

Li-Cheng Tsai

Curriculum Vitae

Department of Mathematics, Columbia University
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POSITIONS

Columbia University, August 2016–
Junior Fellow of the Simons Society of Fellows
Postdoctoral Research Scientist

EDUCATION

Stanford University
Ph.D. Mathematics, June 2016
Thesis advisor: Amir Dembo
Academia Sinica, Taipei, Taiwan
Research Trainee, 2010–2011
Mentor: Tai-Ping Liu
National Taiwan University
B.S. Physics, minor in Mathematics, June 2009

AWARDS

2017 NSF grants: DMS-1712575
2016 Junior Fellow, Simons Society of Fellows
2015 Graduate Fellow, Kavli Institute for Theoretical Physics

RESEARCH INTERESTS

Asymptotic behaviors of interacting particle systems arising from mathematical physics, and the interplay between partial differential equations and stochastic partial differential equations.

PUBLICATIONS

- 2017 [13] Stefano Olla and Li-Cheng Tsai. Exceedingly Large Deviations of the Totally Asymmetric Exclusion Process. *arXiv:1708.07052*
- [12] Amir Dembo and Li-Cheng Tsai. The Criticality of a Randomly-Driven Front. *arXiv:1705.10017*
- [11] Li-Cheng Tsai. Stationary Distributions of the Atlas Model. *arXiv:1702.02043*
- [10] Andrey Sarantsev and Li-Cheng Tsai. Stationary Gap Distributions for Infinite Systems of Competing Brownian Particles. *Electron. J. Probab.* 22 (56), 2017

- [9] Ivan Corwin and Li-Cheng Tsai. KPZ equation limit of higher-spin exclusion processes. *Ann. Prob.* 45(3)1771-1798
- 2016 [8] Ivan Corwin and Hao Shen. ASEP(q, j) converges to the KPZ equation. *To appear in Ann. Inst. Henri Poincaré (B) Probab. Stat.* *arXiv:1602.01908*
- [7] Li-Cheng Tsai. Infinite Dimensional Stochastic Differential Equations for Dyson's Model. *Probab. Theory Related Fields* 166(3)801-850
- [6] Amir Dembo and Li-Cheng Tsai. Weakly Asymmetric Non-Simple Exclusion Process and the Kardar-Parisi-Zhang Equation. *Comm. Math. Phys.* 341(1)219-261.
- 2015 [5] Wenpin Tang and Li-Cheng Tsai. Optimal Surviving Strategy for Drifted Brownian Motions with Absorption. *To appear in Ann. Prob.* *arXiv:1512.04493*
- [4] Amir Dembo and Li-Cheng Tsai. Equilibrium Fluctuation of the Atlas Model. *To appear in Ann. Prob.* *arXiv:1503.03581*
- 2014 [3] Hung-Wen Kuo, Tai-Ping Liu, and Li-Cheng Tsai. Equilibrating effects of boundary and collision in rarefied gases. *Comm. Math. Phys.*, 328(2)421-480.
- 2013 [2] Hung-Wen Kuo, Tai-Ping Liu, and Li-Cheng Tsai. Free Molecular Flow with Boundary Effect. *Comm. Math. Phys.*, 318(2)375-409.
- 2011 [1] Li-Cheng Tsai. Viscous Shock Propagation with Boundary Effect. *Bull. Inst. Math. Acad. Sin. (N.S.)* 6(1)1-25.

INVITED TALKS

- 2017 Mathematical Congress of the Americas, Montreal, Canada, July
Probability Seminar, University of Toronto, April
Probability Seminar, Duke University, March
- 2016 Probability Seminar, Brown University, October
Probability Seminar, University of Washington, April
Probability Seminar, Northwestern University, April
- 2015 Probability Seminar, Stanford University, November
Probability Seminar, Kyushu University, Japan, November
Stochastic Analysis on Large Scale Interacting Systems, RIMS, Japan, October
Random Matrix and Probability Theory Seminar, Harvard University, September
Probability Seminar, Columbia University, September
Stochastic Portfolio Theory and related topics, May
- 2014 Probability Seminar, Princeton University, November
Probability Seminar, Columbia University, November
Stochastic Integrable Systems Reading Seminar, University of Warwick, June
- 2013 Combinatorial Representation Theory Seminar, Stanford University, November
Student Probability/PDE Seminar, UC Berkeley, March

CONFERENCES

- 2017 Mathematical Congress of the Americas, Montreal, Canada
- 2016 Quantum integrable systems, conformal field theories and stochastic processes, Institut d'Études Scientifiques de Cargèse, France
New approaches to non-equilibrium and random systems: KPZ integrability, universality, applications and experiments, Kavli Institute for Theoretical Physics, Santa Barbara
- 2014 MSRI Summer School: Stochastic Partial Differential Equations
Stochastic Analysis: Around the KPZ Universality Class, Oberwolfach, Germany
Seminar on Stochastic Processes, University of California, San Diego
- 2013 Cornell Probability Summer School, Cornell University, New York

TEACHING EXPERIENCE

Stanford University

Section Leader, ODE with Linear Algebra, Winter 2015

Section Leader, Calculus (accelerated), Winter 2014

Section Leader, Calculus (accelerated), Fall 2012

REFEREE SERVICE

Referee, Probability Surveys

Referee, Probability Theory and Related Fields

Referee, Annals of Applied Probability