Li-Cheng Tsai   Curriculum Vitae

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Education

Stanford University   Sep 2011 – Jun 2016

Ph.D. Mathematics, June 2016
Thesis advisor: Amir Dembo

Institute of Mathematics, Academia Sinica   Jul 2010 – Jun 2011

Research Trainee
Mentor: Tai-Ping Liu

National Taiwan University   Sep 2005 – June 2009

Bachelor of Science in Physics
with minor in Mathematics, June 2009

Positions

The University of Utah   Jul 2022 –

Tenure-track Assistant Professor of Mathematics

Rutgers University—New Brunswick   Jul 2019 – Jun 2022

Tenure-track Assistant Professor of Mathematics

Columbia University   Jul 2016 – Jun 2019

Junior Fellow of the Simons Society of Fellows
Postdoctoral Research Scientist in Department of Mathematics
Mentor: Ivan Corwin

Honors and awards

Sloan Research Fellowships	2022
Bernoulli Society New Researcher Award	2020
Junior Fellow, Simons Society of Fellows	2016

Grants and fellowships

Sloan Research Fellowships	2022	$75,000	Jul 2022 – Jun 2026
Standard NSF Grant DMS-2153739 transferred to DMS-2243112	2022	$225,000	Jul 2022 – Jun 2025
Standard NSF Grant DMS-1712575 transferred to DMS-1953407	2017	$149,111	Jul 2017 – Jun 2022

Professional service

Associate Editor   Journal of Statistical Physics   Jan 2022 –

Publications

Preprint

[31]   Sayan Das and Li-Cheng Tsai
Solving marginals of the LDP for the directed landscape
arXiv: 2405.17041

[30]   Yier Lin and Li-Cheng Tsai
Spacetime limit shapes of the KPZ equation in the upper tails
arXiv:2304.14380

[29]   Li-Cheng Tsai
High moments of the SHE in the clustering regimes
arXiv:2304.14375

Published or to appear

[28]   Jeremy Quastel and Li-Cheng Tsai
Hydrodynamic large deviations of TASEP
To appear in Communications on Pure and Applied Mathematics
arXiv:2104.04444

[27]   Yier Lin and Li-Cheng Tsai
A lower-tail limit in the weak noise theory
To appear in Annales de l'Institut Henri Poincaré (B) Probabilités et
Statistiques. arXiv:2210.05629

2023 [26]   Li-Cheng Tsai
Integrability in the weak noise theory
Transactions of the American Mathematical Society 376, pp 6521–6572 (2023)

[25]   Pierre Yves Gaudreau Lamarre, Yier Lin, and Li-Cheng Tsai
KPZ equation with a small noise, deep upper tail and limit shape
Probability Theory and Related Fields 185, pp 885–920 (2023)

2022 [24]   Li-Cheng Tsai
Exact lower tail large deviations of the KPZ equation
Duke Mathematical Journal 171(9), pp 1879–1922 (2022)

2021 [23]   Li-Cheng Tsai
Large deviations of the KPZ equation via the Stochastic Airy operator
Advanced Studies in Pure Mathematics 87, pp 415–429 (2021)

[22] Yier Lin and Li-Cheng Tsai
Short time large deviations of the KPZ equation
Communications in Mathematical Physics 386(1), pp 359–393 (2021)

[21] Sayan Das* and Li-Cheng Tsai
Fractional moments of the Stochastic Heat Equation
Annales de l'Institut Henri Poincaré (B) Probabilités et Statistiques 57(2), pp 778–799 (2021)

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

2020   [19] Ivan Corwin and Li-Cheng Tsai
SPDE Limit of Weakly Inhomogeneous ASEP
Electronic Journal of Probability 25, pp 1–55 (2020)

[18] Ivan Corwin, Promit Ghosal*, Hao Shen, and Li-Cheng Tsai
Stochastic PDE Limit of the Six Vertex Model
Communications in Mathematical Physics 375, pp 1945–2038 (2020)

2019   [17] Yu Gu and Li-Cheng Tsai
Another look into the Wong-Zakai Theorem for Stochastic Heat Equation
Annals of Applied Probability 29(5), pp 3037–3061 (2019)

[16] Hao Shen and Li-Cheng Tsai
Stochastic Telegraph Equation Limit for the Stochastic Six Vertex Model
Proceedings of American Mathematical Society 147(6), pp 2685–2705 (2019)

[15] Stefano Olla and Li-Cheng Tsai
Exceedingly Large Deviations of the Totally Asymmetric Exclusion Process
Electronic Journal of Probability 24(16), pp 1–71 (2019)

[14] Amir Dembo and Li-Cheng Tsai
Criticality of a Randomly-Driven Front
Archive for Rational Mechanics and Analysis 233(2), pp 643–699 (2019)

2018   [13] Ivan Corwin, Promit Ghosal*, Alexandre Krajenbrink*, Pierre Le Doussal, and Li-Cheng Tsai
Coulomb-gas electrostatics controls large fluctuations of the KPZ equation
Physical Review Letters 121(6), page 060201-1 to page 060201-6 (2018)

[12] Li-Cheng Tsai
Stationary Distributions of the Atlas Model
Electronic Communications in Probability 23(10) pp 1–10 (2018)

[11] Ivan Corwin, Hao Shen, and Li-Cheng Tsai
ASEP(q,j) converges to the KPZ equation
Annales de l'Institut Henri Poincaré (B) Probabilités et Statistiques 54(2), pp 995–1012 (2018)

[10]   Wenpin Tang and Li-Cheng Tsai
Optimal Surviving Strategy for Drifted Brownian Motions with Absorption
Annals of Probability 46(3), pp 1597–1650 (2018)

2017   [9]   Andrey Sarantsev and Li-Cheng Tsai
Stationary Gap Distributions for Infinite Systems of Competing Brownian Particles
Electronic Journal of Probability 22, pp 1–20 (2017)

[8]   Amir Dembo and Li-Cheng Tsai
Equilibrium Fluctuation of the Atlas Model
Annals of Probability 45(6B), pp 4529–4560 (2017)

[7]   Ivan Corwin and Li-Cheng Tsai
KPZ equation limit of higher-spin exclusion processes
Annals of Probability 45(3), pp 1771–1798 (2017)

–2016   [6]   Li-Cheng Tsai
Infinite Dimensional Stochastic Differential Equations for Dyson's Model
RIMS Kôkyûroku Bessatsu B59, pp 175–201 (2016)

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

[4]   Amir Dembo and Li-Cheng Tsai
Weakly Asymmetric Non-Simple Exclusion Process and the Kardar-Parisi-Zhang Equation
Communications in Mathematical Physics 341(1) 219–261 (2016)

[3]   Hung-Wen Kuo, Tai-Ping Liu, and Li-Cheng Tsai
Equilibrating effects of boundary and collision in rarefied gasses
Communications in Mathematical Physics 328(2) pp 421–480 (2014)

[2]   Hung-Wen Kuo, Tai-Ping Liu, and Li-Cheng Tsai
Free Molecular Flow with Boundary Effect
Communications in Mathematical Physics 318(2), pp 375–409 (2013)

[1]   Li-Cheng Tsai
Viscous Shock Propagation with Boundary Effect
Bulletin, Institute of Mathematics, Academia Sinica (New Series) 6(1), pp 1–25 (2011)