

BINGRONG HUANG 黄炳荣

## CURRICULUM VITAE

BIRTHDAY: 1990  
BIRTHPLACE: Fujian, China  
NATIONALITY: Chinese

### MAILING ADDRESS

Data Science Institute  
Shandong University  
27 Shanda Nanlu  
Jinan, Shandong 250100, China

### CONTACT INFORMATION

Office: Mingde Building, Room C701  
Phone: +86 0531-88369786  
E-mail: brhuang@sdu.edu.cn  
Webpage: <http://faculty.sdu.edu.cn/brhuang>

### RESEARCH INTERESTS

Analytic Number Theory, Automorphic Forms,  $L$ -functions, Arithmetic Quantum Chaos.

### EDUCATION

2012.09–2017.06 Ph.D., Shandong University  
(Supervisors: Prof. Jianya Liu and Dorian Goldfeld).  
2015.08–2017.02 Joint-cultivated doctoral student, Columbia University  
(Host supervisor: Prof. Wei Zhang).  
2008.09–2012.06 B.S., Shandong University.

### POSITIONS

2017.10–2019.08 Postdoctoral fellow, Tel Aviv University  
(Supervisor: Prof. Zeév Rudnick).

### EMPLOYMENT

2019.08–now Professor, Shandong University.

### GRANTS

- 2021-2026, National Key R&D Program of China, Participate.
- 2021-2025, NSFC Key Program, Participate.
- 2021-2023, NSFC Young Scientists Fund, PI.

## AWARDS AND HONORS

- 2023, SCIENCE CHINA Mathematics best paper award.
- 2021, National Top Young Scholars Program.
- 2019, Young Taishan Scholars Program of Shandong Province.

## CONFERENCES/SEMINARS ORGANIZED

- Aug. 14-18, 2023, Workshop on automorphic representations, Zhixin Building, Jinan. (with Yongxiao Lin)
- Mar. 14, 2023, SDU Number Theory  $\pi$  Day, Mingde Building, Jinan. (with Yongxiao Lin, Shenghao Hua, and Liangxun Li)
- Dec. 10, 2022, SDU Number Theory Day, Online.
- Dec. 05, 2021, SDU Number Theory Day, Online.
- Apr. 2020 – Today, SDU Number Theory Seminar.

## TEACHING

### UNDERGRADUATE COURSES AT SHANDONG UNIVERSITY:

- 2023 Fall, Modular Forms Seminar, Taishan College and School of Mathematics.
- 2022 Fall, Modular Forms Seminar, Taishan College and School of Mathematics.
- 2022 Spring, Fundamentals in Number Theory, Taishan College.
- 2021 Spring, Fundamentals in Number Theory, Taishan College.
- 2020 Fall, Basic Algebra and Geometry, School of Mathematics.

### GRADUATE COURSES AT SHANDONG UNIVERSITY:

- 2024 Spring,  $L$ -functions, School of Mathematics. (with Yongxiao Lin)
- 2023 Spring,  $L$ -functions, School of Mathematics.
- 2022 Fall, Automorphic Forms, School of Mathematics. (with Jianya Liu)
- 2022 Spring,  $L$ -functions, School of Mathematics.

## PREPRINTS

- Effective decorrelation of Hecke eigenforms. *ArXiv preprint*, 22 pp, 2022.  
<https://arxiv.org/abs/2201.12481>

## PUBLICATIONS

26. Uniform bounds for  $GL(3) \times GL(2)$   $L$ -functions. To appear in **J. Inst. Math. Jussieu**, 44 pp, 2023+.
25. On the Rankin–Selberg problem, II. To appear in **Q. J. Math.**, 10 pp, 2023+.

