Curriculum Vitae
Wei Zhang
11/2021

CONTACT INFORMATION

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BIRTH YEAR/PLACE

1981
Sichuan, China.

RESEARCH INTERESTS

Number theory, automorphic forms and related area in algebraic geometry.

EDUCATION

09/2000-06/2004 B.S., Mathematics, Peking University, China.

08/2004-06/2009 Ph.D, Mathematics, Columbia University.

Advisor: Shouwu Zhang

EMPLOYMENT

07/2017-Now, Professor, Massachusetts Institute of Technology

07/2015-06/2017, Professor, Columbia University.

01/2014-06/2015 Associate professor, Columbia University.

07/2011-12/2013 Assistant professor, Columbia University.

07/2010-06/2011 Benjamin Peirce Fellow, Harvard University.

07/2009-06/2010 Postdoctoral fellow, Harvard University.

AWARD,HONOR

2010 SASTRA Ramanujan Prize.

2013 Alfred P. Sloan Research Fellowship.

2016 Morningside Gold Medal of Mathematics, ICCM.

2017 Simons Fellowship in Mathematics.

2018 New Horizon prize in mathematics.

2018 Invited speaker, ICM, Rio de Janeiro.

2019 Fellow of the AMS

2019 Clay Research Award

Editor (since 12/2018), Mathematische Annalen

Associate editor for *Journal of Number theory*, *Peking Mathematical Journal*, and *Communications of the AMS*

Editorial Board, *Compositio Mathematica* (2022–)

the Fan Fund Committee of AMS, 2019–2022.

Co-organizer, MSRI "Algebraic Cycles, L-Values, and Euler Systems", Jan–May 2023

Co-organizer, American Institute of Mathematics workshop "Arithmetic intersection theory on Shimura varieties", January 11 to January 15, 2021

Co-organizer, Clay research workshop, "Periods, Representations, and Arithmetic: Recent Advances on the Gan-Gross-Prasad Conjectures and their Applications", 29 September - October 3, 2019.

Co-organizer of Special Session on Number Theory, Joint International Meeting of the Chinese Mathematical Society and the American Mathematical Society, Shanghai, June 11-14, 2018.

Co-organizer, Arbeitsgemeinschaft: Higher Gross–Zagier Formulas, 2 Apr - 8 Apr 2017, Oberwolfach, Germany

Co-organizer of Joint COLUMBIA-CUNY-NYU number theory seminar (prior to 06/2017), and BC-MIT number theory seminar.

GRANTS

07/2010 - 06/2013: PI, NSF Grant DMS 1001631, 1204365.

07/2013 - 06/2016: PI, NSF Grant DMS 1301848.

07/2016 - 06/2019: PI, NSF Grant DMS 1601144.

07/2019 - 06/2024: PI, NSF Grant DMS 1901642.

CONFERENCES/INVITED
LECTURES

"Theta Series: Representation Theory, Geometry, and Arithmetic", July 5–9, 2021, the Fields Institute.

May 24–28, 2021, Luminy.

Distinguished Lectures in Algebra and Number Theory, Maryland of Maryland, Dec 2021.

Distinguished Ordway Lecturer, University of Minnesota, Spring 2021(postponed).

Minerva Distinguished Lectures, Princeton University, Fall 2020 (postponed).

p-adic L-functions and Euler systems, in honor of Bernadette Perrin-Riou", CRM, Montreal, September 21-25, 2020, (postponed)

Oberwolfach Workshop–Arithmetic Geometry (July, 2020)

Simons symposia, 2020 (postponed)

Conference on Arithmetic Algebraic Geometry, March 16-20, 2020, Darmstadt (Germany). (postponed)

First JNT Biennial Conference (July 22 - 26, 2019), Cetraro, Italy.

Boston University–Keio University workshop in number theory at BU, June 24 - 28, 2019.

Co-organizer, Special Session on Special Values of L-functions and Arithmetic Invariants in Families, AMS Spring Eastern Sectional Meeting, April 13, 2019.

Luo-Keng Hua distinguished lecture, Tsinghua university, March 25-29, 2019.

Co-organizer, 2019 International Conference on Arithmetic Geometry, Mar. 18 - 22, 2019. In honor of Prof. Michael Rapoport's 71th birthday, Beijing, Morningside center of Mathematics.

