Wenpin Tang **Date: 03/31/2026**

CONTACT INFORMATION

Columbia University
Department of Industrial Engineering and Operations Research
Mudd 334, NY 10027

(510) 332-0562
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EDUCATION

Department of Statistics, University of California, Berkeley

Ph.D., Probability and Statistics, September 2012 − May 2017
Dissertation: Continuous paths in Brownian motion and related problems
Advisor: Jim Pitman

Department of Applied Mathematics, Ecole Polytechnique

Engineer's diploma, Financial Engineering, September 2009 − May 2013

EMPLOYMENT

Department of Industrial Engineering and Operations Research, Columbia University

Tang Family Assistant Professor (Tenure Track), Jan 2025 −
Assistant Professor (Tenure Track), July 2020 −

Department of Industrial Engineering and Operations Research, University of California, Berkeley

Researcher, July 2019 − June 2020

Department of Mathematics, University of California, Los Angeles

Assistant Adjunct Professor, July 2017 − June 2019

EDITORIAL SERVICE

Associate Editor, *Applied Mathematics and Optimization*, 2024–

Associate Editor, *Probability in the Engineering and Informational Sciences*, 2025–

Associate Editor, *Mathematics of Operations Research*, 2025–

PUBLICATIONS

[P49] Winston Yu, Qiang Du and Wenpin Tang, *Convergence rate of vanishing viscosity approximations to mean field games with non-separable Hamiltonians,* To appear in *Stochastic Processes and their Applications.*

[P48] Wenpin Tang and Fuzhong Zhou, *Fine-tuning of diffusion models via stochastic control: entropy regularization and beyond,* To appear in American Control Conference (ACC).

[P47] Gaoyue Guo, Nicolas Juillet and Wenpin Tang, *The soccer model, stochastic ordering and martingale transport,* To appear in Bernoulli.

[P46] Haoxian Chen, Hanyang Zhao, Ji Zhang, David Yao and Wenpin Tang, *Scores as Actions: a framework of fine-tuning diffusion models by continuous-time reinforcement learning,* To appear in International Conference on Machine Learning (ICML).

[P45] Genta Indra Winata, Hanyang Zhao, Anirban Das, Wenpin Tang, David D. Yao, Shi-Xiong Zhang and Sambit Sahu. *Preference tuning with human feedback on*

language, speech, and vision tasks: a survey, Journal of Artificial Intelligence Research (2025) vol.82, 2595-2661.

[P44] Wenpin Tang and Yuming Paul Zhang, *The convergence rate of vanishing viscosity approximations for mean field games,* SIAM Journal on Mathematical Analysis (2025) vol.57, no.3, 3217-3254.

[P43] Wenpin Tang and Hanyang Zhao, *Contractive diffusion probabilistic models,* To appear in SIAM Journal on Imaging Sciences.

[P42] Hanyang Zhao, Genta Indra Winata, Anirban Das, Shi-Xiong Zhang, David D. Yao, Wenpin Tang and Sambit Sahu, *RainbowPO: a unified framework for combining improvements in preference optimization,* International Conference on Learning Representation (ICLR 2025).

[P41] Haoxian Chen, Hanyang Zhao, Henry Lam, David Yao and Wenpin Tang, *MallowsPO: fine-tune your LLM with preference dispersions,* International Conference on Learning Representation (ICLR 2025).

[P40] Wenpin Tang, *Stability of shares in the Proof of Stake protocol – concentration and phase transitions,* To appear in Journal of Financial Stability.

[P39] Wenpin Tang and Hanyang Zhao, *Score-based diffusion models via stochastic differential equations,* Statistics Surveys (2025) vol.19, 28-64.

[P38] Lu Zhang, Wenpin Tang and Sudipto Banerjee, *Exact Bayesian geostatistics using predictive stacking,* To appear in *Journal of the American Statistical Association.*

[P37] Erhan Bayraktar, Gaoyue Guo, Wenpin Tang and Yuming Paul Zhang, *Systemic robustness: a mean-field particle system approach,* Mathematical Finance (2025) vol.35, no.4, 727-744.

[P36] Wenpin Tang and David D. Yao, *Polynomial voting rules,* Mathematics of Operations Research (2025) vol.50, no.1, 90-106.

[P35] Wenpin Tang, Hung Vinh Tran and Yuming Paul Zhang, *Policy iteration for the deterministic control problems – a viscosity approach,* SIAM Journal on Control and Optimization (2025) vol.63, no.1, 375-401.

