Elliot Paquette

Associate Professor

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Employment

2023- **Associate professor (Tenured)**, *McGill University*, Mathematics & Statistics, Montreal, Quebec, Canada.

2020-2023 **Assistant professor (Tenure stream)**, *McGill University*, Mathematics & Statistics, Montreal, Quebec, Canada.

2016-2020 **Assistant professor (Tenure stream)**, *The Ohio State University*, Mathematics & The Translational Data Analytics Institute, Columbus, Ohio, United States.

2013-2016 **NSF Postdoctoral Fellow**, *The Weizmann Institute of Science*, Faculty of Mathematics and Computer Science., Rehovot, Israel.

Education

2008-2013 **Doctor of Philosophy**, *Mathematics*, University of Washington, Seattle, Washington, United States.
Advisor: Ioana Dumitriu
Thesis: *Eigenvalue fluctuations of random matrices beyond the Gaussian universality class*

2005-2008 **Bachelor of Arts, Magna cum Laude**, *Mathematics and Physics*, Kalamazoo College, Kalamazoo, Michigan, United States.
Thesis: *A Synthetic Approach to the Characterization of Graph Invariants*

Honours, grants, and funded visits

Grant Google Unrestricted Gift. $82,000. *Theory of compute optimality.*

Visitor Long term participant, Institut Mittag Leffler. "Random matrices and scaling limits" Autumn 2024.

Grant Google-MILA, 2023-25: "Advancing scientific progress through AI fundamental research projects". (Collaborator) $140,000. *High-dimensional Optimization for Machine Learning.* (Renewed once).

Grant NSERC Discovery 2020–2025, RGPIN-2020-04974, and Discovery launch supplement. (PI) $142,500. *Random series in the unit disk, random matrix theory, and the Gaussian multiplicative chaos.*

Grant McGill University startup fund. (PI) $100,000.

Grant USA–Israel Binational Science Foundation Startup Grant, no. 2018341, with Alon Nishry of Tel Aviv University (2019). US$60,000. *Gaussian analytic functions and planar branching processes.* 2019-2021 (ended early on account of relocation)

Grant Simons travel grant No. 638152. US$40,000. 2019-2024 (ended early on account of relocation)

Prize Feinberg Graduate School prize for outstanding postdoctoral research (April 2017)

Grant NSF Postdoctoral Fellowship. US$150,000. DMS-1304057 (2013-2016)

Prize McKibben-Merner Fellowship (2012-2013)

Instruction

Winter 2025 Math 547. Honours stochastic processes. 27 students.

Winter 2025 Math 447. Introduction to stochastic processes. 107 students.

Summer 2024	Instructor at the "CRM-PIMS summer school in probability" in Montreal. July 1-26 2024.
Summer 2024	Instructor at the "Random matrix theory summer school" at the University of Michigan. June 17-28 2024.
Winter 2024	Reading course (Math 698): algorithmic spin glasses. 3 students registered. 15 participants.
Winter 2024	Math 589. Advanced Probability II. 11 students.
Fall 2023	Math 598. Topics in Probability: High dimensional probability. 20 students.
Summer 2023	Summer school speaker in probability and optimization. Lehigh University. Available here.
Winter 2023	Math 547. Stochastic processes. 14 students. Developed new course notes. Available here.
Fall 2022	Math 356. Honours Probability. 35 students.
Fall 2022	Coordinator for Math 222. Calculus 3. Total 400 students. In my section 200 students.
Winter 2022	Math 447, Stochastic Processes. 130 students.
Winter 2022	Math 598/784, Topics in Probability and Statistics (Random matrix theory). 20 students.
Fall 2021	Math 356, Honours Probability. Measure theoretic probability for undergraduates. 70 students.
Winter 2021	Math 447, Stochastic Processes. Course on Markov chains and some continuous time processes. Predominantly U3, in-major, 170 students.
Fall 2020	Math 240, Discrete Mathematics. Developed webwork assignments and new tutorials. Majority CS/CSE, mostly U2. 250 students.
2016-2019	At the Ohio State University: an instructor for Math 3356 introductory proof course, Math 6251-2 graduate probability sequence, Math 2255 ordinary differential equations.