JMM, Baltimore, Jan, 2019

Bonn, Arithmetic algebraic geometry on the occasion of the 70th birthday of Rapoport, Oct 2018

Invited speaker, International Congress of Mathematicians (ICM), Rio de Janeiro, Aug 2018.

Shandong, June 18-22, 2018

Shanghai, June 11-14, 2018, co-organizer of Special Session on Number Theory, Joint International Meeting of the Chinese Mathematical Society and the American Mathematical Society.

Mazur 80th birthday conference, June 4-8, 2018, Cambridge

Riemann Hypothesis, June 4-8, 2018, Bristol.

Simons Symoposium on Relative trace formula, April 22-28, 2018.

AIM, SQUARE, April 2018

IAS workshop March 2018

ICCM Guangzhou, Dec 2017

AIM workshop Dec, 2017

Monroe H. Martin Lectures, Johns Hopkins University, Fall 2017

Alpbach, July, 2017

The 30th Journées Arithmétiques, July 3-7, 2017, Caen, France.

Arithmetic geometry, June 5-9, 2017, BICMR, Beijing

Co-organizer (with Z. Yun) Arbeitsgemeinschaft: Higher Gross Zagier Formulas, 2 Apr - 8 Apr 2017, Oberwolfach

AIM Dec. 2016,

AIM, SQUARE, March 2017

Plenary speaker, ICCM Beijing Aug. 2016

Luminy May 23-27 2016

AMS Sectional Meeting Invited Addresses, Fall Eastern Sectional Meeting, Nov. 2015.

Oberwolfach, Aug 2012, Aug 2015, April 2017.

SOUTHERN CALIFORNIA NUMBER THEORY DAY, U.C. SAN DIEGO, May 23, 2015

Harvard-MIT "Current Developments in Mathematics", Nov 2013.

Plenary speaker, International Congress of Chinese Mathematicians (ICCM), Taipei, July 2013

International Colloquium on "Automorphic Representations and L-Functions", TIFR, Mumbai, India, Jan 2012.

Invited speaker, International Congress of Chinese Mathematicians (ICCM), Beijing, Dec 2010.

Pan Aisa Number Theory Conference, Kyoto, Japan, Sep , 2010.

PREPRINTS

1. *Unitary Friedberg–Jacquet periods and their twists*
   (with Jingwei Xiao) in preparation, 2021

2. *Higher theta series for unitary groups over function fields*
   (with Tony Feng, Zhiwei Yun), preprint, arxiv: 2110.07001.

3. *More Arithmetic Fundamental Lemma conjectures: the case of Bessel subgroups*
   preprint, 2021, arxiv: 2108.02086.

4. *On the arithmetic Siegel–Weil formula for GSpin Shimura varieties*
   (with Chao Li) preprint, 2021, arxiv: 2106.15038.

5. *On the Arithmetic Fundamental Lemma conjecture over a general p-adic field*
   (with A. Mihatsch), preprint, arXiv:2104.02779.

6. *Higher Siegel–Weil formula for unitary groups: the non-singular terms*
   (with Tony Feng, Zhiwei Yun), preprint, arXiv:2103.11514.

7. *A majority of elliptic curves over $\mathbb{Q}$ satisfy the Birch and Swinnerton-Dyer conjecture.*
   (with M. Bhargava, C. Skinner) preprint.

8. *Indivisibility of Heegner points in the multiplicative case.*
   (with C. Skinner) preprint.

9. *Triple product L-series and Gross–Kudla–Schoen cycles.*
   (with X. Yuan, S. Zhang). preprint

1. *On the Beilinson–Bloch–Kato conjecture for Rankin–Selberg motives*
   (with Yifeng Liu, Yichao Tian, Liang Xiao, Xinwen Zhu), Invent. Math., to appear, arXiv: 1912.11942.

2. *Kudla–Rapoport cycles and derivatives of local densities*
   (with Chao Li), J. Amer. Math. Soc., to appear, doi:/10.1090/jams/988.

3. *Isolation of cuspidal spectrum, with application to the Gan–Gross–Prasad conjecture*
   (with Raphaël Beuzart-Plessis, Yifeng Liu, Xinwen Zhu), Ann. of Math. (2) Vol. 194 (2021), no.2, 519–584.

4. *Weil representation and Arithmetic Fundamental Lemma*
   Ann. of Math. (2) Vol. 193 (2021), no. 3, 863–978.

