

# Kelvin Shuangjian ZHANG

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## ACADEMIC APPOINTMENTS

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Fudan University, Young Investigator (Tenure-track Professor) <i>School of Mathematical Sciences</i>	2023.09 - present
University of Waterloo, Postdoctoral Fellowship <i>Department of Statistics and Actuarial Science</i>	2021.09 - 2023.08
École Normale Supérieure Paris, Postdoctoral Fellowship <i>Department of Mathematics and Applications</i>	2019.06 - 2021.08
ENSAE Paris, Postdoctoral Fellowship <i>Center for Research in Economics and Statistics</i>	2018.09 - 2019.05

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## EDUCATION

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Doctor of Philosophy in Mathematics, University of Toronto, Canada Supervisor: Robert J. McCANN Thesis: <i>Existence, Uniqueness, Concavity, and Geometry of the Monopolist's Problem Facing Consumers with Nonlinear Price Preferences</i>	2018
Master of Science in Mathematics, University of Toronto, Canada	2013
Bachelor of Science in Mathematics, Nankai University, China	2012

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## TEACHING and MENTORING EXPERIENCE

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### COURSE INSTRUCTOR:

Mathematical Corporate Finance, <i>Fudan University</i>	2024.02-2024.06
Stochastic Processes I, <i>University of Waterloo</i>	2022.05-2022.08
Stochastic Processes I, <i>University of Waterloo</i>	2022.01-2022.04
Calculus II, <i>University of Toronto</i>	2016.05-2016.08
Calculus I (B), <i>University of Toronto</i>	2016.05-2016.08

### TUTORIAL INSTRUCTOR:

Mathematical Analysis A I, <i>Fudan University</i>	2023.09-2024.01
Mathematical Analysis A II, <i>Fudan University</i>	2024.02-2024.06

### MENTOR:

Graduate Students' Research Project Advisor, <i>University of Waterloo</i>	2021.10 - 2022.06
Highschool Math Mentorship Program, <i>University of Toronto</i>	2013-2018

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## VISITING EXPERIENCE

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Fields Institute, <i>Toronto</i>	2022.07 - 2022.12
INRIA, <i>Paris</i>	2018.06 - 2018.08
Fields Institute, <i>Toronto</i>	2014.07 - 2014.12
MSRI, <i>Berkeley</i>	2013.07 - 2013.12
BICMR, <i>Beijing</i>	2012.02 - 2012.06

## SERVICE

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### CONFERENCE SESSION ORGANIZER:

- Session co-chair, 2022 INFORMS Annual Meeting, Indianapolis 2022.10  
*Optimization under Ambiguity and Applications to Finance and Insurance*
- Mini-symposium organizer, 2022 SIAM Great Lakes Annual Meeting, Detroit 2022.09  
*Optimal Transport and Applications in Economics, Statistics, and Machine Learning*

**REVIEWER:** Reviewed journal and conference submissions, including  
**Journals:** *Economic Theory, Information and Inference: A Journal of the IMA*  
**Conferences:** *AISTATS, Workshop at NeurIPS*

### WORKSHOP ORGANIZER

- Mini-Workshop on Optimal Transport, Fudan University 2023.12

### SEMINAR ORGANIZER

- Optimal Transport and its applications, ENSAE Paris 2018-2019

### CONSULTANT

- American Statistical Association DataFest 2022 at Mizzou, University of Missouri 2022.04

## AWARDS AND GRANTS

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- Shanghai Outstanding Academic Leaders Plan 2021  
Mitacs Globalink Research Award 2018

## PUBLICATIONS and PREPRINTS

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10.  $C^{1,1}$  regularity for principal-agent problems, with R.J. McCann, Cale Rankin. Submitted.
9. Bounds on Choquet risk measures in finite product spaces with ambiguous marginals, with M. Ghossoub, D. Saunders. Accepted by *Statistics & Risk Modeling*.
8. A duality and free boundary approach to adverse selection, with R.J. McCann. Submitted.
7. **K.S. Zhang**, G. Peyré, J. Fadili, M. Pereyra. Wasserstein Control of Mirror Langevin Monte Carlo. **Proceedings of Thirty Third Conference on Learning Theory (COLT)**, PMLR 125 (2020) 3814-3841.
6. Existence of solutions to principal-agent problems with adverse selection under minimal assumptions, with G. Carlier. **J. Math. Econ.** **88** (2020) 64-71.
5. Existence in multidimensional screening with general nonlinear preferences. **Econ. Theory** **67**(2) (2019) 463-485.
4. On concavity of the monopolist's problem facing consumers with nonlinear price preferences, with R.J. McCann. **Comm. Pure Appl. Math.** **72**(7) (2019) 1386-1423.
3. Existence, Uniqueness, Concavity, and Geometry of the Monopolist's Problem Facing Consumers with Nonlinear Price Preferences. PhD Thesis, University of Toronto, 2018.
2. K.Y.-C. Lui, Y. Cao, M. Gazeau, **K.S. Zhang**. Implicit manifold learning on generative adversarial networks. **ICML2017 Workshop on Implicit Generative Models**, Sydney, 2017.
1. **K.S. Zhang**, J. Du, L. Zhang, C. Zeng, Q. Liu, T. Zhang, G. Hu. Circular cone: A novel approach for protein ligand shape matching using modified PCA. **Computer Methods and Programs in Biomedicine** **108**(1) (2012) 168-175.

