

Marcel F. Nutz

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Employment and Education

- *Professor*, Department of Statistics, Columbia University (Assistant Prof. 2014, Associate Prof. 2016, tenured 2017, Full Prof. 2020). Parental leave, January–June 2023.
Also affiliated with the Department of Mathematics and the Data Science Institute.
- *J. F. Ritt Assistant Professor*, Department of Mathematics, Columbia University, 2011–2014.
- *Postdoctoral Research Fellow* (with H. M. Soner), ETH Zurich, 2010–2011.
- *Ph.D. in Mathematics*, ETH Zurich, 2010.
- *Diploma in Mathematics* with distinction, ETH Zurich, 2007.

Awards and Honors

- *IMS Fellow*, 2023.
- *Columbia–Polytechnique Alliance Professor*, 2020–2021.
- *Alfred P. Sloan Research Fellow*, 2016–2018 (extended through 2021).
- Hong Kong GRF Grant 14302622, 2023–2025 (Co-Investigator; PI Xiaolu Tan).
- NSF Grant DMS-2106056, 2021–2024.
- NSF Grant DMS-1812661, 2018–2022.
- NSF Grant DMS-1512900, 2015–2018.
- NSF Grant DMS-1208985, 2012–2015.
- *Minerva Foundation Fellow*, 2011–2014.
- *Medal of ETH*, 2007.
- Select plenary lectures:
 - SIAM FME, Philadelphia, 2023.
 - International Symposium on BSDEs and Mean Field Systems, Annecy, 2022.
 - Optimal Transport with Applications to Economics & Statistics, Paris, 2021.
 - 10th General AMAMEF Conference, Padova, 2021.
 - Uncertainty and Risk—A Workshop Commemorating the Centenary of Publication of Frank H. Knight’s “Risk, Uncertainty, and Profit” [...], Chicago, 2021.
 - ~~8th Asian Quantitative Finance Conference, Taipei, 2020.~~
 - ~~Frictions in Finance, London, 2020.~~
 - 13th German Probability and Stochastic Days, Freiburg, 2018.
 - 6th Asian Quantitative Finance Conference, Guangzhou, 2018.
 - Robust Techniques in Quantitative Finance, Oxford, 2018.

- Thera Stochastics—A Mathematics Conference in Honor of Ioannis Karatzas, Santorini, 2017.
- Advances in Financial Mathematics, Paris, 2017.
- 6th IMS FIPS Workshop, Edmonton, 2016.
- Byrne Workshop on Stochastic Analysis in Finance and Insurance, Ann Arbor, 2016.

Publications and Preprints

58. M. Nutz. Quadratically Regularized Optimal Transport: Existence and Multiplicity of Potentials. Preprint arXiv:2404.06847, 2024.
57. M. Nutz and J. Wiesel. On the Martingale Schrödinger Bridge between Two Distributions. Preprint arXiv:2401.05209, 2024.
56. M. Nutz, K. Webster and L. Zhao. Unwinding stochastic order flow: when to warehouse trades. Preprint arXiv:2310.14144, 2023.
55. M. Nutz and A. Riveros Valdevenito. On the Guyon–Lekeufack Volatility Model. Preprint arXiv:2307.01319, 2023.
54. Y. Yang, S. Eckstein, M. Nutz and S. Mandt. Estimating the rate–distortion function by Wasserstein gradient descent. *37th Conference on Neural Information Processing Systems (NeurIPS)*, 2023.
53. P. Ghosal and M. Nutz. On the convergence rate of Sinkhorn’s algorithm. Preprint arXiv:2212.06000, 2022.
52. M. Nutz, R. Wang and Z. Zhang. Martingale transports and Monge maps. Preprint arXiv:2209.14432, 2022.
51. S. Eckstein and M. Nutz. Convergence rates for regularized optimal transport via quantization. *Mathematics of Operations Research*, forthcoming.
50. M. Nutz, J. Wiesel and L. Zhao. Martingale Schrödinger bridges and optimal semistatic portfolios. *Finance & Stochastics*, Vol. 27, No. 1, pp. 233–254, 2023.
49. M. Nutz, J. Wiesel and L. Zhao. Limits of semistatic trading strategies. *Mathematical Finance*, Vol. 33, No. 1, pp. 185–205, 2023.
48. M. Nutz and J. Wiesel. Stability of Schrödinger potentials and convergence of Sinkhorn’s algorithm. *Annals of Probability*, Vol. 51, No. 2, pp. 699–722, 2023.
47. M. Nutz and Y. Zhang. Mean field contest with singularity. *Mathematics of Operations Research*, Vol. 48, No. 2, pp. 1095–1118, 2023.
46. S. Eckstein and M. Nutz. Quantitative stability of regularized optimal transport and convergence of Sinkhorn’s algorithm. *SIAM Journal on Mathematical Analysis*, Vol. 54, No. 6, pp. 5922–5948, 2022.
45. P. Ghosal, M. Nutz and E. Bernton. Stability of entropic optimal transport and Schrödinger bridges. *Journal of Functional Analysis*, Vol. 283, No. 9, Paper No. 109622, 2022.
44. M. Nutz and J. Wiesel. Entropic optimal transport: convergence of potentials. *Probability Theory and Related Fields*, Vol. 184, pp. 401–424, 2022.