Organization

Conference	Workshop organizer for "Phase transitions and dynamics in random media," June 2025. CRM.
Conference	Workshop organizer for "Random matrix theory and high-dimensional learning dynamics," June 2025. CRM thematic program in "Mathematical foundations of data science."
Conference	Workshop organizer for "The many facets of random matrix theory," December 2023. Winter CMS Meeting 2023. 20 participants.
Conference	Workshop organizer for "High–dimensional learning dynamics," July 2023. ICML. This contained a non-archival proceedings, with submissions reviewed and 6 merit talks awarded. 5 plenary speakers. 100+ participants.
Seminar	(2021+) Organizer for the RMT-OPT-ML seminar (random matrix theory, optimization, and machine learning). Weekly seminar for presentation of recent advances in theory of optimization, and random matrix theory. 20 regular participants.
Seminar	(2021+) Organizer for the CRM-ISM probability seminar. 20 regular participants.
Summer program	(2021) Organizer and instructor (with Courtney Paquette) for the RMT-OPT (random matrix theory and optimization) summer program. 7 students (5 BSc and 2 postgraduate) participated in the summer program, split into 3 groups. Financially supported by 1 NSERC USRA award, 1 McGill SURA award, 1 ISM undergraduate summer scholar, and NSERC Discovery grant (listed above). Began as a 4 week minicourse, and concluded with 3 groups working on research around random matrix theory and optimization.
Conference	Organizer for "Algebraic questions in random integral matrices" conference, March 28-29 2020. Rescheduled for November 14-15, 2020 as an online conference. 50 participants.
Conference	Organizer for "Stochastic Spatial Processes at OSU" conference, April 18-19 2020. Rescheduled for March 2021 as an online conference. 50 participants.

Committees & Scholarship

Conference ref.	ICML 2025 Area chair.
Conference ref.	ICLR 2025 reviewer.
Conference ref.	NeurIPS top reviewer 2023. Area chair 2024. ICML Workshop reviewer 2024.
Committee	NSERC Faculty level CGS-M Evaluation committee, 2023, 2024, & 2025
Committee	NSERC CGS-M Departmental evaluation committee chair, 2023 & 2024
Committee	(2021) CRM-ISM postdoctoral selection committee.
Committee	(2021-24) McGill Department Committee for Graduate Affairs. Prize subcommittee chair.
Reviewer	(2022) External reviewer for grant organizations: NSERC Discovery, NWO (Dutch research council), ISF (Israel Science Foundation), FWO (Flemish research council).
Thesis examiner	(2024) University of Toronto, (2022+) McGill Mathematics, (2021) Weizmann Institute Mathematics
Referee	Journal of the AMS. Inventiones Mathematicae. Duke Journal of Mathematics. International Mathematics Research Notices. Transactions of the AMS. Communications in Mathematical Physics. Communications in Pure and Applied Mathematics. Proceedings of the London Mathematical Society. Israel Journal of Mathematics. Annals of Probability. Annals of Applied Probability. Electronic Journal of Probability. Random Structures & Algorithms. Discrete & Computational Geometry.

Current Students & Postdocs

Postdoc	Elizabeth Collins–Woodfin. (2022–) Postdoctoral fellow. McGill.
PhD	Vincent Painchaud. (2021–). McGill University.
PhD	Kevin Xiao. (2023–). McGill University.
PhD	Noah Marshall. (2023–). McGill University.
MSc	Yixi Aurora Wang. *Joint with Courtney Paquette.* (2024–). McGill University.

Students & Postdocs mentored

Postdoc	Inbar Seroussi. (2024-2024) Postdoctoral fellow. McGill & MILA. currently: Assistant Professor Tel Aviv University.
Postdoc	Érika Roldán. (2019–2020) Postdoctoral fellow. The Ohio State University. currently: Max Planck Fellow.
PhD	Kiwon Lee. (2020–2023). McGill University. currently: Lecturer at the Computational Data Science Institute at McGill University
PhD	Andrew Vander Werf. (2018–2023). The Ohio State University. currently: Postdoc Brown University
MSc	Hugo Latourelle–Vigeant. *Joint with Courtney Paquette.* (2022–2024). McGill University. currently: PhD Yale University
MSc	Samuel Kirkiles. (2023–2024). McGill University. currently: Software engineer
MSc	Andrew Cheng. *Joint with Courtney Paquette.* (2022–2023). McGill University. currently: PhD Harvard University
MSc	Romain Pagès. (2021-2022). KTH (Stockholm). Research assistant at McGill. Currently: Lab assistant, evolutionary biology, Paris.
MSc	Kiwon Lee. (2018–2020). The Ohio State University. Currently: PhD student McGill (listed above).
BSc R.E.	Austin Huang (SURA). 2023.
BSc R.E.	Kevin Zhao (ARIA). 2023.
BSc R.E.	Samuel Kirkles (SURA). 2022.
BSc R.E.	Hugo Latourelle-Vigeant (USRA). 2021.

