Rufei Ren

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Research Interests

Hilbert Modular Forms, Exponential Sums, p-adic analysis, Arithmetic dynamical system

Employment

Associate professor, Fudan University, Shanghai, China	2022-present
Young associate researcher, Fudan University, Shanghai, China	2020-2022
Visiting Assistant Professor, University of Rochester, NY	2017-2020

Education

Ph.D. Mathematics, University of California, Irvine	2012-2017
B.S. Mathematics, Fudan University	2008-2012

Papers and Preprints

1. Non-linearizability for cubic polynomials of positive characteristic, *preprint*

2. Optimal cycles in ultrametric dynamics and minimally semi-ramified power series(with Juan Rivera-Letelier), *preprint*

3. The local ghost conjecture for U_p-slopes: irreducible case(with Bin Zhao), *preprint*

4. On Minkowski entropy(with Huayi Chen and Wenbin Luo), *preprint*

5. The slope-invariant of local ghost series under direct sum, *in revision, arXiv:2207.12145*

6. Local Gouvêa–Mazur conjecture, *to appear on Math. Ann.*

7. Generic Newton polygon for exponential sums in two variables with triangular base, *J. Number Theory* **245**(2023), 119–149

8. Non-linearizability of power series over a valuation ring with positive characteristic, *Adv. Math.* **416**(2023).

9. Spectral halo for Hilbert modular forms(with Bin Zhao), *Math. Ann.* **382**(2022), 821–899.

10. Primitive prime divisors in the critical orbits of rational polynomials, *Math. Proc. Cambridge Philos. Soc.* **171**(2021), no. 3, 569–584

11. Generic Newton polygon for exponential sums in n-variable with parallelotope base, *Amer. J. Math.* **142**(2020), no. 5, 1595–1639.

12. Iteration of Polynomials $AX^d + C$ Over Finite Fields, *J. Number Theory* **214**(2020), 326–347.

13. Newton slopes for twisted Artin–Schreier–Witt Towers, *Int. J. Number Theory* **15** (2019), no. 10, 2089–2105.

14. Slopes for higher rank Artin–Schreier–Witt towers (with L. Xiao, Q. Wan, and M. Yu), *Trans. Amer. Math. Soc.* **370**(2018), 6411–6432.

Teaching Experience

- Spring 2023, Elementary introduction to modular forms, Fudan University
- Fall 2022, , Fudan University
- Fall 2022, Calculus B, Fudan University
- Spring 2022, Elementary number theory, Fudan University
- Fall 2021, Calculus A, Fudan University
- Fall 2019, Math 235, Linear Algebra, University of Rochester
- Spring 2019, Math 236, Introduction of Algebra, University of Rochester
- Spring 2018, Math 236, Introduction of Algebra, University of Rochester
- Spring 2018, Math 162, Calculus II, University of Rochester
- Fall 2017, Math 141, Calculus I, University of Rochester
- Fall 2017, Math 165, Differential equation with linear algebra, University of Rochester

Academic Service

- Reviewer for Journal of Number Theory   2017–present
- Reviewer for Bulletin of London Mathematic Society   2019–present
- Co-organize the special session on p-adic Analysis in Number Theory at AMS Sectional Meeting, Binghamton University   Oct 2019
- Co-organize the *p*-adic analysis study group, University of Rochester   Feb 2020

Talks

- 2024 Conference on Number Theory and Its Applications (Daqing Wan 60th birthday), Southeast University, 3/2024
- Fudan-Guanghua International Forum for Young Scholars, Fudan University, 12/2019
- Fudan-Guanghua International Forum for Young Scholars, Fudan University, 12/2019
- The 4th Nanjing University Young Scholar Forum, Nanjing University, 12/2019
- AMS Sectional Meeting, Binghamton University, 10/2019
- Mathematics and its Multidisciplinary Frontier Innovation Forum, Capital Normal University, 5/2019
- Number Theory Seminar, UC Irvine, 9/2018
- Frontier Innovation Forum, Sichuan University, 5/2018
- AMS Sectional Meeting, University at Buffalo, 9/2017

- Number Theory Seminar, University of Rochester, 9/2017
- Number Theory Seminar, UCSD, 11/2016
- AMS Sectional Meetings, University of St. Thomas (Minneapolis campus), 10/2016
- Number Theory Seminar, Fudan University, 8/2016
- Research Conference on elliptic curves, modular forms, and related topics, U. Connecticut, 8/2016

Conferences and Summer Schools Attended

- Number theory and arithmetic geometry conference, Nanjing University, 6/2023
- China Mathematics Annual Conference, Yunnan University, 10/2021
- Fudan-Guanghua International Forum for Young Scholars, Fudan University, 12/2019
- The 4th Nanjing University Young Scholar Forum, Nanjing University, 12/2019
- AMS Sectional Meeting, Binghamton University, 10/2019
- Frontier Innovation Forum, Sichuan University, 5/2018
- AMS Sectional Meeting, University at Buffalo, 9/2017
- Southern California Number Theory Day, UC Irvine, 10/2016
- Connecticut Summer School in Number Theory, U. Connecticut, 8/2016
- The p-adic Langlands program and related topics, Indiana U., Bloomington, 5/2016
- Southern California Number Theory Day (John Tate 90th birthday), UCSD, 5/2015
- Southern California Number Theory Seminar, UCI, 10/2014
- Automorphic forms, Shimura varieties, Galois representations and L-functions (Michael Harris 60th birthday), MSRI, Berkeley, 12/2014
- p-adic variation in number theory (Glenn Stevens 60th birthday), Boston U, 6/2014
- Arithmetic of p-adic modular forms, L-functions, Shimura varieties and Galois representations (Haruzo Hida 60th birthday), UCLA, 6/2012