

Justin Ko

Department of Statistics and Actuarial Science — University of Waterloo
justin.ko@uwaterloo.ca

- Research** Spin glasses, random matrices, high-dimensional statistics.
- Employment**
- University of Waterloo** 2023
- Postdoctoral Researcher
 - Supervisors: Aukosh Jagannath
- École Normale Supérieure de Lyon** 2020 - 2023
- Postdoctoral Researcher
 - Supervisors: Alice Guionnet, Florent Krzakala, and Lenka Zdeborová
- Education**
- University of Toronto** 2015 - 2020
- PhD Mathematics
 - Thesis: The Free Energy of Spherical Vector Spin Glasses
 - Advisor: Dmitry Panchenko
- University of Toronto** 2014 - 2015
- MSc Mathematics
 - Research Project: Diluted spin glass models
- University of British Columbia** 2009 - 2014
- Bachelor of Commerce, Finance Co-op, Minor Mathematics
- Papers**
1. Spectral Phase Transitions in Non-Linear Wigner Spiked Models. (with Alice Guionnet, Florent Krzakala, Pierre Mergny and Lenka Zdeborová) arXiv:2310.14055 (2023)
 2. Estimating rank-one matrices with mismatched prior and noise: universality and large deviations. (with Alice Guionnet, Florent Krzakala and Lenka Zdeborová) arXiv:2306.09283 (2023) *Submitted*.
 3. TAP variational principle for the constrained multiple spherical SK model. (with David Belius and Leon Fröber) arXiv:2304.04031 (2023) *Submitted*.
 4. Optimal Algorithms for the Inhomogeneous Spiked Wigner Model (with Aleksandr Pak, and Florent Krzakala) arXiv:2302.06665 (2023) *Accepted in NeurIPS 2023*.
 5. Low-rank Matrix Estimation with Inhomogeneous Noise (with Alice Guionnet, Florent Krzakala and Lenka Zdeborová) arXiv:2208.05918 (2022) *Submitted*.
 6. Spherical Integrals of Sublinear Rank (with Jonathan Husson) arXiv:2208.03642 (2022) *Submitted*.
 7. The Crisanti–Sommers Formula for Spherical Spin Glasses with Vector Spins, arXiv:1911.04355 (2019) *Submitted*.
 8. Free Energy of Multiple Systems of Spherical Spin Glasses with Constrained Overlaps, Electron. J. Probab. 2020, Vol. 25, No. 28, 1-34
 9. MAX κ -CUT and the inhomogeneous Potts spin glass (with Aukosh Jagannath and Subhabrata Sen), Ann. Appl. Probab. 2018, Vol. 28, No. 3, 1536-1572

Invited Talks	1. Northwestern University Probability Seminar	Oct 2023	
	2. Waterloo Probability Seminar	Oct 2023	
	3. Cargese Summer School: Statistical physics and machine learning	August 2023	
	4. ICTP Learning and Inference from Structured Data	July 2023	
	5. LN-UMN Joint Probability Seminar	February 2023	
	6. LPSM Probability Seminar	February 2023	
	7. Grenoble-Lyon-Geneva Probability Meeting	November 2022	
	8. Les Diablerets Spin Glass Workshop	October 2022	
	9. St Flour Probability School	July 2022	
	10. ICTP Youth In High Dimensions	June 2022	
	11. University of Toulouse III Probability Seminar	June 2021	
	12. University of Waterloo Probability Seminar	March 2021	
	13. University of Basel Probability Seminar	March 2020	
Teaching	Course Instructor Positions		
	• MAT186, APM346	2019 - 2020	
	• MAT186, MAT136	2018 - 2019	
	Teaching Assistant Positions		
	• MAT377, MAT1600, APM346	2019 - 2020	
	• MAT377, APM346	2018 - 2019	
	• MAT1600, MAT1601, MAT133, MAT223, APM346	2017 - 2018	
	• MAT457, MAT236, MAT267, MAT244, MAT232, APM346	2016 - 2017	
	• MAT133, MAT237, MATA35, STAB52, STA256	2015 - 2016	
	• MAT135, MAT136, MAT133	2014 - 2015	
	Awards	1. Ida Bulat Teaching Award for Graduate Students, UofT	2020
		2. Queen Elizabeth II Graduate Scholarship, UofT	2019 - 2020
		3. Scotiabank Scholarship, UBC	2009 - 2013
4. Sauder School of Business Dean's Scholarship, UBC		2010	
Conferences & Seminars Organized	1. Waterloo Probability Seminar (Co-organizer)	2023	
	• Waterloo, Canada		
	2. High Dimensional Statistics and Random Matrices (Co-organizer)	2023	
	• Porquerolles, France		
	3. Large Deviations and Random Matrices Working Group	2022-2023	
	• Lyon, France		
Work Experience	Economist (SmartWay Program)	2013 - 2014	
	• Natural Resources Canada, Ottawa, On		