43. E. Bernton, P. Ghosal and M. Nutz. Entropic optimal transport: geometry and large deviations. *Duke Mathematical Journal*, Vol. 171, No. 16, pp. 3363–3400, 2022.
42. M. Nutz and F. Stebegg. Climate change adaptation under heterogeneous beliefs. *Mathematics and Financial Economics*, Vol. 16, No. 3, pp. 481–508, 2022.
41. M. Nutz and Y. Zhang. Reward design in risk-taking contests. *SIAM Journal on Financial Mathematics*, Vol. 13, No. 1, pp. 129–146, 2022.
40. M. Nutz and R. Wang. The directional optimal transport. *Annals of Applied Probability*, Vol. 32, No. 2, pp. 1400–1420, 2022.
39. M. Beiglböck, M. Nutz and F. Stebegg. Fine properties of the optimal Skorokhod embedding problem. *Journal of the European Mathematical Society (JEMS)*, Vol. 24, No. 4, pp. 1389–1429, 2022.
38. J. Muhle-Karbe, M. Nutz and X. Tan. Asset pricing with heterogeneous beliefs and illiquidity. *Mathematical Finance*, Vol. 30, No. 4, pp. 1392–1421, 2020.
37. M. Nutz and Y. Zhang. Conditional optimal stopping: A time-inconsistent optimization. *Annals of Applied Probability*, Vol. 30, No. 4, pp. 1669–1692, 2020.
36. M. Nutz and J. A. Scheinkman. Shorting in speculative markets. *Journal of Finance*, Vol. 75, No. 2, pp. 995–1036, 2020.
35. M. Nutz, J. San Martin and X. Tan. Convergence to the mean field game limit: a case study. *Annals of Applied Probability*, Vol. 30, No. 1, pp. 259–286, 2020.
34. M. Nutz, F. Stebegg and X. Tan. Multiperiod martingale transport. *Stochastic Processes and their Applications*, Vol. 130, No. 3, pp. 1568–1615, 2020.
33. M. Nutz and Y. Zhang. A mean field competition. *Mathematics of Operations Research*, Vol. 44, No. 4, pp. 1145–1509, 2019.
32. M. Nutz and F. Stebegg. Canonical supermartingale couplings. *Annals of Probability*, Vol. 46, No. 6, pp. 3351–3398, 2018.
31. J. Muhle-Karbe and M. Nutz. A risk-neutral equilibrium leading to uncertain volatility pricing. *Finance & Stochastics*, Vol. 22, No. 2, pp. 281–295, 2018.
30. M. Nutz. A mean field game of optimal stopping. *SIAM Journal on Control and Optimization*, Vol. 56, No. 2, pp. 1206–1221, 2018.
29. A. Neufeld and M. Nutz. Robust utility maximization with Lévy processes. *Mathematical Finance*, Vol. 28, No. 1, pp. 82–105, 2018.
28. J. Guyon, R. Menegaux and M. Nutz. Bounds for VIX futures given S&P 500 smiles. *Finance & Stochastics*, Vol. 21, No. 3, pp. 593–630, 2017.
27. M. Beiglböck, M. Nutz and N. Touzi. Complete duality for martingale optimal transport on the line. *Annals of Probability*, Vol. 45, No. 5, pp. 3038–3074, 2017.
26. S. Biagini, B. Bouchard, C. Kardaras and M. Nutz. Robust fundamental theorem for continuous processes. *Mathematical Finance*, Vol. 27, No. 4, pp. 963–987, 2017.