BSc R.E. Nicolas Fertout. 2021. Subsequently: MSc Stanford

BSc R.E. Vincent Savignac. 2021. Subsequently: MSc McGill

BSc R.E. Jiajun Yu (SURA). 2021. Subsequently: MSc Oxford

BSc R.E. Ria Stevens (SURA). 2021. Subsequently: PhD Rice.

BSc Thesis Anna Brandenberger. 2020. Subsequently: PhD MIT.

Publications and Conference Proceedings

Preprints

2024 49. Ke Liang Xiao, Noah Marshall, Atish Agarwala, and Elliot Paquette. "Exact Risk Curves of signSGD in High-Dimensions: Quantifying Preconditioning and Noise-Compression Effects". In: *arXiv e-prints* (Nov. 2024). DOI: 10.48550/arXiv.2411.12135. arXiv: 2411.12135 [stat.ML]

48. Noah Marshall, Ke Liang Xiao, Atish Agarwala, and Elliot Paquette. "A Clipped Trip: the Dynamics of SGD with Gradient Clipping in High-Dimensions". In: (2024). arXiv: 2406.11733 [stat.ML]

47. Alon Nishry and Elliot Paquette. "The image of random analytic functions: coverage of the complex plane via branching processes". In: (2024). arXiv: 2403.19380 [math.PR]

2023 46. Hugo Latourelle-Vigeant and Elliot Paquette. "Matrix Dyson equation for correlated linearizations and test error of random features regression". In: (2023). arXiv: 2312.09194 [math.ST]

2020 45. Gaultier Lambert and Elliot Paquette. "Strong approximation of Gaussian β-ensemble characteristic polynomials: the edge regime and the stochastic Airy function". In: *arXiv e-prints*, arXiv:2009.05003 (Sept. 2020), 76pp. arXiv: 2009.05003 [math.PR]

Accepted

2024 44. Elliot Paquette and Ofer Zeitouni. "The extremal landscape for the CβE ensemble". In: *Forum of Mathematics, Sigma*, arXiv:2209.06743 (Sept. 2022), 118pp. arXiv: 2209.06743 [math.PR]

43. Courtney Paquette, Elliot Paquette, Ben Adlam, and Jeffrey Pennington. "Homogenization of SGD in high-dimensions: Exact dynamics and generalization properties". In: *Mathematical Programming* (May 2022), 64pp. arXiv: 2205.07069 [math.ST]

Refereed Conference Proceedings

2024 42. Elizabeth Collins-Woodfin, Inbar Seroussi, Begoña García Malaxechebarría, Andrew W. Mackenzie, Elliot Paquette, and Courtney Paquette. "The High Line: Exact Risk and Learning Rate Curves of Stochastic Adaptive Learning Rate Algorithms". In: *NeurIPS* (2024). arXiv: 2405.19585 [math.OC]

41. Elliot Paquette, Courtney Paquette, Lechao Xiao, and Jeffrey Pennington. "4+3 Phases of Compute-Optimal Neural Scaling Laws". In: *NeurIPS Spotlight* (2024). arXiv: 2405.15074 [stat.ML]

2023 40. Kiwon Lee, Andrew N. Cheng, Courtney Paquette, and Elliot Paquette. "Trajectory of Mini-Batch Momentum: Batch Size Saturation and Convergence in High Dimensions". In: *Advances in Neural Information Processing Systems*. Ed. by S. Koyejo, S. Mohamed, A. Agarwal, D. Belgrave, K. Cho, and A. Oh. Vol. 35. June 2022, arXiv:2206.01029, 38pp. arXiv: 2206.01029 [math.OC]