[P34] Wenpin Tang, Yuhang Wu and Xun Yu Zhou, *Discrete simulated annealing: a convergence analysis via the Eyring–Kramers law,* Numerical Algebra, Control and Optimization (2024) vol.14, no.4, 778-794.

[P33] Wenpin Tang, *Trading and wealth evolution in the Proof of Stake protocol,* Proof-of-Stake for Blockchain Networks: Fundamentals, Challenges and Approaches (2024) Chapter 7, 135-161.

[P32] Lu Zhang, Wenpin Tang and Sudipto Banerjee, *Fixed-domain asymptotics under Vecchia's approximation of spatial process likelihoods,* Statistica Sinica (2024) vol.34, no.4, 1863-1881.

[P31] Erhan Bayraktar, Gaoyue Guo, Wenpin Tang and Yuming Paul Zhang, *McKean-Vlasov equations involving hitting times: blow-ups and global solvability,* Annals of Applied Probability (2024) vol.34, no.1B, 1600-1622.

[P30] Xin Guo, Jiequn Han, Mahan Tajrobehkar and Wenpin Tang, *Escaping saddle points efficiently with occupation-time-adapted perturbations,* Journal of Computational Mathematics and Data Science (2024) vol.10, 100090.

[P29] Hanyang Zhao, Wenpin Tang and David D. Yao, *Policy optimization for continuous reinforcement learning,* Proceedings of the 37th International Conference on Neural Information Processing Systems (Neurips 2023) vol.37, 13637-13663..

[P28] Thomas M. Liggett and Wenpin Tang, *One-dependent hard-core processes and colorings of the star graph,* Annals of Applied Probability (2023) vol. 33, no. 6A, 4341-4365.

[P27] Wenpin Tang and David D. Yao, *Trading under the Proof-of-Stake protocol – a continuous-time control approach,* Mathematical Finance (2023) vol.33, no.4, 979-1004.

[P26] Didong Li, Wenpin Tang and Sudipto Banerjee, *Fixed-domain inference for Gaussian processes with Matérn covariogram on compact Riemannian manifolds,* Journal of Machine Learning Research (2023) vol.24, no.101, 1-26.

[P25] Wenpin Tang and Xun Yu Zhou, *Tail probability estimates of continuous-time simulated annealing processes,* Numerical Algebra, Control and Optimization (2023) vol.13, no.3-4, 473-485.

[P24] Jim Pitman and Wenpin Tang, *Extreme order statistics of random walks,* Annales de l'Institut Henri Poincaré (2023) vol.59, no.1, 97-116.

[P23] Wenpin Tang and Fengmin Tang, *Poisson binomial distributions – Old & New*, Statistical Science (2023) vol.38, no.1, 108-119.

[P22] Wenpin Tang, Yuming Paul Zhang and Xun Yu Zhou, *Exploratory HJB equations and their convergence,* SIAM Journal on Control and Optimization (2022) vol.60, no.6, 3191-3216.

[P21] Jim Pitman and Wenpin Tang, *Hidden symmetries and limit laws in the extreme order statistics of the Laplace random walk,* Annals of Probability (2022) vol.50, no.4, 1647-1673.

[P20] Georg Menz, André Schlichting, Wenpin Tang and Tianqi Wu, *Ergodicity of the infinite swapping algorithm at low temperature,* Stochastic Processes and their Applications (2022) vol 151, 519-552.

[P19] T. Tony Ke, Wenpin Tang, J. Miguel Villas-Boas and Yuming Zhang, *Parallel search for information in continuous time – optimal stopping and geometry of the PDE,* Applied Mathematics and Optimization (2022) vol.85, article 3, 1-25.

[P18] Wenpin Tang, Xiao Xu and Xun Yu Zhou, *Asset selection via correlation block-model clustering,* Expert Systems with Applications (2022) vol.195, 116558.

[P17] Xin Guo, Wenpin Tang and Renyuan Xu, *A stochastic game and stochastic free boundary problem,* SIAM Journal on Control and Optimization (2022) vol.60, no.2, 758-785.

[P16] Wenpin Tang, Lu Zhang and Sudipto Banerjee, *On identifiability and consistency of the nugget in Gaussian spatial process models,* Journal of the Royal Statistical

Society: Series B (2021) vol.83, no.5, 1044-1070.

[P15] Xiao Fang, Han Liang Gan, Susan Holmes, Haiyan Huang, Erol Peköz, Adrian Röllin and Wenpin Tang, *Arcsine laws for random walks generated from random permutations with applications to genomics,* Journal of Applied Probability (2021) vol.58, no.4, 851-867.