## CONFERENCE and SEMINAR PRESENTATIONS

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### INVITED CONFERENCE PRESENTATIONS:

21. INFORMS Annual Meeting, Session on Optimization under Ambiguity and Applications to Finance and Insurance, *Indianapolis* 2022.10.16-10.19
20. SIAM Great Lakes Annual Meeting, Session on Optimal Transport and Applications in Economics, Statistics, and Machine Learning, *Detroit* 2022.09.26
19. PIMS-IFDS-NSF Summer School on Optimal Transport, *University of Washington* 2022.06.20-07.01
18. Optimal Transport with Applications to Economics and Statistics, *Sciences Po* 2021.10.21
17. 2021 Canadian Mathematical Society Summer Meeting, Session on Optimal Transport and Applications 2021.06.07-06.11
16. 2020 Canadian Mathematical Society Winter Meeting, Session on Optimal Transport and Applications 2020.12.03-12.08
15. Optimal Control, Optimal Transport, and Data Science, *IMA* 2020.11.08-11.13
14. Mathematics of Machine Learning LMS-Bath Symposium, *University of Bath* 2020.08.03-08.07
13. The 33rd Annual Conference on Learning Theory (COLT 2020), *Graz* 2020.07.09-07.12
12. Economics Meets the Mathematical Sciences Workshop, *The Fields Institute* 2019.04.10-04.12
11. Variational Problems in Optical Engineering and Free Material Design, *Institute of Mathematics, Polish Academy of Sciences* 2018.06.07-06.09
10. 2018 Canadian Mathematical Society Summer Meeting, Session on Geometric Potential Theory 2018.06.03
9. 2018 SIAM Great Lakes Section Annual Meeting, Session on Nonlinear PDEs, Optimal Control Theory, and Relevant Topics 2018.04.21
8. The IV Applied Mathematics, Modeling and Computational Science (AMMCS) International Conference 2017.08.20-08.25
7. 34th International Conference on Machine Learning, Workshop on Implicit Generative Models, *Sydney* 2017.08.10
6. Generated Jacobian Equations: From Geometric Optics to Economics, *BIRS* 2017.04.09-04.14
5. The Ninth Annual Ottawa Mathematics Conference, *University of Ottawa* 2016.06.17-06.19
4. Southern Ontario Graduate Mathematics and Statistics Conference, *U. of Guelph* 2016.06.13-06.14
3. Optimal Transportation, Equilibrium, and Applications to Economics, *NYU* 2016.04.29-04.30
2. Prairie Analysis Seminar 2015, *Kansas State University* 2015.09.25-09.26
1. Optimal Transport and Applications, *University of California, Los Angeles* 2013.10.07-10.11

### INVITED SEMINAR PRESENTATIONS:

11. Colloquium at the School of Mathematical Sciences, *Fudan University* 2023.10.27
10. Group seminar on Risk Management and Actuarial Science, *University of Waterloo* 2021.11.25
9. Webinar on Analysis and PDE 2021.11.06
8. Meeting on Nesterov Langevin, *INRIA Paris* 2020.01.20
7. Analysis and Partial Differential Equations seminar, *National University of Singapore* 2019.05.02
6. MokaMeeting, *INRIA Paris* 2018.07.10
5. Partial Differential Equations Seminar, *Ohio State University* 2018.04.17
4. Stochastic Analysis and Stochastics of Financial Markets Seminar, *Humboldt-Universität zu Berlin* 2018.02.01
3. Graduate Student Seminar, *University of Toronto* 2018.01.25
2. Partial Differential Equations and Analysis Seminar, *Australian National University* 2017.08.11
1. Analysis and Applied Math Seminar, *University of Toronto* 2017.03.17