24. The cubic moment of Hecke–Maass cusp forms and moments of  $L$ -functions. To appear in **Math. Ann.**, 47 pp, 2023+.
23. (with Shenghao Hua), Extreme central  $L$ -values of almost prime quadratic twists of elliptic curves. **Sci. China Math.** 66 (2023), no. 12, 2755–2766.
22. (with Shenghao Hua), Lower bounds for moments of quadratic twisted self-dual  $GL(3)$  central  $L$ -values. **Acta Math. Sin. (Engl. Ser.)** 39 (2023), no. 11, 2139–2148.
21. (with Zhao Xu), Hybrid subconvexity bounds for twists of  $GL(3) \times GL(2)$   $L$ -functions. **Algebra Number Theory** 17 (2023), no. 10, 1715–1752.
20. (with Qingfeng Sun and Huimin Zhang), Analytic twists of  $GL_2 \times GL_2$  automorphic forms. **Math. Nachr.** 296 (2023), no. 6, 2366–2394.
19. (with Daniel El-Baz and Min Lee), Effective equidistribution of primitive rational points on expanding horospheres. **J. Eur. Math. Soc. (JEMS)** 25 (2023), no. 6, 2295–2317.
18. (with Shenghao Hua), Determination of  $GL(3)$  cusp forms by central values of quadratic twisted  $L$ -functions. **Int. Math. Res. Not. IMRN** 2023, no. 9, 7976–8007.
17. (with Stephen Lester), Quantum variance for dihedral Maass forms. **Trans. Amer. Math. Soc.** 376 (2023), 643–695.
16. (with Yongxiao Lin and Zhiwei Wang), Averages of coefficients of a class of degree 3  $L$ -functions. **Ramanujan J.** 57 (2022), no. 1, 79–91.
15. On the Rankin–Selberg problem. **Math. Ann.** 381 (2021), no. 3-4, 1217–1251.
14. (with Olga Balkanova and Anders Södergren), Non-vanishing of Maass form  $L$ -functions at the critical point. **Proc. Amer. Math. Soc.** 149 (2021), no. 2, 509–523.
13. Quantum variance for Eisenstein Series. **Int. Math. Res. Not. IMRN** 2021, no. 2, 1224–1248.
12. Hybrid subconvexity bounds for twisted  $L$ -functions on  $GL(3)$ . **Sci. China Math.** 64 (2021), no. 3, 443–478.
11. (with Jianya Liu and Zeév Rudnick), Gaussian primes in almost all narrow sectors. **Acta Arith.** 193 (2020), no. 2, 183–192.
10. (with Dorian Goldfeld), Super-positivity of a family of  $L$ -functions. **Banach Center Publications** 118 (2019), 45–93.
9. Sup-norm and nodal domains of dihedral Maass forms. **Comm. Math. Phys.** 371 (2019), no. 3, 1261–1282.
8. (with Zeév Rudnick), Prime lattice points in ovals. **Monatsh. Math.** 189 (2019), no. 2, 295–319.
7. (with Shenhui Liu and Zhao Xu), Mollification and non-vanishing of automorphic  $L$ -functions on  $GL(3)$ . **Israel J. Math.** 227 (2018), no. 2, 597–622.
6. (with Dorian Goldfeld), Super-positivity of a family of  $L$ -functions in the level aspect. **Res. Math. Sci.** 5 (2018), no. 2, 5:16.
5. (with Zhao Xu), Sup-norm bounds for Eisenstein series. **Forum Math.** 29 (2017), no. 6, 1355–1369.
4. (with Xiaoguang He), Exponential sums involving the Möbius function. **Acta Arith.** 175 (2016), no. 3, 201–209.

3. Exponential sums over primes in short intervals and an application to the Waring–Goldbach problem. **Mathematika** 62 (2016), no. 2, 508–523.
2. Strong orthogonality between the Möbius function and nonlinear exponential functions in short intervals. **Int. Math. Res. Not. IMRN** 2015, no. 23, 12713–12736.
1. (with Zhiwei Wang), Exponential sums over primes in short intervals. **J. Number Theory** 148 (2015), 204–219.

## APPENDIXES

- Kloosterman sums on  $GL(4)$ . An appendix to “An orthogonality relation for  $GL(4, \mathbb{R})$ ” by Goldfeld, Stade, and Woodbury, **Forum Math. Sigma** 9 (2021), Paper No. e47, 83 pp.
- (with Daniel El-Baz), Equidistribution of the lengths of the primitive vectors in integer lattices. An appendix to “Uniform distribution of saddle connection lengths” by Chaika and Robertson, **J. Mod. Dyn.** 15 (2019), 329–343.

## MINI-COURSES

- 2022.08, North China University of Water Resources and Electric Power, *Topics in Analytic Theory of Automorphic L-functions*. 10 hours.
- 2021.07, Xi’an Jiaotong University, *Analytic theory of automorphic forms on  $GL(2)$* . 8 hours.