25. A. Neufeld and M. Nutz. Nonlinear Lévy processes and their characteristics.
Transactions of the American Mathematical Society, Vol. 369, No. 1, pp. 69–95, 2017.
24. B. Bouchard and M. Nutz. Consistent price systems under model uncertainty.
Finance & Stochastics, Vol. 20, No. 1, pp. 83–98, 2016.
23. B. Bouchard and M. Nutz. Stochastic target games and dynamic programming via regularized viscosity solutions.
Mathematics of Operations Research, Vol. 41, No. 1, pp. 109–124, 2016.
22. M. Nutz. Utility maximization under model uncertainty in discrete time.
Mathematical Finance, Vol. 26, No. 2, pp. 252–268, 2016.
21. M. Nutz. Robust superhedging with jumps and diffusion.
Stochastic Processes and their Applications, Vol. 125, No. 12, pp. 4543–4555, 2015.
20. B. Bouchard and M. Nutz. Arbitrage and duality in nondominated discrete-time models.
Annals of Applied Probability, Vol. 25, No. 2, pp. 823–859, 2015.
19. M. Nutz and J. Zhang. Optimal stopping under adverse nonlinear expectation and related games.
Annals of Applied Probability, Vol. 25, No. 5, pp. 2503–2534, 2015.
18. M. Beiglböck and M. Nutz. Martingale inequalities and deterministic counterparts.
Electronic Journal of Probability, Vol. 19, No. 95, pp. 1–15, 2014.
17. A. Neufeld and M. Nutz. Measurability of semimartingale characteristics with respect to the probability law.
Stochastic Processes and their Applications, Vol. 124, No. 11, pp. 3819–3845, 2014.
16. M. Nutz. Superreplication under model uncertainty in discrete time.
Finance & Stochastics, Vol. 18, No. 4, pp. 791–803, 2014.
15. B. Bouchard, L. Moreau and M. Nutz. Stochastic target games with controlled loss.
Annals of Applied Probability, Vol. 24, No. 3, pp. 899–934, 2014.
14. A. Neufeld and M. Nutz. Superreplication under volatility uncertainty for measurable claims.
Electronic Journal of Probability, Vol. 18, No. 48, pp. 1–14, 2013.
13. M. Nutz and R. van Handel. Constructing sublinear expectations on path space.
Stochastic Processes and their Applications, Vol. 123, No. 8, pp. 3100–3121, 2013.
12. M. Nutz. Random G -expectations.
Annals of Applied Probability, Vol. 23, No. 5, pp. 1755–1777, 2013.
11. M. Nutz. Pathwise construction of stochastic integrals.
Electronic Communications in Probability, Vol. 17, No. 24, pp. 1–7, 2012.
10. M. Nutz. A quasi-sure approach to the control of non-Markovian stochastic differential equations.
Electronic Journal of Probability, Vol. 17, No. 23, pp. 1–23, 2012.
9. B. Bouchard and M. Nutz. Weak dynamic programming for generalized state constraints.
SIAM Journal on Control and Optimization, Vol. 50, No. 6, pp. 3344–3373, 2012.
8. Y. Dolinsky, M. Nutz and H. M. Soner. Weak approximation of G -expectations.
Stochastic Processes and their Applications, Vol. 122, No. 2, pp. 664–675, 2012.

