Lingfu Zhang

Contact Information

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Research Interests

Probability – especially asymptotic analysis of stochastic systems.
Harmonic analysis and dispersive equations.

Education

Massachusetts Institute of Technology

B.S. Double major in Mathematics and Computer Science (expected June 2017)
GPA: 5.0 / 5.0

Tsinghua University

Major in Architecture, Sep 2013 - June 2014

Articles

V. Gorin and L. Zhang, *Interlacing adjacent levels of β-Jacobi corners processes,* available at https://arxiv.org/abs/1612.02321, submitted (Dec 2016).

H. Wang and L. Zhang, *Refinements of the 2-dimensional Strichartz estimate on the maximum wave packet,* available at https://arxiv.org/abs/1611.10275 (Aug 2016).

Research Talks

Interlacing adjacent levels of β-Jacobi corners processes, Integrable Probability Working Group, Massachusetts Institute of Technology, Nov 29th, 2016. Slides available at http://lfzhang.com/papers/int_work_group_talk.pdf.

Refinements of 2-dimensional Strichartz estimate by the maximum wave packet, 2016 MIT SPUR Conference, Massachusetts Institute of Technology, Aug 5th, 2016.

Honors and Awards

Aug	2016	The Hartley Rogers Jr. Prize. For the best paper in the Summer Program for Undergraduate Research in the MIT Department of Mathematics.
Sep	2015	MIT EECS Levine Undergraduate Research and Innovation Scholars.
Apr	2015	Putnam Fellow. Top 6 in the 75th William Lowell Putnam Math Competition.
Aug	2013	Gold Medal in the 54th International Mathematical Olympiad (IMO).

Graduate Coursework

- Measure Theory and Analysis
- Differential Analysis II
- Topics in Combinatorics
- Algebraic Geometry I
- Introduction to Lie Algebras
- Geometry of Manifolds I
- Algorithms for Inference

Research Experience

Periodic water wave equations on tori, Sep 2016 – present

We are working on analyzing a simplified model of the gravity-capillary water wave system on tori.
Supervisor: Gigliola Staffilani.
MIT Undergraduate Research Opportunities Program (UROP), MIT Department of Mathematics.

Refining the Strichartz estimate for the Schrödinger equation, Jun 2016 – Aug 2016

We established refinements of the 1+1 dimensional Schrödinger equation using approaches including polynomial partition, explicit computation, and ideas related to decoupling.
Project suggested by Larry Guth, mentor: Hong Wang.
Summer Program for Undergraduate Research (SPUR), run by David Jerison and Ankur Moitra, MIT Department of Mathematics.

Integrable probability: asymptote of interlacing sequences in β-Jacobi ensembles with exact formulas, Jan 2016 – Jun 2016.
We proved LLM and CLT for interlacing sequences in β-Jacobi ensembles, showed their implications to orthogonal polynomials, interlacing diagrams, and connections with Gaussian free fields.
Supervisor: Vadim Gorin.
Undergraduate Research Opportunities Program (UROP), MIT Department of Mathematics.

Deep neural networks and financial time series, Sep 2015 – Jun 2016
Supervisor: Suvrit Sra.
Advanced Undergraduate Research Program SuperUROP, MIT EECS.

Urban microclimate: simulation of the effect of urban height island, Oct 2014 – Jan 2015
Supervisor: Les Norford.
Undergraduate Research Opportunities Program (UROP), MIT Department of Architecture.

Industry Experience

Quantitative Finance Intern, Morgan Stanley Inc	Jan 2016 – Feb 2016
Software Development Engineer Intern, Amazon.com LLC	Jun 2015 – Sep 2015

Other Skills

Programing: C++, python, Java, MATLAB
Languages: Chinese (native speaker), English, French (basic reading)