Curriculum Vitae

Zhiren Wang

Positions

- Associate Professor, Pennsylvania State University, 2019-
- Assistant Professor, Pennsylvania State University, 2014-2019
- Gibbs Assistant Professor, Yale University, 2011-2014

Visiting Positions

- Von Neumann Fellow, Institute for Advanced Study, Fall 2022
- Member, Institute for Advanced Study, 2015-2016
- Postdoctoral Fellow, Mathematical Sciences Research Institute, Fall 2011

Education

- Ph.D., Mathematics, Princeton University, 2006-2011
  Advisor: Prof. Elon Lindenstrauss
- M.S., Mathematics, University Paris-Sud (Orsay), 2005-2006
- M.S., Mathematics, Ecole Polytechnique, 2004-2006
- B.S., Mathematics, Fudan University, 2001-2004

Grants and Awards

- Brin Prize in Dynamical Systems, 2022
- Von Neumann Fellowship, Institute for Advanced Study, Fall 2022
- NSF CAREER Grant DMS-1753042, 2018-2023
- NSF Grant DMS-1501295, 2015-2018
- NSF Grant DMS-1201453, 2012-2016
- Simons Travel Grant, American Mathematical Society, 2011-2013

Editorial board

- Discrete and Continuous Dynamical Systems, Series A, 2017-
- Journal of Modern Dynamics, 2020-

Research interests

- Dynamical systems on homogeneous spaces
- Classfication of group actions
- Diophantine approximation and geometry of numbers

Publications and Preprints

Submitted

1. *Quantitative almost reducibility and Möbius disjointness for analytic quasiperiodic Schrödinger cocycles*
   joint with W. Huang, J. Wang & Q. Zhou, submitted

2. *Smooth ergodic theory of $\mathbb{Z}^d$-actions, Part 3: Product structure of entropy*
joint with A. Brown and F. Rodriguez Hertz, under revision, Journal of Modern Dynamics

Accepted and Published

1. *Polynomial effective equidistribution* (research announcement)
joint with E. Lindenstrauss and A. Mohammadi, accepted, Comptes Rendus Math.
2. *Invariant measures and measurable projective factors for actions of higher-rank lattices on manifolds*
joint with A. Brown and F. Rodriguez Hertz, accepted, Annals of Mathematics.
3. *Arbitrarily slow rate in the Möbius disjointness conjecture*
joint with A. Algom, accepted, Ergodic Theory & Dynamical Sys.
4. *Non-rigidity of partially hyperbolic abelian C^1-actions on tori*
joint with F. Rodriguez Hertz, accepted, Ergodic Theory & Dynamical Sys.
5. *The normal subgroup theorem through measure rigidity* (expository book chapter)
joint with A. Brown and F. Rodriguez Hertz, in "Dynamics, Geometry, Number Theory: The Impact of Margulis on Modern Mathematics" (2022)
6. *Logarithmic Fourier decay for self-conformal measures*
joint with A. Algom & F. Rodriguez Hertz, Journal of London Soc. Math. (2022)
https://doi.org/10.1112/jlms.12608
7. *Three-stage evolution and fast equilibrium for SGD with non-degenerate critical points*
joint with Y. Wang, Proceedings of the 39th International Conference on Machine Learning (2022), PMLR 162:23092-23113
8. *Pointwise normality and Fourier decay for self-conformal measures.*
joint with A. Algom & F. Rodriguez Hertz, Adv. Math. (2021), vol. 393, 108096
9. *Möbius disjointness along short intervals for nilsequences*
joint with X. He, Transactions of Amer. Math. Soc. (2021), vol. 374 (6), 3881-3917
10. *On ϵ-escaping trajectories in homogeneous spaces*
joint with F. Rodriguez Hertz, Disc. & Cont. Dyn. Sys.-A (2021), vol. 41 (*DCDS 25 years special volume*), 329-357
11. *Möbius disjointness for skew products on the Heisenberg nilmanifold*
joint with M. Litman, Proc. Amer. Math. Soc. (2019), Vol (147) 2033-2043
12. *Measure complexity and Möbius disjointness*
joint with W. Huang and X. Ye, Adv. Math. (2019), Vol 347, 827-858
13. *Möbius disjointness for topological models of ergodic systems with discrete spectrum*
joint with W. Huang and G. Zhang, J. Modern Dynamics (2019), vol. 14 (1),277-290
14. *Global smooth and topological rigidity of hyperbolic lattice actions*
joint with A. Brown and F. Rodriguez Hertz, Annals Math. (2017), vol. 186 (3), 913-972
15. *Möbius disjointness for analytic skew products*
Inventiones Mathematicae (2017), vol. 209 (1), 175-196
16. *Multi-invariant measures and subsets on nilmanifolds*
Journal d'Analyse Mathematique, J. Anal. Math. (2018), vol. 135 (1), 123-183.
17. *Global rigidity of abelian algebraic actions*
joint with F. Rodriguez Hertz, Inventiones Mathematicae (2014), vol. 198 (1), 165-209

18. *Remarks on Euclidean minima*
joint with U. Shapira, J. of Number Theory (2012), vol. 137, 93-121
19. *Rigidity of commutative non-hyperbolic actions by toral automorphisms*
Ergodic Theory & Dynamical Sys. (2012), vol. 32, 1752-1782
20. *Topological self-joinings of Cartan actions by toral automorphisms*
joint with E. Lindenstrauss, Duke Math. Journal (2012), vol. 161, 1305-1350
21. *Quantitative density under higher rank abelian algebraic toral actions*
Int. Math. Res. Notices (2011), vol. 2011, 3744-3821

Ph.D. students

- Qiao Liu, co-advisor with Anatole Katok, Ph.D 2021 (Penn State Univ.), lecturer at Xiangtan Univ.
- Xiaoguang He, co-advisor with Jianya Liu, Ph.D 2019 (Shandong Univ.), post-doc at Sichuan Univ.

Organizing services

2022 Co-organizer, Workshop "Global rigidity and classification of actions by higher rank groups", AIM, San Jose, CA

2017- Organizer, MOU 2017, 2019, 2021 (Math Outing for Undergraduates)

2017 Co-organizer, The 28th Fall Workshop in Dynamical Systems and Related Topics, Penn State University

2016 Co-organizer, The 27th Fall Workshop in Dynamical Systems and Related Topics, Penn State University

2016- Co-organizer, Dynamical systems seminar, Penn State University

2015 Co-organizer, Special Session "Smooth and symbolic ergodic theory", AMS Eastern sectional meeting, New Brunswick, NJ

Contact information

Pennsylvania State University, Department of Mathematics, University Park, PA 16802
zhirenw@psu.edu