7. M. Nutz and H. M. Soner. Superhedging and dynamic risk measures under volatility uncertainty. *SIAM Journal on Control and Optimization*, Vol. 50, No. 4, pp. 2065–2089, 2012.
6. M. Nutz. Risk aversion asymptotics for power utility maximization. *Probability Theory and Related Fields*, Vol. 152, No. 3–4, pp. 703–749, 2012.
5. M. Nutz. Power utility maximization in constrained exponential Lévy models. *Mathematical Finance*, Vol. 22, No. 4, pp. 690–709, 2012.
4. M. Nutz. The Bellman equation for power utility maximization with semimartingales. *Annals of Applied Probability*, Vol. 22, No. 1, pp. 363–406, 2012.
3. J. Muhle-Karbe and M. Nutz. Small-time asymptotics of option prices and first absolute moments. *Journal of Applied Probability*, Vol. 48, No. 4, pp. 1003–1020, 2011.
2. M. Nutz. The opportunity process for optimal consumption and investment with power utility. *Mathematics and Financial Economics*, Vol. 3, No. 3, pp. 139–159, 2010.
1. M. Nutz. Optimal consumption and investment with power utility. *Dissertation ETH Zurich*, No. 19272, 2010. Advisor: M. Schweizer. Co-examiners: H. Pham, H. M. Soner, N. Touzi.
0. M. Nutz. Quadratic PDE and backward SDE. *Diploma Thesis ETH Zurich*, 2007. Advisor: F. Delbaen.

Advising

Postdoc Mentor for

- Johannes Wiesel, 2020–2023. First job: Carnegie Mellon University.
- Carsten Chong, 2020–2023. Hong Kong University of Science and Technology.
- Gökçe Dayanikli, 2022–2023. Urbana Champaign.
- Xiaofei Shi, 2020–2022. University of Toronto.
- Ruimeng Hu, 2018–2020. University of Santa Barbara.
- Yuchong Zhang, 2015–2018. University of Toronto.

Ph.D. Students

- Long Zhao, defended 4/2023. Undisclosed trading firm.
- Florian Stebegg, defended 6/2019. Two Sigma.
- Xiaowei Tan, defended 5/2019. Morgan Stanley.
- Ariel Neufeld, defended 5/2015. ETH Zurich.

Dissertation Committee Member/Secondary Advisor/Referee for

Zhen Huang (Statistics), 2024; Agathe Soret (IEOR), 2022; Luc Le Flem (IEOR), 2022; Alejandra Quintos Lima (Statistics), 2012; Johannes Wiesel (Oxford), 2020; Zhi Li (Mathematics), 2020; Donghan Kim (Mathematics), 2020; Minghan Yan (Mathematics), 2017; Léo Neufcourt (Statistics), 2017; Lisha Qiu (Statistics), 2017; Yinghui Wang (Mathematics), 2016; Cameron Bruggeman (Mathematics), 2016; Sébastien Choukroun (Paris 7), 2015; Subhankar Sadhukhan (Statistics), 2012.

Teaching Experience

Columbia University

- *Probability Theory I* (GR6301), Fall 2022, Fall 2019, Fall 2016, Fall 2015.
- *Probability Theory II* (GR6302), Spring 2022, Spring 2020.
- *Probability Theory III* (GR6303), Fall 2020 (new course: Optimal Transport and Entropic Regularization), Fall 2017 (new course: Stochastic Optimal Control), Fall 2016.
- *Stochastic Control and Applications in Finance* (GR5266), Fall 2017, Fall 2014 (new course).
- *Topics in Advanced Probability: Robust Finance, Optimal Transport and Skorokhod Embeddings* (G8243), Spring 2015 (new course).
- *Probability Theory* (W4155), Spring 2015, Spring 2014, Spring 2013, Spring 2012.
- *Calculus III* (V1201), Fall 2013 (two sections), Spring 2013, Spring 2012.

