Junxian Li

Contact Information

Max Planck Institute for Mathematics
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Research Interests

L-functions, Primes, Exponential sums, Additive Combinatorics
Automorphic Forms

Employment

Max Planck Institute for Mathematics — Sept 2019–
Mentors: Valentin Blomer and Pieter Moree

Georg-August Universität Göttingen — Sept 2018–Aug 2019
Mentors: Valentin Blomer and Harald Helfgott

Education

University of Illinois at Urbana-Champaign — Sept 2009–Aug 2013
Ph.D. in Mathematics
Advisor: Alexandru Zaharescu

Nanjing University — Sept 2009–Aug 2013
B.A. in Mathematics

Publications

16. Uniform Titchmarsh divisor problems (with E. Assing and V. Blomer), arXiv:2005.13915.

15. Lower bounds for discrete negative moments of the Riemann zeta function (with W. Heap and J. Zhao), arXiv:2003.09368.

14. Large values of Dirichlet L-functions at zeros of a class of L-functions *Canad. J. Math.* to appear.

13. Value distribution of $L'(\rho)$ (with A. Zaharescu), *J. Math. Anal. Appl.* 480(1): 123400, 24 pp, 2019.

12. The surprising accuracy of Benford's law in mathematics (with Z. Cai, M. Faust, A. J. Hildebrand and Y. Zhang), *Amer. Math. Monthly* 127(3): 217–237, 2020.

11. The final problem: an identity from Ramanujan's lost notebook (with B. Berndt and A. Zaharescu), *J. Lond. Math. Soc.* 100(2): 568–591, 2019.

10. Almost Beatty Partitions (with A. J. Hildebrand, X. Li, and Y. Xie), *J. Integer Seq.* 22(4): Art. 19.4.6, 34 pp, 2019.

9. A local Benford Law for a class of arithmetic sequences (with Z. Cai and A. J. Hildebrand), *Int. J. Number Theory* 15(3): 613–638, 2019.

8. A binary quadratic Titchmarsh divisor problem *Acta Arithmetica* 192(4): 341–361, 2020.

7. Ducci iterates and similar ordering on sets of visible points (with A. Tamazyan and A. Zaharescu), *Int. J. Number Theory* 16(1): 1–28, 2020.

6. Leading Digits of Mersenne Numbers (with Z. Cai, M Faust, A. J. Hildebrand, and Y. Zhang), *Exp. Math.* to appear, arXiv:1712.04425.

5. On distinct consecutive r-differences (with G. Shakan), *J. Number Theory* 199: 363–376, 2019.

4. Exact evaluation of second moments associated with some families of curves over a finite field (with R. Donepudi and A. Zaharescu), *Finite Fields Appl.* 48: 331–355, 2017.

3. A lower bound for the least prime in an arithmetic progression (with K. Pratt and G. Shakan), *Q. J. Math.*, 68(3): 729–758, 2017.

2. Smooth L^2 distances and zeros of approximations of Dedekind zeta functions (with M. Nastasescu, A. Roy, and A. Zaharescu), *Manuscripta Math.* 154(1-2): 195–223, 2017.

1. Zeros of a family of approximations of Hecke L-functions associated with cusp forms (with A. Roy and A. Zaharescu), *Ramanujan J.* 41(1-3): 391–419, 2016.

Conference Proceedings

2. The Final Problem: A Series Identity from the Lost Notebook (with B. C. Bruce and A. Zaharescu), *George Andrews - 80 Years of Combinatory Analysis, 2020.*

1. On primes in arithmetic progressions Automorphic forms and related topics, 165–167, *Contemp. Math.* 732, Amer. Math. Soc., Providence, RI, 2019

Honors and Awards

Bateman Fellowship in Number Theory — Spring 2018

On the List of Teachers Ranked as Excellent by their Students — Fall 2017

Teaching Experience

Math 415 Linear Algebra, Instructor	UIUC, Fall 2017
Math 415 Linear Algebra, Instructor	UIUC, Spring 2017
Math 231 Calculus II, Instructor	UIUC, Spring 2016
Math 241 Calculus III, Instructor	UIUC, Fall 2016
Math 241 Calculus III, Instructor	UIUC, Spring 2015

Undergraduate Mentoring

❑ Illinois Geometry Lab Graduate Student Mentor

• Almost Beatty Partitions	Fall 2018
• Beatty sequences, and Partitions of the Integers	Spring 2018
• Chaotic maps and exotic number systems	Fall 2017
• Finding integers in group orbits	Spring 2017
• Local Benford's Law	Fall 2016
• Leading digit distribution	Spring 2016
• Random Walk in number theory	Fall 2015
• Fractals, Patterns and Randomness in Number Theory	Spring 2015
• Fourier Series with Number theoretic coefficients	Fall 2014
• Symmetry in Nature	Spring 2014

Professional Services

❑ Organizer of AMS Special Session at the Joint Mathematics Metting — 2019
- Number Theoretic Methods in Hyperbolic Geometry

❑ Organizer of Graduate Student Number Theory Seminar in UIUC — 2016–2018

❑ Referee:
- J. Number Theory
- Math. Reports
- Rev. Roumaine Math. Pures Appl.

