTACT
INFORMATION

Mingde Building, Room C706
Shandong University
No. 27 Shanda South Road
Jinan, Shandong, China, 250100

bguan.math@sdu.edu.cn
https://sites.google.com/view/binguan/

RESEARCH
INTERESTS

Number theory, representation theory — especially automorphic forms, automorphic representations, and L-functions.

POSITIONS

Shandong University, Shandong, China

Postdoctoral Fellow (August 2020 — present)

- Advisor: Prof. Jianya Liu

EDUCATION

The Graduate Center, The City University of New York, NY, USA

Ph.D. in Mathematics, June 2020

- Dissertation Topic: Averages and nonvanishing of central values of triple product L-functions via the relative trace formula
- Advisor: Prof. Brooke Feigon

Shandong University, Shandong, China

M.S. in Mathematics, June 2015

- Dissertation Topic: On application of $(\mathfrak{g}, K)-$cohomology to calculation of cohomology of locally symmetric spaces
- Advisor: Prof. Jing–Song Huang

B.S. in Mathematics, June 2012

- Dissertation Topic: The Clebsch–Gordan problem of the category of nilpotent representations of $\tilde{A}_n$ and its nilpotent representation ring
- Advisor: Prof. Hualin Huang

PUBLICATIONS

1. An explicit Watson–Ichino formula with CM newforms.
   to appear in *Acta Arith.*, 24 pp, 2024.

2. On the analytic strong multiplicity one for $SL(2)$.
   Int. J. Number Theory, 19(10):2419–2426, 2023.

PREPRINTS

- Averages and nonvanishing of central values of triple product L-functions.
  ArXiv preprint, submitted, 67 pp, 2021. arXiv:2101.12400.

Article in progress:
- *Exact averages of central values of Asai L-functions.*
- (with Bingrong Huang) *Cubic moments of Hecke–Maass cusp forms in the level aspect.*
- (with Hongbo Yin) *Selmer groups for elliptic curves over $\mathbb{Q}(\sqrt{-3})$.*

CONFERENCE TALKS	*Averages of central values of triple product L-functions*, Junior Number Theory Days 2019, Johns Hopkins University.
	December 2019
	Averages of central values of triple product L-functions, 2019 Maine/Québec Number Theory Conference, The University of Maine.
	October 2019
	Exact averages of central values of triple product L-functions via the relative trace formula, 33rd Automorphic Forms Workshop, Duquesne University.
	March 2019
INVITED TALKS	*Relative trace formula and averages of central values of triple product L-functions*, Shandong University.
	March 2021
	Averages of central values of triple product L-functions, Binghamton University.
	March 2020
	Exact averages of central values of triple product L-functions via the relative trace formula, Shenzhen University.
	July 2019
	Exact averages of central values of triple product L-functions via the relative trace formula, Shandong University at Weihai.
	June 2019
	An introduction to Jacquet–Langlands correspondence and the relative trace formula, series lectures, Shandong University.
	May 2019
SEMINAR TALKS	Co-organizer and speaker at the *Automorphic Forms and L-functions Student Seminar*, The Graduate Center, CUNY.
	Summer 2016 — Fall 2018
	Abstracts available at `https://bit.ly/2XONOqE`.

Co-organizer and speaker at the *Pure Math Student Seminar of Shandong University*, Shandong University, Jinan, China.   Fall 2009 — Spring 2014
I was the organizer and one of the lecturers of the following seminars:

• Automorphic forms on GL_2	Fall 2013
• Lie algebras and Lie groups	Fall 2012 — Fall 2013
• Structure theory of reductive Lie groups	Fall 2013
• Group cohomology	Spring 2013
• Representation theory of compact Lie groups	Spring 2013
• Semisimple Lie algebras	Fall 2012
• Algebraic Number Theory	Spring 2012 — Spring 2013
• Undergraduate Algebraic Geometry	Spring 2012
• Algebraic topology	Spring 2011
• General topology	Fall 2010
• Calculus on manifolds	Fall 2009

OTHER TALKS	*Baby case of the Arthur–Selberg trace formula*, Summer school on Dirac cohomology and Langlands functoriality, Shandong University.
	July 2022
	Proof sketch of the Jacquet–Langlands correspondence, Reading seminar on David Whitehouse's notes, Shandong University.
	December 2020