Others

- At Ecole Polytechnique Paris: *Introduction to Entropic Optimal Transport*, 2021.
- At ETH Zurich: *G-Expectations and Nonlinear Martingales*, 2011.
- At Bielefeld University: minicourse *Topics in Nonlinear Expectations*, 2011.

Service to Community

- Associate Editor for *SIAM Journal on Control and Optimization*, 2024–.
- Associate Editor for *Frontiers of Mathematical Finance*, 2021–.
- Associate Editor for *Mathematical Finance*, 2020–.
- Associate Editor for *Mathematics of Operations Research*, 2019–.
- Associate Editor for *SIAM Journal on Financial Mathematics*, 2018–.
- Associate Editor for *Stochastic Processes and their Applications*, 2018–2024.
- Co-Chair, IMS Standing Committee on Finance, Insurance, Probability and Statistics (FIPS), 2016–2023.
- ArXiv moderator, 2014–.
- IMS Committee on Nominations, 2016/17.
- Co-organizer of
 - SLMath (formerly MSRI) Summer Graduate School *Statistical Optimal Transport*, 2025.
 - *Stochastic Optimal Control in Economics, Finance, and Learning Theory*, Zurich, 2023.
 - *Optimal Transport and Finance*, minisymposium at SIAM FME, Philadelphia, 2023.
 - *Market Impact and Transaction Costs*, invited session at 11th AMaMeF Conference, Bielefeld, 2023.
 - *Optimal Transport and Finance*, invited session at 11th AMaMeF Conference, Bielefeld, 2023.
 - *4th Berkeley–Columbia Meeting in Engineering and Statistics*, New York, 2023.
 - *Applied Optimal Transport*, IMSI, Chicago, 2022.
 - *Machine Learning and Optimal Transport*, IMSI, Chicago, 2021.

- 10th IMS FIPS Workshop, Seoul, 2020 (postponed).
- *Optimal Transport: Regularization and Applications*, New York (virtual), 2020.
- 3rd Berkeley–Columbia Meeting in Engineering and Statistics, Berkeley, 2020.
- MAFIA—Conference in Honor of Philip E. Protter, New York, 2019.
- 9th IMS FIPS Workshop, Shanghai, 2019.
- Mean Field Games, minisymposium at SIAM Conference, Toronto, 2019.
- Symposium in Honor of Mark Brown, New York, 2019.
- 8th IMS FIPS Workshop, London, 2018.
- METE—Mathematics and Economics: Trends and Explorations, Zurich, 2018.
- 2nd Berkeley–Columbia Meeting in Engineering and Statistics, New York, 2018.
- 7th IMS FIPS Workshop, Baltimore, 2017.
- Theoretical Insight through Experimentation, ICERM Workshop, Providence, 2017.
- Thera Stochastics—A Mathematics Conference in Honor of Ioannis Karatzas, Santorini, 2017.
- Berkeley–Columbia Meeting in Engineering and Statistics, Berkeley, 2016.
- World Congress of the Bachelier Finance Society, New York, 2016 (local organizer).
- 11th Columbia–JAFEE Conference, New York, 2015.
- *Optimal Transport and Stochastic Calculus*, invited Session at SPA conference, Oxford, 2015.
- Conference on Stochastic Portfolio Theory and Related Topics, New York, 2015.
- Symposium on Systemic Risk, New York, 2015.
- *Probability, Control and Finance—A Conference in Honor of the 60th Birthday of Ioannis Karatzas*, New York, 2012.
- Reviewer for domestic and international grant-making agencies.
- Referee for: *Acta Applicanda Mathematicae*, *Annals of Applied Probability*, *Annals of Probability*, *Applied Mathematical Finance*, *Bernoulli*, *Bulletin of the London Mathematical Society*, *Calculus of Variations and Partial Differential Equations*, *Duke Mathematical Journal*, *Econometrica*, *Electronic Communications in Probability*, *Electronic Journal of Probability*, *ESAIM: Control, Optimisation and Calculus of Variations*, *Finance & Stochastics*, *International Journal of Theoretical and Applied Finance*, *Journal of the European Mathematical Society (JEMS)*, *Journal of Functional Analysis*, *Journal of Mathematical Analysis and Applications*, *Journal of Mathematical Economics*, *Mathematical Finance*, *Nonlinear Analysis: Theory, Methods & Applications*, *Probability Theory and Related Fields*, *Proceedings of the London Mathematical Society*, *Proceedings of the National Academy of Sciences*, *Review of Financial Studies*, *SIAM Journal on Control and Optimization*, *SIAM Journal on Mathematical Analysis*, *SIAM Journal on Financial Mathematics*, *Statistics and Probability Letters*, *Stochastic Processes and their Applications*, *Stochastics and Dynamics*, etc.