## CONFERENCE TALKS

- 2023.12, Xiamen University, *Moments of quadratic twisted L-functions*.
- 2023.09, Queen Mary University of London, *Value distribution of  $GL(2)$  Maass forms*.
- 2023.08, Wuhan University, *Averages of coeicients of L-functions*.
- 2023.05, Northwest University & Xi’an Polytechnic University, *Effective decorrelation of Hecke eigenforms*.
- 2023.04, University of Science and Technology of China, *Arithmetic Quantum Chaos and L-functions*.
- 2023.02, Wuhan, *Effective decorrelation of Hecke eigenforms*.
- 2022.08, Shandong University, *Effective joint equidistribution of primitive rational points on expanding horospheres*.
- 2022.08, Minnan Normal University, *The subconvexity problem of L-functions*.
- 2022.07, University of Northern British Columbia, *Quantum variance for automorphic forms*.
- 2022.06, International Centre for Theoretical Sciences, *Quantum variance for automorphic forms*.
- 2022.04, Capital Normal University, *The subconvexity problem of L-functions*.
- 2021.12, Kyoto University, *On the Rankin-Selberg problem*.
- 2021.07, The University of Hong Kong, *Quantum variance for automorphic forms*.
- 2021.06, Jiangsu Hualuogeng Senior High School, *On the Rankin–Selberg problem*.
- 2021.05, Zhejiang University, *Quantum variance for automorphic forms*.
- 2020.04, Xi’an Jiaotong University, *Sup-norm and nodal domains of dihedral Maass forms*.
- 2018.07, Queen Mary University of London, *Sup-norm and nodal domains of dihedral Maass forms*.

- 2018.06, Shandong University, *Super-positivity of a family of L-functions.*
- 2018.05, Technion – Israel Institute of Technology, *Prime lattice points in ovals.*
- 2018.04, The University of Hong Kong, *Prime lattice points in ovals.*
- 2017.08, Shandong University at Weihai, *Kuznetsov trace formulas and their applications.*
- 2017.06, Chinese Academy of Sciences, *Super-positivity of a family of L-functions.*
- 2014.08, Shandong University at Weihai, *Exponential sums over primes in short intervals.*

## SEMINAR TALKS

- 2023.11, Sichuan University, *Value distribution of Maass forms.*
- 2023.10, Shenzhen University, *Averages of coefficients of L-functions.*
- 2023.06, Henan University, *The subconvexity problem of L-functions.*
- 2023.03, Shandong Normal University, *Arithmetic Quantum Chaos and L-functions.*
- 2023.02, Wuhan University, *Arithmetic Quantum Chaos and L-functions.*
- 2022.12, International Seminar on Automorphic Forms, *Arithmetic Quantum Chaos and L-functions.*
- 2022.11, Webinar on Analysis and PDE, *Arithmetic Quantum Chaos and L-functions.*
- 2022.11, Washington State University, *Arithmetic Quantum Chaos and L-functions.*
- 2022.10, Hefei University of Technology, *Arithmetic Quantum Chaos.*
- 2022.09, Modern Dynamics Seminar @ Tsinghua University, *Effective joint equidistribution of primitive rational points on expanding horospheres.*
- 2022.06, Stanford Student Analytic Number Theory Seminar, *Effective decorrelation of Hecke eigenforms.*
- 2022.06, Wuhan University, *Effective decorrelation of Hecke eigenforms.*
- 2022.05, Nankai University, *Effective joint equidistribution of primitive rational points.*
- 2022.05, Henan University, *On the Rankin–Selberg problem.*
- 2022.04, Renyi Institute, *Uniform bounds for  $GL(3) \times GL(2)$  L-functions.*
- 2022.03, University of Illinois Urbana-Champaign, *On the Rankin–Selberg problem.*
- 2021.12, Nanjing University of Information Science and Technology, *The subconvexity problem of L-functions.*
- 2021.11, YMSC @ Tsinghua University, *On the Rankin–Selberg problem.*
- 2021.05, Westlake University, *Sup-norms of automorphic forms.*
- 2021.04, Shandong University, *On the Rankin–Selberg problem.*
- 2020.11, Shandong University at Weihai, *Effective equidistribution of primitive rational points on expanding horospheres.*
- 2020.11, Shandong Normal University, *Quantum variance for automorphic forms.*
- 2020.05, Xi'an Jiaotong University, *On the Rankin–Selberg problem.*
- 2019.10, Chinese Academy of Sciences, *Zeros of L-functions and random matrix theory.*
- 2019.04, Technion, *Equidistribution of primitive rational points on expanding horospheres.*
- 2019.03, Tel Aviv University, *Prime angles for quadratic fields.*
- 2019.01, Shandong University, *Quantum variance for Eisenstein series.*
- 2018.05, Tel Aviv University, *Prime lattice points in ovals.*
- 2018.04, Institut Élie Cartan de Lorraine, *Prime lattice points in ovals.*
- 2018.01, Tel Aviv University, *Super-positivity of a family of L-functions.*