[P14] Wenpin Tang and Yuting Ye, *The existence of maximum likelihood estimate in high-dimensional generalized linear models with binary responses,* Electronic Journal of Statistics (2020) vol.14, no.2, 4028-4053.

[P13] Xin Guo, Fengmin Tang and Wenpin Tang, *The Buckley-Osthus model and the block preferential attachment model: statistical analysis and application,* Proceedings of the 37th International Conference on Machine Learning (ICML 2020) PMLR 119, 9377-9386.

[P12] Wenpin Tang, *Mallows ranking models: maximum likelihood estimate and regeneration,* Proceedings of the 36th International Conference on Machine Learning (ICML 2019) PMLR 97, 6125-6134.

[P11] Wenpin Tang, *Exponential ergodicity and convergence for generalized reflected Brownian motion,* Queueing Systems: Theory and Applications (2019) vol.92, no.1, 83-101.

[P10] Jean-Jil Duchamps, Jim Pitman and Wenpin Tang, *Renewal sequences and record chains related to multiple zeta sums,* Transactions of AMS (2019) vol.371, no.8, 5731-5755.

[P9] Jim Pitman and Wenpin Tang, *Regenerative random permutations of integers,* Annals of Probability (2019) vol.47, no.3, 1378-1416.

[P8] Günter Last, Wenpin Tang and Hermann Thorisson, *Transporting random measures on the line and embedding excursions into Brownian motion,* Annales de l'Institut Henri Poincaré (2018) vol.54, no.4, 2286-2303.

[P7] Jim Pitman and Wenpin Tang, *The argmin process of random walks, Brownian motion and Lévy processes,* Electronic Journal of Probability (2018) vol.23, no.60, 1-35.

[P6] Wenpin Tang and Li-Cheng Tsai, *Optimal surviving strategy for drifted Brownian motions with absorption,* Annals of Probability (2018) vol.46, no.3, 1597-1650.

[P5] Jim Pitman and Wenpin Tang, *Tree formulas, mean first passage times and Kemeny's constant of a Markov chain,* Bernoulli (2018) vol.24, no.3, 1942-1972.

[P4] Steven N. Evans, Jim Pitman and Wenpin Tang, *The spans in Brownian motion,* Annales de l'Institut Henri Poincaré (2017) vol.53, no.3, 1108-1135.

[P3] Jim Pitman and Wenpin Tang, *The Slepian zero set, and Brownian bridge embedded in Brownian motion by a spacetime shift,* Electronic Journal of Probability (2015) vol.20, no.61, 1-28.

[P2] Jim Pitman and Wenpin Tang, *Patterns in random walks and Brownian motion,* Séminaire de Probabilité XLVII - In Memoriam Marc Yor (2015), 49-88.

[P1] Titus Lupu, Jim Pitman and Wenpin Tang, *The Vervaat transform of Brownian bridges and Brownian motion,* Electronic Journal of Probability (2015) vol.20, no.51, 1-31.

Submitted Preprints

[S13] Zhengyi Guo, Wenpin Tang and Renyuan Xu, *Conditional diffusion guidance under hard constraint: a stochastic analysis approach,* https://arxiv.org/abs/2602.05533.

[S12] Yilie Huang, Wenpin Tang, Xunyu Zhou, *ART for diffusion sampling: a reinforcement learning approach to timestep schedule,* https://www.arxiv.org/abs/2601.18681.

[S11] Haoting Zhang, Haoxian Chen, Donglin Zhan, Hanyang Zhao, Henry Lam, David Yao and Zeyu Zheng, *SOCRATES: simulation optimization with correlated replicas and adaptive trajectory evaluations,* https://arxiv.org/abs/2511.00685.

[S10] Jiayuan Sheng, Hanyang Zhao, Haoxian Chen and David Yao, *Understanding sampler stochasticity in training diffusion models for RLHF,* https://arxiv.org/abs/2510.10767.

[S9] Hanyang Zhao, Dawen Liang, David Yao and Nathan Kallus. *DiFFPO: training diffusion LLMs to reason fast and furious via reinforcement learning,* https://arxiv.org/abs/2510.02212.

[S8] Zhengyi Guo, Jiatu Li, Wenpin Tang and David D. Yao, *Diffusion generative models meet compressed sensing, with applications to image data and financial time series,* https://arxiv.org/abs/2509.03898.

[S7] Ruofei Ma, Zhebiao Cai, Wenpin Tang and David D. Yao, *Optimal decisions for liquid staking: allocation and exit Timing,* https://arxiv.org/abs/2507.14810.