Service to University

- Statistics Department Faculty Director for *Mathematics of Finance* MA program, 2020–. Member of the steering committee, 2014–.
- Academic Review Committee (ARC), Faculty of Arts and Sciences, Fall 2019.
- Financial and Business Analytics Center Committee, Data Science Institute, 2019–.

- Mentor for Statistics MA students, 2014–.
- Departmental committees for
 - Vision, 2023/24, 2022/23
 - Diversity, Equity and Inclusion, 2020–21.
 - Hiring, 2023/24, 2021/22 (chair), 2019/20 (chair), 2018/19, 2017/18, 2014/15.
 - Space, 2021/22, 2022/23
 - PhD admission, 2020/19, 2017/18, 2016/17, 2015/16.
 - PhD curriculum, 2017–.
 - Probability qualifying exam, 2022 (chair), 2021, 2020 (chair), 2019, 2018, 2017 (chair), 2016 (chair).
 - Core Competency exam, 2019, 2018.
- Co-organizer of
 - Mathematical Finance Seminar, Departments of Mathematics and Statistics, 2012–.
 - Probability Seminar, Departments of Mathematics and Statistics, 2011–.

Invited Talks

- 2024: B. de Finetti Seminar, Milano Lectures on the Mathematical Theory of Economics and Finance, Milan, Italy; XXV Workshop on Quantitative Finance (QFW2024), Bologna, Italy; “Workshop on Market Microstructure,” London; Purdue Quantitative Methods Seminar; Stony Brook Information Geometry and Machine Learning Webinar; Workshop “Decision Making and Uncertainty,” IMSI, University of Chicago; Bachelier Finance Society One World Seminar, virtual.
- 2023: One World Probability Seminar, virtual; 43rd Conference on Stochastic Processes and their Applications (SPA), Lisbon; Workshop “Optimal Transport and Econometrics,” University of Washington, Seattle; SIAM Conference on Financial Mathematics and Engineering, Philadelphia; Chicago Conference on Stochastic Analysis and Financial Mathematics, Chicago; Workshop “Optimal Transport in Data Science,” ICERM, Providence; Workshop “Applications of Stochastic Control to Finance and Economics,” BIRS, Banff (Canada); ORFE Colloquium, Princeton; Universidad Nacional Autónoma, CDMX, Mexico.
- 2022: ETH Zurich; International Symposium on BSDEs and Mean Field Systems, Annecy (France); Workshop “Stochastic Mass Transports,” BIRS, Banff (Canada); Mathematics Colloquium, Universidad de los Andes, Bogota; ~~Financial Mathematics Global Seminar, Vega Institute Foundation, Moscow.~~
- 2021: Hong Kong–Singapore joint Seminar in Financial Mathematics/Engineering; Illinois Institute of Technology; Workshop “Distributed Solutions to Complex Societal Problems—Applications to Financial Engineering,” IMSI, University of Chicago; Séminaire Bachelier, Paris; Tutorial on Optimal Transport, TU Dresden/King’s College, London; Conference “Optimal Transport with Applications to Economics & Statistics,” Paris; CIRM Workshop “Advances in Stochastic Analysis for Handling Risks in Finance and Insurance,” Marseille; Tutorial on Optimal Transport, IMSI, University of Chicago; Mathematics and Computation of Financial Engineering, Erice (Italy); Bernoulli World Congress, Seoul; 10th General AMAMEF Conference, Padova, Italy; FM21 SIAM Financial Mathematics conference, Philadelphia; Stochastics Seminar, University of Münster, Germany; Optimal Transport seminar MOKAPLAN, Paris Dauphine and INRIA; Uncertainty and Risk—A Workshop Commemorating the Centenary of Publication of Frank H. Knight’s “Risk, Uncertainty, and Profit” [...], Chicago; SIAM FME Virtual Talk Series; Sidney Stochastics and Finance Seminar.