- 2017.11, Tel Aviv University, *Zero density theorems, I & II.*
- 2017.09, Huaqiao University, *Some analytic aspects of L-functions.*
- 2017.06, Xi'an Jiaotong University, *Super-positivity of a family of L-functions.*
- 2017.05, Shandong University, *The subconvexity problem of L-functions and their applications.*
- 2015.11, Columbia University, *Hybrid sup-norm bounds for Eisenstein series.*

## ACADEMIC ACTIVITIES

2024

- Feb. 4 – Apr. 12, 2024, Analytic Number Theory, Institut Mittag-Leffler, Sweden.

2023

- Dec. 08-11, 2023, Workshop on Number Theory and Representation Theory, Xiamen University, China.
- Sep. 25-29, 2023, New perspectives in the analytic theory of automorphic forms, University of Oxford, UK.
- Sep. 11-15, 2023, Automorphic Forms and  $L$ -functions of higher rank, Queen Mary University of London, UK.
- Jul. 10-14, 2023, Analytic Number Theory and Its Interfaces, To Honour the 70th Birthday of Roger Heath-Brown, University of Oxford, UK.
- Jul. 05-07, 2023, Random Matrices from Quantum Chaos to the Riemann Zeta Function, A Celebration in Honour of Jon Keating's 60th Birthday, University of Bristol, UK.
- May 19-22, 2023, The 16th International Conference on Number Theory and Related Problems, Xi'an, China.
- Apr. 08-09, 2023, USTC–XJTU Number Theory Workshop, Hefei, China.
- Apr. 01-02, 2023, XJTU–USTC Number Theory Workshop, Xi'an, China.
- Feb. 18-22, 2023, Chinese Mathematical Society 2022 Annual Conference, Wuhan, China.

2022

- Aug. 22-29, 2022, Workshop on Number Theory and Dynamical Systems, SDU, Shandong, China.
- Aug. 08-21, 2022, Workshop on Analytical Number Theory and Automorphic Forms, NCWU, Henan, China. (Online)
- Aug. 05-09, 2022, Conference on L-Functions and Related Themes, MNNU, Fujian, China.
- Jun. 27 - Jul. 01, 2022, ICTS discussion meeting “L-functions, Circle-Method and Applications (HYBRID)”, Bengaluru, India. (Online)
- Apr. 07-08, 2022, Symposium on Number Theory, Capital Normal University, Beijing, China. (Online)

2021

- Dec. 06-10, 2021, PANT - Kyoto 2021 (the 10th Pan Asian Number Theory Conference), RIMS, Kyoto University, Japan. (Online)
- Nov. 05-07, 2021, Symposium on Number Theory and Representation Theory, Zhejiang University, Hangzhou, China. (Online)

- Jul. 21-27, 2021, HKU Number Theory Days 2021, The University of Hong Kong, China. (Online)
- Jul. 12-22, 2021, 2021 Summer School on Number Theory, Xi'an Jiaotong University, China.
- Jun. 25-30, 2021, Jintan conference on number theory (The 8th National Conference on Number Theory), Jintan, China.
- May 14-16, 2021, Symposium on Number Theory and Representation Theory, Zhejiang University, Hangzhou, China.