[S6] Hanyang Zhao, Haoxian Chen, Yucheng Guo, Tingting Ou, Ziyu Huang, Genta Indra Winata, David D. Yao and Wenpin Tang, *Fine-tuning diffusion generative models via rich preference optimization,* https://arxiv.org/abs/2503.11720.

[S5] Ruofei Ma, Wenpin Tang and David D. Yao, *Analysis of the order flow auction under proposer-builder separation,* https://arxiv.org/abs/2502.12026.

[S4] Wenpin Tang and Xun Yu Zhou, *Regret of exploratory policy improvement and q-learning,* https://arxiv.org/abs/2411.01302.

[S3] Wenpin Tang and David D. Yao, *Transaction fee mechanism for Proof-of-Stake protocol,* https://arxiv.org/abs/2308.13881.

[S2] Wenpin Tang, *Finite and infinite weighted exchangeable sequences,* https://arxiv.org/abs/2306.11584.

[S1] Wenpin Tang, *Learning an arbitrary mixture of two multinomial logits,* https://arxiv.org/abs/2007.00204.

Invited talks

2025 **INFORMS, Atlanta**: *Systemic robustness: a mean-field particle system approach.*

International Conference on Continuous Optimization, USC: *Fine-tuning and guidance of diffusion models.*

INFORMS Applied Probability Society Conference, Atlanta: *A stochastic analysis approach to conditional diffusion guidance.*

Workshop on stochastic control and reinforcement learning, Banff: *Stochastic approaches to guide generative models and applications.*

IOE seminar, University of Michigan: *Stochastic approaches to guide generative models and applications.*

Financial Mathematics Seminar, University of Michigan: *The soccer model, stochastic ordering and martingale transport.*

2024 **World Online Seminars on Machine Learning in Finance, Virtual**: *Diffusion models and fine tuning/guidance.*

INFORMS, Seattle: *Diffusion models and fine tuning/guidance.*

Workshop on Responsible AI and Financial Innovation, Columbia University: *RainbowPO–in search of critical components improving preference optimization.*

Bachelier World Congress, Rio de Janeiro: *Contractive diffusion models and reinforcement learning.*

Byrne Workshop on Stochastic Analysis in Finance and Insurance, University of Michigan: *Contractive diffusion models and reinforcement learning.*

Computational Applied Mathematics and Operations Research seminar, Rice University: *Contractive diffusion models and reinforcement learning.*

ECE seminar, University of Texas at San Antonio: *Contractive diffusion models and reinforcement learning.*

2023 **INFORMS, Pheonix**: *Reinforcement learning in continuous time: learning Hamiltonian and temperature control.*

CityU-NUS Mean Field Game and Control Seminar, Virtual: *The vanishing viscosity limit for mean field games and diffusion probabilistic models.*

Wharton Statistics seminar, University of Pennsylvania: *Diffusion probabilistic models and predictive stacking in Bayesian geostatistics.*

43rd Conference on Stochastic Processes and their Applications, Lisbon: *The convergence rate of vanishing viscosity approximations for mean field games.*

Secure Blockchain Summit, Carnegie Mellon University: *Mechanism design under the Proof of Stake protocol.*

Penn/Temple Probability Seminar, University of Pennsylvania: *Phase transition in mean field models.*

Applied Mathematics Colloquium (APAM), Columbia University: *Phase transition in mean field models.*

2022 **Hong Kong-Singapore Financial Mathematics seminar, Virtual**: *A prelude to blockchain technology: design and economy.*

Mathematical Finance seminar, Columbia University: *A prelude to blockchain technology: design and economy.*

INFORMS, Indianapolis: *Parallel search for information in continuous time.*

SIAM Annual Meeting, Pittsburgh: *Exploratory control problem: some convergence results.*

Institute for Mathematical and Statistical Innovation, Chicago: *Some stories about Brownian interacting systems with absorption.*

PKU Financial Math seminars, Virtual: *Some topics on reachability, policy iteration and strategic learning in (stochastic) control problems.*

Mathematical Finance Colloquium, USC: *Some stories about Brownian interacting systems with absorption.*

2021 **InnoHK Lab seminar, Virtual**: *A prelude to blockchain technology: design and economy.*

Financial Mathematics seminar (ORFE), Princeton University: *Some stories about Brownian interacting systems with absorption.*

THU-PKU-BNU joint probability webinar, Virtual: *Some stories about Brownian interacting systems with absorption.*

Probability seminar, UCLA: *Some stories about interacting random processes.*

Institute for Mathematical and Statistical Innovation, Virtual: *Exploration via randomization: reinforcement learning and beyond.*