39. Courtney Paquette, Elliot Paquette, Ben Adlam, and Jeffrey Pennington. "Implicit Regularization or Implicit Conditioning? Exact Risk Trajectories of SGD in High Dimensions". In: *Advances in Neural Information Processing Systems*. Ed. by S. Koyejo, S. Mohamed, A. Agarwal, D. Belgrave, K. Cho, and A. Oh. Vol. 35. June 2022, arXiv:2206.07252, 33pp. arXiv: 2206.07252 [stat.ML]

2021 38. Courtney Paquette and Elliot Paquette. "Dynamics of Stochastic Momentum Methods on Large-scale, Quadratic Models". In: *Advances in Neural Information Processing Systems*. Ed. by M. Ranzato, A. Beygelzimer, Y. Dauphin, P.S. Liang, and J. Wortman Vaughan. Vol. 34. Curran Associates, Inc., 2021, arXiv:2106.03696, pp. 9229–9240. arXiv: 2106.03696 [math.OC]

37. Courtney Paquette, Kiwon Lee, Fabian Pedregosa, and Elliot Paquette. "SGD in the Large: Average-case Analysis, Asymptotics, and Stepsize Criticality". In: *Proceedings of Thirty Fourth Conference on Learning Theory*. Ed. by Mikhail Belkin and Samory Kpotufe. Vol. 134. Proceedings of Machine Learning Research. PMLR, Aug. 2021, arXiv:2102.04396, pp. 3548–3626. arXiv: 2102.04396 [math.OC]

Print publications

2024 36. Elizabeth Collins-Woodfin, Courtney Paquette, Elliot Paquette, and Inbar Seroussi. "Hitting the High-dimensional notes: an ODE for SGD learning dynamics on GLMs and multi-index models". In: *Information and Inference: A Journal of the IMA* 13.4 (Oct. 2024), iaae028. DOI: 10.1093/imaiai/iaae028. arXiv: 2006.04299 [math.OC]

35. Afonso S. Bandeira, Antoine Maillard, Shahar Mendelson, and Elliot Paquette. "Fitting an ellipsoid to a quadratic number of random points". In: *ALEA* 21 (2024), pp. 1835–1852. DOI: 10.48550/arXiv.2307.01181. arXiv: 2307.01181 [math.PR]

34. Shurong Lin, Elliot Paquette, and Eric D. Kolaczyk. "Differentially Private Linear Regression with Linked Data". In: *Harvard Data Science Review* 6.3, arXiv:2308.00836 (July 2024), arXiv:2308.00836. DOI: 10.48550/arXiv.2308.00836. arXiv: 2308.00836 [stat.ME]

33. Elizabeth Collins–Woodfin and Elliot Paquette. "High-dimensional limit of one-pass SGD on least squares". In: *Electronic Communications in Probability* 29 (2024), pp. 1–15. DOI: 10.1214/23-ECP571. arXiv: 2304.06847 [math.PR]

2023 32. Joseph Najnudel, Elliot Paquette, and Nick Simm. "Secular coefficients and the holomorphic multiplicative chaos". In: *Ann. Probab.* 51.4 (2023), pp. 1193–1248. DOI: 10.1214/22-aop1616. arXiv: 2011.01823 [math.PR]

31. Andrew Newman and Elliot Paquette. "The integer homology threshold in $Y_d(n,p)$". In: *Proc. Amer. Math. Soc.* 151.8 (2023), pp. 3213–3228. DOI: 10.1090/proc/16196. arXiv: 1808.10647 [math.CO]

30. Tim Hoheisel and Elliot Paquette. "Uniqueness in nuclear norm minimization: flatness of the nuclear norm sphere and simultaneous polarization". In: *J. Optim. Theory Appl.* 197.1, arXiv:2205.08442 (2023), pp. 252–276. DOI: 10.1007/s10957-023-02167-7. arXiv: 2205.08442 [math.CV]

29. Alon Nishry and Elliot Paquette. "Gaussian analytic functions of bounded mean oscillation". In: *Analysis & PDE* 16.1, arXiv:2002.00804 (Apr. 2023), 33pp. DOI: 10.2140/apde.2023.16.89. arXiv: 2002.00804 [math.CV]

28. Gaultier Lambert and Elliot Paquette. "Strong approximation of Gaussian beta-ensemble characteristic polynomials: the hyperbolic regime". In: *Ann. Appl. Probab.* 33.1 (2023), pp. 549–612. DOI: 10.1214/22-AAP1823. arXiv: 2001.09042 [math.PR]