2020

- Apr. 17-18 and May 08-09, 2020, Number Theory in the Sky, Xi'an Jiaotong University, China. (online)

2019

- Nov. 15-18, 2019, Workshop on Number Theory, China University of Mining and Technology-Beijing, Beijing, China.
- Sep. 14-15 and Oct. 19-20, 2019, Analytic Number Theory Seminar, AMSS, Beijing, China.
- Jul. 8-12, 2019, Second Symposium on Analytic Number Theory, Grand Hotel San Michele, Cetraro, Italy.
- Jun. 17-21, 2019, Arithmetic, geometry, and modular forms: a conference in honour of Bill Duke, ETH Zürich, Switzerland.
- Mar. 12, 2019, Automorphic forms & representation theory: A conference in memory of Ilya Piatetski-Shapiro, Weizmann Institute of Science, Israel.
- Feb. 18-21, 2019, Function field arithmetic conference, Tel Aviv University, Israel.

2018

- Nov. 19-23, 2018, Workshop on “Geometric and Analytic Number Theory”, Göttingen, Germany.
- Sep. 3-7, 2018, Conference on “Elementare und Analytische Zahlentheorie (ELAZ)”, MPIM, Germany.
- Jul. 23-27, 2018, Analytic number theory and quantum chaos workshop: “L-functions and Multiplicative Functions”, Queen Mary University of London, UK.
- Jun. 25-29, 2018, Hausdorff Summer School: L-functions, Open Problems and Current Methods, Hausdorff Center for Mathematics, University of Bonn, Germany.
- Jun. 18-22, 2018, Automorphic Forms and L-functions – A Conference in Celebration of Dorian Goldfeld’s 71 Birthday, Shandong University, Qingdao, China.
- Jun. 04-07, 2018, Heilbronn: Perspectives on the Riemann Hypothesis, Bristol, UK.
- May 24, 2018, The 2018 IMU annual meeting, Technion - Israel Institute of Technology, Israel.
- Apr. 19-21, 2018, Number Theory and its connections with Random Matrices and Extreme Values, The University of Hong Kong, China.

2017

- Aug. 6-7, 2017, Automorphic Representations and L-functions, Shandong University, Weihai, China.
- Jul. 3-7, 2017, Analytic Methods in Diophantine Problems, Shandong University, Weihai, China.

- Jun. 15-18, 2017, Workshop on Number Theory and Dynamics, AMSS, China.
- Apr. 22-23, 2017, Diophantine Equations and Related Topics, Xiamen University, China.
- Apr. 03-07, 2017, NCG workshop: Number theory, Fudan University, China.
- Feb. 06-10, 2017, Introductory Workshop: Analytic Number Theory, MSRI, USA.

2016 and earlier

- Jun. 13-16, 2016, *L*-functions and arithmetic, Harvard, USA.
- May 21-24, 2016, Analysis and Beyond - Celebrating Jean Bourgain's Work and Impact, IAS, USA.
- Nov. 9-13, 2015, Computational Aspect of *L*-functions, ICERM, USA.
- Jul. 20-24, 2015, PANTC 2015, TSIMF, Sanya, China.
- May 16-19, 2015, The 7th National Conference on Number Theory, Shandong University, Jinan, China.
- May 11-15, 2015, Conference on Arithmetic Algebraic Geometry in honor of Professor Nicholas Katz's 71 birthday, MCM & AMSS, China.
- Aug. 11-16, 2014, Workshop on Number Theory, Shandong University, Weihai, China.
- Jul. 9-23, 2014, Summer school Analytic Number Theory, Institut des Hautes Études Scientifiques, France.
- Jan. 7-9, 2014, Number Theory Conference in Honor of Peter Sarnak, Shandong University, Jinan, China.
- Jul. 16-26, 2012, China-France Summer School on Number Theory, Shandong University, Weihai, China.
- Aug. 1-12, 2011, Workshop on Number Theory, Shandong University, Weihai, China.

## STUDENTS MENTORED

### PH.D. STUDENTS:

Liangxun Li	李良汛	(2022.09-)
Shenghao Hua	华晟昊	(2021.09-)
Huimin Zhang	张慧敏	(2020.09-)

### MASTER STUDENTS:

Chengliang Guo	郭诚亮	(2023.09-)
Zhiwei Liu	刘智伟	(2023.09-)
Junhao Huang	黄俊皓	(2023.09-)
Minghui Wang	王明慧	(2022.09-)
Zhenyu Zhang	张振宇	(2022.09-)
Yi Huang	黄奕	(2020.09-2023.06)

January 17, 2024