Li-Cheng Tsai

Curriculum Vitae

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

lctsai.math@gmail.com
lc.tsai@rutgers.edu

https://lc-tsai.github.io

POSITIONS

Rutgers University – New Brunswick, 2019–
Assistant Professor of Mathematics

Columbia University, 2016–2019
Junior Fellow of the Simons Society of Fellows
Postdoctoral Research Scientist, Department of Mathematics
Mentor: Ivan Corwin

EDUCATION

Stanford University, 2011–2016
Ph.D. Mathematics, June 2016
Thesis advisor: Amir Dembo

Academia Sinica (Taipei, Taiwan), 2010–2011
Research Trainee, Institute of Mathematics
Mentor: Tai-Ping Liu

National Taiwan University, 2005–2009
B.S. Physics, with minor in Mathematics, June 2009

AWARDS

2020 Awardee, Bernoulli Society New Researcher Award

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

[23] Jeremy Quastel and Li-Cheng Tsai. Hydrodynamic large deviations of TASEP. *arXiv:2104.04444*

Published / To appear

2021 [22] Li-Cheng Tsai. Exact lower tail large deviations of the KPZ equation. *To appear in Duke Math. J. arXiv:1809.03410*

[21] Yier Lin and Li-Cheng Tsai. Short time large deviations of the KPZ equation. *To appear in Comm. Math. Phys.*

[20] Sayan Das and Li-Cheng Tsai. Fractional moments of the Stochastic Heat Equation. *Ann. Inst. Henri Poincaré (B) Probab. Stat. 57(2) 9778–799, 2021*

[19] Yu Gu, Jeremy Quastel, and Li-Cheng Tsai. Moments of the 2D SHE at criticality. *Probability and Mathematical Physics 2(1) 179–219, 2021*

2020 [18] Ivan Corwin and Li-Cheng Tsai. SPDE Limit of Weakly Inhomogeneous ASEP. *Electron. J. Probab. 25 1–55, 2020*

[17] Ivan Corwin, Promit Ghosal, Hao Shen, and Li-Cheng Tsai. Stochastic PDE Limit of the Six Vertex Model. *Comm. Math. Phys., 375, 1945–2038 (2020)*

2019 [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) 1–71, 2019*

[13] Amir Dembo and Li-Cheng Tsai. Criticality of a Randomly-Driven Front. *Arch. Rational Mech. Anal. 233(2) 643–699, 2019*

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(6) 060201, 2018*

[11] Li-Cheng Tsai. Stationary Distributions of the Atlas Model. *Electron. C. Probab. 23(10) 1–10, 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, 2018*

[9] Wenpin Tang and Li-Cheng Tsai. Optimal Surviving Strategy for Drifted Brownian Motions with Absorption. *Ann. Prob. 46(3) 1597–1650, 2018*

2017 [8] Andrey Sarantsev and Li-Cheng Tsai. Stationary Gap Distributions for Infinite Systems of Competing Brownian Particles. *Electron. J. Probab. 22(56) 1–20, 2017*

[7] Amir Dembo and Li-Cheng Tsai. Equilibrium Fluctuation of the Atlas Model. *Ann. Prob. 45(6B) 4529–4560, 2017*

[6] Ivan Corwin and Li-Cheng Tsai. KPZ equation limit of higher-spin exclusion processes. *Ann. Prob. 45(3) 1771–1798, 2017*

2016 [5] Li-Cheng Tsai. Infinite Dimensional Stochastic Differential Equations for Dyson's Model. *Probab. Theory Related Fields 166(3) 801–850, 2016*

[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, 2016*

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, 2014*

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, 2013*

2011 [1] Li-Cheng Tsai. Viscous Shock Propagation with Boundary Effect. *Bull. Inst. Math. Acad. Sin. (N.S.) 6(1) 1–25, 2011*

TEACHING EXPERIENCE

Rutgers University

2021 Introduction to stochastic processes (undergraduate) 4.75/5

2020 Linear Algebra and applications (EE Ph.D. students) 5.00/5

2020 Differential equations for engineering and physics 4.59/5

2019 Linear Algebra and Applications (EE Ph.D. students) 4.67/5

Note: Scores are for "overall quality of the course".

Columbia University

2017 Calculus II 4.0/5 "overall assessment of the effectiveness"