Li-Cheng Tsai

Curriculum Vitae

Department of Mathematics Rutgers University – New Brunswick Hill Center, 110 Frelinghuysen Road Piscataway, NJ 08854, USA

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POSITIONS

Rutgers University – New Brunswick Assistant Professor, Sep 2019–

Columbia University

Junior Fellow of the Simons Society of Fellows, Aug 2016–Jul 2019

Postdoctoral Research Scientist, Aug 2016–Jul 2019

Mentor: Ivan Corwin

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

2020	Awardee, I	Bernoulli	Society	New 1	Researcl	her Aw	ard
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2017 NSF grants \$149,111 (DMS-1712575, DMS-1953407)

2016 Junior Fellow, Simons Society of Fellows

2015 Graduate Fellow, Kavli Institute for Theoretical Physics

RESEARCH INTERESTS

Asymptotic behaviors of interacting particle systems, with a focus on their interplay between partial differential equations, stochastic partial differential equations, and integrability.

PUBLICATIONS

Preprint

2019 [21] Sayan Das and Li-Cheng Tsai. Fractional moments of the Stochastic Heat Equation. arXiv:1809.03410

- [20] Yu Gu, Jeremy Quastel, and Li-Cheng Tsai. Moments of the 2D SHE at criticality arXiv:1905.11310
- 2018 [19] Li-Cheng Tsai. Exact lower tail large deviations of the KPZ equation. arXiv:1809.03410
 - [18] Ivan Corwin and Li-Cheng Tsai. SPDE Limit of Weakly Inhomogeneous ASEP. *arXiv:1806.09682*

Published/to appear

- 2019 [17] Ivan Corwin, Promit Ghosal, Hao Shen, and Li-Cheng Tsai. Stochastic PDE Limit of the Six Vertex Model. *To appear in Comm. Math. Phys.* online first *arXiv:1803.08120*
 - [16] Yu Gu and Li-Cheng Tsai. Another look into the Wong-Zakai Theorem for Stochastic Heat Equation. *Ann. Appl. Probab.* 29(5) 3037-3061, 2019
 - [15] Hao Shen and Li-Cheng Tsai. Stochastic Telegraph Equation Limit for the Stochastic Six Vertex Model. *Proceedings of AMS 147(6) 2685–2705, 2019*
 - [14] Stefano Olla and Li-Cheng Tsai. Exceedingly Large Deviations of the Totally Asymmetric Exclusion Process. *Electron. J. Probab.* 24 (16), 2019
 - [13] Amir Dembo and Li-Cheng Tsai. Criticality of a Randomly-Driven Front. *Arch. Rational Mech. Anal. (first online)*
- 2018 [12] Ivan Corwin, Promit Ghosal, Alexandre Krajenbrink, Pierre Le Doussal, and Li-Cheng Tsai. Coulomb-gas electrostatics controls large fluctuations of the KPZ equation. *Phys. Rev. Lett.* 121, 060201
 - [11] Li-Cheng Tsai. Stationary Distributions of the Atlas Model. *Electron. C. Probab. 23* (10), 2018
 - [10] Ivan Corwin and Hao Shen. ASEP(q, j) converges to the KPZ equation. Ann. Inst. Henri Poincaré (B) Probab. Stat. 54(2) 995-1012
 - [9] Wenpin Tang and Li-Cheng Tsai. Optimal Surviving Strategy for Drifted Brownian Motions with Absorption. *Ann. Prob.* 46(3) 1597-1650
- 2017 [8] Andrey Sarantsev and Li-Cheng Tsai. Stationary Gap Distributions for Infinite Systems of Competing Brownian Particles. *Electron. J. Probab.* 22 (56)
 - [7] Amir Dembo and Li-Cheng Tsai. Equilibrium Fluctuation of the Atlas Model. *Ann. Prob.* 45(6B) 4529-4560
 - [6] Ivan Corwin and Li-Cheng Tsai. KPZ equation limit of higher-spin exclusion processes. *Ann. Prob.* 45(3) 1771-1798
- 2016 [5] Li-Cheng Tsai. Infinite Dimensional Stochastic Differential Equations for Dyson's Model. *Probab. Theory Related Fields* 166(3)801-850
 - [4] 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
- 2014 [3] Hung-Wen Kuo, Tai-Ping Liu, and Li-Cheng Tsai. Equilibrating effects of boundary and colllision 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

TEACHING EXPERIENCE

Rutgers University

2020 Differential Equations for Engineering and Physics ongoing

2019 Linear Algebra and Applications 4.78/5 (teaching effectiveness)

Columbia University

2017 Calculus II 4.0/5 (overall assessment of the effectiveness)

INVITED TALKS

Integrable Probability Summer School, Oxford, August
Bernoulli-IMS 10th World Congress in Probability and Statistics, July
Integrable Probability FRG meeting, Columbia University, March

2019 Probability Seminar, Columbia University, November

Mathematical Physics Seminar, Rutgers University, November

Probability Seminar, University of Rochester, November

Workshop: Singular SPDEs and Related Topics,

Hausdorff Institute of Mathematics, Germany, October

Probability Seminar, Temple University, October

Central AMS sectional meeting, Madison, September

The 12th Mathematical Society of Japan, Seasonal Institute, August

Department colloquium, Carnegie Mellon University, April

Probability and Analysis Seminar, Stony Brook University, March

2018 Probability Seminar, University of Toronto, October

Probability Seminar, University of Utah, October

Probability Seminar, UC San Diego, October

Probability Seminar, UC Irvine, October

Probability Seminar, University of Washington, October

Probability Seminar, UC Davis University, October

Probability Seminar, Cornell University, October

New Trends in Stochastic Analysis, Chinese Academy of Science, Beijing, September

Interacting Particle Systems and Parabolic PDEs, Banff, August

Integrable probability focus research group, MIT, May

Probability Seminar, the City University of New York, March

Probability Seminar, University of Virginia, February

Applied Math Seminar, Stanford University, January

2017	Probability Seminar, University of Minnesota, December
	Mathematical Congress of the Americas, Montreal, July
	Probability Seminar, University of Toronto, April
	Probability Seminar, Duke University, March
2016	Probability Seminar, Brown University, October
	Columbi-Courant Probability Seminar, NYU, 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	Student Probability/PDE Seminar, UC Berkeley, March
CONI	FERENCES
2020	Integrable Probability Summer School, Oxford
	Bernoulli-IMS 10th World Congress in Probability and Statistics
	Integrable Probability FRG meeting, Columbia University, March
2019	Workshop: Singular SPDEs and Related Topics,
	Hausdorff Institute of Mathematics, Germany
	The 12th Mathematical Society of Japan, Seasonal Institute
2018	New Trends in Stochastic Analysis, Beijing
	Interacting Particle Systems and Parabolic PDEs, Banff
	International Congress on Mathematical Physics, Montreal
	Integrable probability focus research group, MIT
2017	Mathematical Congress of the Americas, Montreal
2016	Quantum integrable systems, conformal field theories and stochastic processes, Institud' d'Études Scientifiques de Cargèse, Corsica
	New approaches to non-equilibrium and random systems: KPZ integrability, universality applications and experiments, Kavli Institute for Theoretical Physics, Santa Barbara
2015	Stochastic Analysis on Large Scale Interacting Systems, RIMS, Kyoto
	Stochastic Analysis: Around the KPZ Universality Class, Oberwolfach
	Seminar on Stochastic Processes, UC San Diego