- 2020: Workshop “New Challenges in the Interplay between Finance and Insurance,” Oberwolfach; 10th Bernoulli–IMS World Congress in Probability and Statistics, Seoul; 8th Asian Quantitative Finance Conference, Taipei; 9th International Colloquium on BSDEs and Mean-Field Systems, Annecy (France); Workshop “Mathematics and Computation of Financial Engineering,” EMFCSC, Erice (Italy); Workshop “Stochastic Analysis, Mathematical Finance and Economics,” BIRS, Banff (Canada); Conference on Frictions in Finance, London; Workshop “Stochastic Mass Transfers,” BIRS, Banff (Canada); Conference on Mean-Field Games, University of Chicago.
- 2019: ETH Zurich; Eastern Conference in Mathematical Finance, Boston; CIRM Workshop “Advances in Stochastic Analysis for Risks in Finance and Insurance,” Marseille; Vienna Congress on Mathematical Finance; International Congress on Industrial and Applied Mathematics (ICIAM), Valencia; Workshop “Contemporary Optimal Transport Problems,” Strasbourg; Séminaire Bachelier, Paris; SIAM Financial Mathematics and Engineering, Toronto; Recent Developments in Mean-Field Game, Machine Learning and Quantitative Finance, Tuan Chau (Vietnam); University of Southern California, Los Angeles; University of Colorado, Boulder; Fields Institute Workshop “Economics Meets the Mathematical Sciences,” Toronto; University of Waterloo; ICMS Workshop “Mean-Field Games and Energy Systems,” Edinburgh.
- 2018: 6th Asian Quantitative Finance Conference, Guangzhou (China); Osaka University; Hong Kong Polytechnic University; Chinese University of Hong Kong; Carnegie Mellon University; Illinois Institute of Technology; Columbia (Business School); JAFEE International Conference on Financial Engineering, Tokyo; Conference on Robust Techniques in Quantitative Finance, Oxford; Symposium on Optimal Stopping in Memory of Larry Shepp, Houston; International Workshop on Applied Probability, Budapest; BIRS/CMO Workshop “Stochastic Analysis and its Applications,” Oaxaca (Mexico); Workshop on Stochastic Analysis Applied to Economics, Finance and Insurance, Santiago (Chile); University of Chile, Santiago (Chile); 13th German Probability and Stochastic Days, Freiburg (Germany); Carnegie Mellon University.
- 2017: Koç University, Istanbul; CIRM Workshop “Advances in Stochastic Analysis for Risk Modeling,” Marseille; First Gran Sasso Workshop on Mathematical Finance, Italy; LUISS Guido Carli, Rome; Workshop “Theoretical Insight through Experimentation,” ICERM, Providence; Colloquium, TU Vienna; “Thera Stochastics—A Mathematics Conference in Honor of Ioannis Karatzas,” Santorini (Greece); Shanghai Advanced Institute of Finance, Shanghai Jiao Tong University; Joint University Symposium on Financial Risk Management, Chinese University of Hong Kong; Hong Kong Polytechnic University; Conference “PDE and Probability Methods for Interactions,” Inria Sophia Antipolis (France); Workshop “Mean Field Games,” Nice (France); Workshop “Pricing-Hedging Duality,” Zurich; University of California, Berkeley; Conference “Advances in Financial Mathematics,” Paris.
- 2016: University of Texas at Austin; University of California, Santa Barbara; Sixth IMS–FIPS Workshop, Edmonton; University of Vienna; Second International Congress on Actuarial Science and Quantitative Finance, Cartagena (Colombia); Byrne Workshop on Stochastic Analysis in Finance and Insurance, University of Michigan, Ann Arbor; BIRS/CMO Workshop “Stochastic Analysis and Mathematical Finance,” Oaxaca (Mexico); Workshop on Optimal Transportation, Equilibrium, and Applications to Economics, NYU, New York; Brown University, Providence; Conference “Mathematical Finance Without Probability,” Wolfgang Pauli Institute, Vienna; University of Southern California, Los Angeles.
- 2015: University of Oxford; International Conference on Stochastic Analysis and Applications, Hammamet (Tunisia); Midwest Probability Colloquium, Northwestern; 11th Columbia–Jafee Conference, New York; Conference “Mathematical Finance Beyond Classical Models,” Institute for Theoretical Studies, Zurich; SPA Conference, Oxford; Bloomberg Quant Seminar, New York; Séminaire Bachelier, Paris; ETH Zurich; Conference “Mathematical Finance and Partial Differential Equations,” Rut-