- J. Math. Sci. Adv. Appl.

Conferences and Seminar Talks

- ❑ Joint Value Distribution of L-functions.
  Oberseminar Analytic Number Theory, Bonn(online). Nov 2020
- ❑ Derivative of the Riemann zeta function at its zeros.
  Analytic Number Theory Meeting, IHP (online). Jun 2020
- ❑ Extreme values of L-functions
  Number theory lunch seminar, MPIM. Oct 2019
- ❑ Extreme values of L-functions
  Oberseminar analytic number theory, Georg-August Universität Göttingen. Nov 2018
- ❑ The Unreasonable Effectiveness of Benford's Law in Mathematics
  Joint with A. J. Hildebrand, Number Theory Seminar, UIUC. Apr 2018
- ❑ Primes in arithmetic progressions
  Junior Mathematics Colloquium, Georg-August Universität Göttingen. Dec 2017
- ❑ Randomness in Number Theory
  Graduate Student Colloquium, UIUC. Nov 2017
- ❑ Primes in arithmetic progressions
  Where Geometry meets Number Theory, a conference in honor of
  the 60th birthday of Per Salberger, Gothenburg. July 2017
- ❑ The least prime in an arithmetic progression
  Joint Mathematics Meeting, Atlanta. Jan 2017
- ❑ On the least prime in an arithmetic progression
  Number Theory Seminar, UIUC. Sept 2016
- ❑ A lower bound on the least prime in an arithemetic progression,
  Workshop on Automorphic Forms and Related Topics, Sarajevo . Jul 2016
- ❑ Approximations of L-functions
  2015 Midwest Number Theory Conference for Graduate Students
  and Recent Ph. D's. Oct 2015
- ❑ Approximations of L-functions
  Graduate Student Number Theory Seminar, UIUC. Nov 2015
- ❑ Bailey Pairs and Bailey chains
  q-series Seminar, UIUC. Apr 2015
- ❑ Basic Hypergoemetric functions
  q-series Seminar, UIUC. Mar 2015

Research Experience

- ❑ Zeta functions, CIRM Dec 2019
- ❑ Second Symposium on Analytic Number Theory, Cetraro July 2019
- ❑ Rational points on irrational varieties, IHP June 2019
- ❑ L-functions and Multiplicative Number Theory, U of Mississippi May 2019
- ❑ Distribution of values of zeta functions and L-functions, RIKEN Mar 2019
- ❑ Workshop and Winter School on Local Statistics of Point Sequences, Linz Feb 2019
- ❑ Building Bridges: 4th EU/US Summer School
  and Workshop on Automorphic Forms and Related Topics July 2018
- ❑ Hausdorff School: L-functions: Open Problems and Current Methods June 2018
- ❑ MRC: Number Theoretic Methods in Hyperbolic Geometry June 2018
- ❑ Probability in Number Theory May 2018
- ❑ Arbeitsgemeinschaft in Oberwolfach Oct 2017
- ❑ MSRI Summer Graduate School on Automorphic Forms
  and the Langlands Program Aug 2017
- ❑ PCMI Graduate Summer School on random matrices June 2017
- ❑ University of Houston Summer School on Dynamical Systems May 2017
- ❑ MSRI: Analytic Number Theory Jan, May 2017
- ❑ West Coast Algebraic Topology Summer School Aug 2016

	❑ Building Bridges: 3rd EU/US Summer School and workshop on Automorphic Forms	July 2016
	❑ UNCG Summer School in Computational Number Theory	June 2016
	❑ Houston Summer School on Dynamical Systems	May 2016
	❑ UNCG Summer School in Computational Number Theory	May 2015
	❑ Exchange in University of Wisconsin-Madison	Fall 2012
Outreach Activities	❑ Four Color Fest	Nov 1-4 2017
	❑ A Math Carnival at Illinois-Gathering for Gardener	Jan 28 2017
	❑ Science at the Market	Aug 2013
Skills	Programming: C++, Mathematica, Matlab, Python	
	Languages: English, Chinese	