Li-Cheng Tsai

Curriculum Vitae

Department of Mathematics
Rutgers University – New Brunswick
Hill Center, 110 Frelinghuysen Road
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https://lc-tsai.github.io

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, Bernoulli Society New Researcher Award

2017 NSF grants: DMS-1712575 $149,111

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

2020 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

CONFERENCES

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, Institut 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