5. *On Shimura varieties for unitary groups*
   (with M. Rapoport, B. Smithling), Pure and Applied Mathematics Quarterly, Special Issue: In Honor of David Mumford, Vol. 17, No. 2 (2021), pp. 773–837. DOI: https://dx.doi.org/10.4310/PAMQ.2021.v17.n2.a8

6. *Arithmetic diagonal cycles on unitary Shimura varieties*
   (with M. Rapoport, B. Smithling), Compositio Mathematica, Vol. 156, no. 9, 2020, pp. 1745–1824.

7. *The arithmetic fundamental lemma: An update.*
   Science China Mathematics, November 2019, Volume 62, Issue 11, 2409–2422.

8. *Shtukas and the Taylor expansion of L-functions (II)*
   (with Zhiwei Yun), Ann. of Math., Vol. 189 (2019), no. 2, 393-526.

9. *Periods, cycles, and L-functions: a relative trace formula approach*
   Proceedings Int. Cong. of Math. 2018, Rio de Janeiro, Vol. 2 (505–540).

10. *On p-adic Waldspurger formula.*
    (with Y. Liu, S. Zhang). Duke Math. J., Vol. 167 (2018), 743–833.

11. *Regular formula moduli spaces and arithmetic transfer conjectures.*
    (with M. Rapoport, B. Smithling). Math. Annalen, 2018, Vol. 370, 1079–1175.

12. *Shtukas and the Taylor expansion of L-functions*
    (with Zhiwei Yun), Ann. of Math., Vol. 186 (2017), no. 3, 767–911.

13. *On the arithmetic transfer conjecture for exotic smooth formal moduli spaces.*
    (with M. Rapoport, B. Smithling). Duke Math. J., Vol. 166, Number 12 (2017), 2183–2336.

14. *Selmer groups and the indivisibility of Heegner points.*
    Cambridge Journal of Math., Vol. 2 (2014) Number 2, 191–253

15. *The Birch–Swinnerton-Dyer conjecture and Heegner points: a survey.*
    Current Developments in Mathematics, Volume 2013, 169–203.

16. *Fourier transform and the global Gan-Gross-Prasad conjecture for unitary groups.*
    Ann. of Math., Vol. 180 (2014), Issue 3, 971–1049.

17. *Spherical characters for a strongly tempered pair.*
    (Atsushi Ichino and Wei Zhang), appendix to *Fourier transform and the global Gan-Gross-Prasad conjecture for unitary groups.*

18. *Automorphic period and the central value of Rankin–Selberg L-function.*
    J. Amer. Math. Soc. 27 (2014), 541-612.

19. *On the arithmetic fundamental lemma in the minuscule case.*
    (with M. Rapoport, U.Terstiege), Compositio Math., 2013, volume 149, issue 10, pp. 1631-1666.

20. *Harmonic analysis for relative trace formula.*
    in "Automorphic Representations and L-Functions", edited by: D. Prasad, C. S. Rajan, A. Sankaranarayanan, and J. Sengupta, Tata Institute of Fundamental Research, 2013, Mumbai, India. ISBN-10: 93-80250-49-5, ISBN-13: 978-93-80250-49-6

21. *On the smooth transfer conjecture of Jacquet–Rallis for $n = 3$.*
    The Ramanujan Journal, (*Ramanujan's 125th anniversary special volume*), Volume 29, Issue 1 (2012), 225-256.

22. *The Gross–Zagier formula on Shimura curves.*
    (with Xinyi Yuan, Shou-Wu Zhang), 266 pp., *Annals of Mathematics Studies* #184, Princeton University Press, 2012, ISBN: 9781400845644.

23. *On arithmetic fundamental lemmas.*
    Inventiones Mathematicae, Vol. 188 (2012), Number 1, 197-252.

24. *Gross–Zagier formula and arithmetic fundamental lemma.*
    in Fifth International Congress of Chinese Mathematicians Part 1, AMS/IP Studies in Advanced Mathematics, vol. 51, Amer. Math. Soc., Providence, RI, 2012, pp. 447-459.

25. *The Gross-Kohnen-Zagier theorem over totally real fields.*
    (with Xinyi Yuan, Shou-Wu Zhang), Compositio Math. 145 (2009), no. 5, 1147-1162.