- gers; Fields Institute, Toronto; University of Michigan, Ann Arbor; Workshop “Optimal Transport and Stochastics,” Hausdorff Research Institute for Mathematics, Bonn.
- 2014: Princeton University; SIAM Financial Mathematics & Engineering, Chicago; 7th International Symposium on Backward Stochastic Differential Equations, Weihai (China); Thematic Cycle on Robust Management in Finance, Paris; Workshop “Mathematical Finance: Arbitrage and Portfolio Optimization,” BIRS, Banff (Canada); Workshop “Stochastic Analysis in Finance and Insurance,” Oberwolfach (Germany); ETH Zurich; Conference “Advances in Financial Mathematics,” Paris.
 - 2013: University of California, Santa Barbara; University of Southern California, Los Angeles; Workshop on Mathematical Finance, Fields Institute, Toronto; Sixth European Summer School in Financial Mathematics, Vienna; Workshop “New Developments in Stochastic Analysis: Probability and PDE,” Beijing; Workshop “Knightian Uncertainty and Backward Stochastic Differential Equations,” NUS, Singapore; Séminaire Bachelier, Paris; Columbia–Princeton Probability Day, Princeton; ETH Zurich; University of Vienna; CUNY, New York.
 - 2012: Workshop “Games, Model Uncertainty and Related Fields,” Jinan (China); Rutgers University; University of Texas at Austin; SIAM Annual Meeting, Minneapolis; SIAM Financial Mathematics & Engineering, Minneapolis; Université du Maine (France); Université d’Evry (France); Séminaire Bachelier, Paris; ETH Zurich; University of Oxford; Columbia University (Risk Seminar), New York.
 - 2011: Princeton University; University of Michigan, Ann Arbor; University of Southern California, Los Angeles; Columbia University (Statistics), New York; Bielefeld University (Germany); Shandong University, Jinan (China); Workshop on Nonlinear Expectations, Beijing; Western Conference on Mathematical Finance, Los Angeles; Columbia University, New York; Workshop “Stochastic Analysis in Finance and Insurance,” Oberwolfach (Germany); Séminaire Bachelier, Paris.
 - 2010: London School of Economics; Conference “New advances in backward SDEs for financial engineering applications,” Tamerza (Tunisia); AMAMEF Workshop, Berlin; Université Paris 6/7; University of Vienna.
 - 2009: TU & HU Berlin; Workshop “Finance and Insurance,” Jena (Germany); TU & LMU Munich.