Séminaire Bachelier, Virtual: *Some stories about Brownian interacting systems with absorption.*

Probability seminar, University of Mannheim: *Mallows ranking (permutation) – Old and New.*

2020 **Workshop on Optimization, Probability, and Simulation, Virtual**: *Functional inequalities of infinite swapping algorithm: theory and application.*

Financial Mathematics Seminar, University of Michigan *Rank-dependent diffusions and PDEs.*

Department colloquium (ORIE), Cornell University: *Discrete and continuous ranking models.*

Department colloquium (IEOR), Columbia University: *Discrete and continuous ranking models.*

Department colloquium (math), Baruch College: *Discrete and continuous ranking models.*

Department colloquium (math), University of Utah: *Discrete and continuous ranking models.*

Stochastics seminar, University of Utah: *Functional inequalities of infinite swapping algorithm: theory and application.*

Department colloquium (math), Northwestern University: *Discrete and continuous ranking models.*

Department colloquium (math), Northeastern University: *Discrete and continuous ranking models.*

2019 **Department colloquium (math), University of Cincinnati**: *Discrete and continuous ranking models.*

Department colloquium (math), University of Miami: *Discrete and continuous ranking models.*

Department colloquium (math), North Carolina State University: *Discrete and continuous ranking models.*

Probability seminar, UCSD: *Functional inequalities of Infinite swapping algorithm: theory and applications.*

Probability seminar, University of Washington: *Functional inequalities of Infinite swapping algorithm: theory and applications.*

INFORMS, Seattle: *The Buckley-Osthus model and the block preferential attachment model.*

	Probability seminar, UC Berkeley: *Functional inequalities of Infinite swapping algorithm: theory and applications.*
	ICML Oral, Los Angeles: *Mallows ranking models: maximum likelihood estimate and regeneration.*
2018	**Southern California Probability Symposium, Los Angeles**: *Discrete and continuous ranking models.*
	AMS Fall Western Sectional Meeting, San Francisco: *The argmin process of random walks, Brownian motion and Lévy processes.*
	Workshop in memory of Larry Shepp, Stanford University: *The "Up the River" Problem:* $1+\varepsilon$.
	Probability seminar, Stanford University: *Regenerative permutations: Mallows(q) and Riemann zeta formulas.*
	Department colloquium (IEOR), UC Berkeley: *Optimal Surviving Strategy for the "Up the River" Problem.*
2017	**Probability seminar, University of Chicago**: *Regenerative permutations: Mallows(q) and Riemann zeta formulas.*
	Probability seminar, UCLA: *Optimal Surviving Strategy for the "Up the River" Problem.*
	Probability seminar, UC Berkeley: *Optimal Surviving Strategy for the "Up the River" Problem.*
2016	**IMS-FIPS Workshop, Edmonton**: *Patterns in random walks and in Brownian paths.*
	Berkeley-Columbia Meeting in Engineering and Statistics: *Optimal Surviving Strategy for the "Up the River" Problem.*
2015	**Mathematical physics and probability seminar, UC Davis**: *Patterns in random walks and in Brownian paths.*
	Probability seminar, UC Berkeley: *Patterns in random walks and in Brownian paths.*
2014	**Conference in honor of Jim Pitman, UCSD**: *Patterns in random walks and in Brownian paths.*

Outside professional service

2022–2023, 2023–2024	NSF grant panel
2023-2024, 2024-2025	INFORMS APS paper competition panel
2025	ICCOPT: Optimization meets GenAI
2025	INFORMS APS conference: Applied Probability to GenAI
2024	INFORMS: Generative diffusion models
2022	INFORMS: Optimization and Learning in Math Finance
2020, 2023	Columbia-Berkeley workshop in Engineering and Statistics

Referee service

Annals of Probability, *Annals of Applied Probability*, *Probability Theory and Related Fields*, *Management Science*, *Operations Research*, *Mathematics of Operations Research*, *Mathematical Finance*, *Annals of Statistics*, *Journal of the Royal Statistical Society: Series B*, *Annales de l'Institut Henri Poincaré*, *Journal of Applied Probability*, *Random Structures & Algorithms*, *Applied Mathematics and Optimization*, *Combinatorics, Probability and Computing*, *Electronic Journal of Probability*, *International Journal of Biostatistics*, *Optimization Letters*, *Quantitative Finance*, *Statistics & Probability Letters*, *Stochastic Models*, *Stochastic Systems*, *Latin American Journal of Probability and Mathematical Statistics*.