Overview of the Langlands conjectures, Oral exam talk, The Graduate Center, CUNY.
September 2017

Elliptic curves, Prof. L. Szpiro's course, The Graduate Center, CUNY.
December 2016

The Hilbert function and the dimension of a variety, Algebraic Geometry Student Seminar, The Graduate Center, CUNY. March 2016

Sheaf structure of $\operatorname{Spec} A$ *on an A-module*, Prof. L. Szpiro's course, The Graduate Center, CUNY. October 2015

Representation theory of symmetric groups, Prof. Hualin Huang's course, Shandong University. May 2014

Group algebra and its representation of a topological group and a Lie group, Prof. Hualin Huang's course, Shandong University. April 2014

Leray–Schauder degree, Prof. Xijun Hu's course, Shandong University.
December 2013

Higher composition laws and applications, Discussion on Manjul Bhargava's thesis, Shandong University. November 2013

Branching law from $U(n)$ to $U(n-1)$, Reading seminar on the branching law, Shandong University. June 2013

Expanding maps on the circle S^1, Prof. Xijun Hu's course, Shandong University.
April 2013

Schur–Weyl duality of symmetric group S_n and $GL(n, \mathbb{C})$, Prof. Hualin Huang's course, Shandong University. December 2012

<table>
<tr><td>Teaching
Experience</td><td colspan="3">**Undergraduate courses at Shandong University**</td></tr>
<tr><td></td><td>Fall</td><td>2022</td><td>Basics in Algebra and Geometry</td></tr>
<tr><td></td><td>Spring</td><td>2022</td><td>Abstract Algebra</td></tr>
<tr><td></td><td>Fall</td><td>2021</td><td>Basics in Algebra and Geometry</td></tr>
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Graduate courses at Shandong University

Spring	2023	Advanced Abstract Algebra

Undergraduate courses at the City College of New York

Spring	2019	Math 39200 Linear Algebra and Vector Analysis for Engineers
Fall	2018	Math 20500 Elements of Calculus
Spring	2018	Math 20200 Calculus II
Fall	2017	Math 20500 Elements of Calculus
Spring	2017	Math 20200 Calculus II
Fall	2016	Math 20100 Calculus I

Recitation classes at Shandong University

Fall	2014	Teaching Assistant, Basics in Algebra and Geometry
Spring	2014	Teaching Assistant, Advanced Abstract Algebra
Fall	2013	Teaching Assistant, Differential Geometry
Spring	2013	Teaching Assistant, Abstract Algebra
Fall	2012	Teaching Assistant, Differential Geometry

EXTENDED PROFESSIONAL TRAVEL

January	2024	Workshop on Number Theory, Shenzhen University, Shenzhen, Guangdong, China
November	2023	Workshop on Number Theory of Shandong University: on the occasion of Professor Tonghai Yang's 60th birthday, Shandong University, Jinan, Shandong, China
October	2023	Workshop on Number Theory of Shandong University, Shandong University, Jinan, Shandong, China
August	2023	SDU—RUC Mathematical Frontier Forum, Shandong University at Weihai, Weihai, Shandong, China
August	2023	Workshop on Automorphic Representations, Shandong University, Jinan, Shandong, China
August	2023	The Eleventh Pan Asian Number Theory (PANT) Conference, Institute for Advanced Study in Mathematics — Harbin Institute of Technology, Harbin, Heilongjiang, China
July	2023	Conference on Representation theory and Post-quantum Cryptography, Shandong University, Jinan, Shandong, China
July	2023	SDU Summer school: Representation Theory and Quantum Computing, Shandong University, Jinan, Shandong, China
April	2023	USTC-XJTU Number Theory Conference, University of Science and Technology of China, Hefei, Anhui, China
April	2023	XJTU-USTC Number Theory Conference, Xi'an Jiaotong University, Xi'an, Shaanxi, China
March	2023	SDU Number Theory Pi Day, Shandong University, Jinan, Shandong, China
December	2022	SDU Number Theory Day, Shandong University, Jinan, Shandong, China
November	2022	(Online) The Seventh Qilu Youth Forum, Shandong University, Jinan, Shandong, China
July	2022	SDU Summer school: Dirac Cohomology and Langlands Functoriality, Shandong University, Jinan, Shandong, China
December	2021	SCU Online Workshop on Algebra and Number Theory, Tianyuan Mathematical Center in Southwest China — Sichuan University, Chengdu, Sichuan, China
December	2021	(Online) The Tenth Pan Asian Number Theory (PANT) Conference, Research Institute for Mathematical Sciences — Kyoto University, Kyoto, Japan
December	2021	(Online) SDU Number Theory Day, Shandong University, Jinan, Shandong, China
December	2021	Mathematics and Technology: The Second National Postdoctoral Academic Forum, Shandong University, Jinan, Shandong, China
November	2021	(Online) Symposium on Number Theory and Representation Theory, Zhejiang University, Hangzhou, Zhejiang, China
June	2021	Jintan Conference on Number Theory (The 8th National Conference on Number Theory), Hua Loo-Keng Center for Mathematical Sciences, Jintan, Jiangsu, China

April	2021	When Number Theory meets Algebraic Geometry (NTAG-1st), University of Science and Technology of China, Hefei, Anhui, China
November	2020	Mathematics and Technology: The First National Postdoctoral Academic Forum, Shandong University, Jinan, Shandong, China
November	2020	(Online) SCU Workshop on Modern Number Theory and Related Topics: in Memory of Professor Chao Ko's 110th birthday, Tianyuan Mathematical Center in Southwest China — Sichuan University, Chengdu, Sichuan, China
May	2020	(Online) Conference on Representation Theory and Algebraic Analysis: in honor of Joseph Bernstein on the occasion of his 75th birthday, Weizmann Institute of Science, Rehovot, Israel
January	2020	Joint Mathematics Meetings, Denver, CO, USA
December	2019	Johns Hopkins Junior Number Theory Days, Johns Hopkins University, Baltimore, MD, USA
October	2019	Maine/Québec Number Theory Conference, The University of Maine, Orono, ME, USA
June	2019	Workshop on Number Theory and Dynamic Systems, Shandong University at Weihai, Weihai, Shandong, China
April	2019	Ninth Annual Upstate Number Theory Conference, Cornell University, Ithaca, NY, USA
March	2019	33rd Automorphic Forms Workshop, Duquesne University, Pittsburgh, PA, USA
December	2018	On the Langlands Program: Endoscopy and Beyond, Institute for Mathematical Sciences — NUS, Singapore
May	2018	Representation Theory, Geometry, and Quantization: The Mathematical Legacy of Bertram Kostant, Massachusetts Institute of Technology, Cambridge, MA, USA
July	2017	MSRI Summer school: Automorphic Forms and the Langlands Program, Mathematical Sciences Research Institute, Berkeley, CA, USA
June	2015	The 17th National Workshop on Algebra and Representation Theory, Shandong University, Jinan, Shandong, China
May	2015	The 7th National Conference on Number Theory, Shandong University, Jinan, Shandong, China
May	2015	Conference on Arithmetic Algebraic Geometry in honor of Professor Nicholas Katz's 71 birthday, Academy of Mathematics and Systems Science, Chinese Academy of Science, Beijing, China
June	2014	International Workshop on Representation Theory and Harmonic Analysis, Chern Institute of Mathematics, Tianjin, China
January	2014	Number Theory Conference in Honor of Peter Sarnak, Shandong University, Jinan, Shandong, China
August	2012	Workshop on Algebraic and Arithmetic Geometry, Beijing International Center for Mathematical Research, Beijing, China
July	2012	Summer Course: Arithmetic, Algebra and Geometry, Mathematical Sciences Center in Tsinghua University, Beijing, China

GRANTS	2024—2026	Natural Science Foundation for Excellent Young Scholars of Shandong Province, China (Participate) Shandong University
	2024—2026	Natural Science Foundation for General Programs of Shandong Province, China (Participate) Shandong University
	2021—2026	The National Key R&D Program of China (Participate) Shandong University
	2019—2020	Doctoral Student Research Grant (Round 14) The Graduate Center, CUNY

Honors and Awards	2020	Graduate Center Dissertation Year Award
		The Graduate Center, CUNY
	2015—2020	Graduate Assistantship 5-year PhD Fellowship
		The Graduate Center, CUNY
	2009—2011	Outstanding Student Scholarship
		Shandong University

Relevant Skills	Languages:	English (Fluent), Chinese (Native), French (Basic)
	Computing:	C++, MATLAB, Magma, SageMath
	Writing:	LaTeX