2022 27. Elliot Paquette and Thomas Trogdon. "Universality for the conjugate gradient and MINRES algorithms on sample covariance matrices". In: *Communications in Pure and Applied Mathematics*, arXiv:2007.00640 (Sept. 2022), 42pp. arXiv: 2007.00640 [math.NA]

26. Pascal Maillard and Elliot Paquette. "Interval fragmentations with choice: Equidistribution and the evolution of tagged fragments". In: *The Annals of Applied Probability* 32.5 (2022), pp. 3537–3571. DOI: 10.1214/21-AAP1766. arXiv: 2006.16932 [math.PR]

25. Courtney Paquette, Bart van Merriënboer, Elliot Paquette, and Fabian Pedregosa. "Halting Time is Predictable for Large Models: A Universality Property and Average-case Analysis". In: *Foundations of Computational Mathematics* (June 2022), 56pp. DOI: 10.1002/cpa.22081. arXiv: 2006.04299 [math.OC]

2021 24. Itai Benjamini, Yoav Krauz, and Elliot Paquette. "Anchored expansion of Delaunay complexes in real hyperbolic space and stationary point processes". In: *Probability Theory and Related Fields* (Nov. 2021), 27pp. DOI: 10.1007/s00440-021-01076-y. arXiv: 2008.01063 [math.PR]

23. Matthew Kahle, Elliot Paquette, and Érika Roldán. "The fundamental group of 2-dimensional random cubical complexes". In: *Forum of Mathematics, Sigma* 9, arXiv:2001.07812 (2021), e76. DOI: 10.1017/fms.2021.64. arXiv: 2001.07812 [math.CO]

22. Matías Carrasco, Pablo Lessa, and Elliot Paquette. "On the speed of distance stationary sequences". In: *ALEA* 18, arXiv:1912.12523 (2021), pp. 829–854. arXiv: 1912.12523 [math.PR]

2020 21. Anirban Basak, Elliot Paquette, and Ofer Zeitouni. "Spectrum of random perturbations of Toeplitz matrices with finite symbols". In: *Trans. Amer. Math. Soc.* 373.7, arXiv:1812.06207 (2020), pp. 4999–5023. DOI: 10.1090/tran/8040. arXiv: 1812.06207 [math.PR]

20. Hoi H. Nguyen and Elliot Paquette. "Surjectivity of near-square random matrices". In: *Combinatorics, Probability and Computing* 29.2, arXiv:1802.00001 (2020), pp. 267–292. DOI: 10.1017/S0963548319000348. arXiv: 1802.00001 [math.ST]

2019 19. Anirban Basak, Elliot Paquette, and Ofer Zeitouni. "Regularization of non-normal matrices by Gaussian noise - the banded Toeplitz and twisted Toeplitz cases". In: *Forum Math. Sigma* 7 (Nov. 2017), Paper No. e3, 72. DOI: 10.1017/fms.2018.29. eprint: 1712.00042 (math.PR)

18. Christopher Hoffman, Matthew Kahle, and Elliot Paquette. "Spectral Gaps of Random Graphs and Applications". In: *International Mathematics Research Notices* (May 2019). DOI: 10.1093/imrn/rnz077. eprint: 1201.0425

2018 17. Elliot Paquette. "Distributional Lattices on Riemannian symmetric spaces". In: *Unimodularity in randomly generated graphs*. Vol. 719. Contemp. Math. Amer. Math. Soc., Providence, RI, 2018, pp. 63–84. DOI: 10.1090/conm/719/14470. arXiv: 1707.00308 [math.PR]

16. Diane Holcomb and Elliot Paquette. "The maximum deviation of the $Sine_\beta$ counting process". In: *Electron. Commun. Probab.* 23 (2018), 13 pp. DOI: doi:10.1214/18-ECP149. eprint: 1801.08989

15. Itai Benjamini, Elliot Paquette, and Joshua Pfeffer. "Anchored expansion, speed and the Poisson–Voronoi tessellation in symmetric spaces". In: *Annals of Probability* 46.4 (July 2018), pp. 1917–1956. DOI: 10.1214/17-AOP1216. arXiv: 1409.4312 [math.PR]

14. Gaultier Lambert and Elliot Paquette. "The law of large numbers for the maximum of almost Gaussian log-correlated fields coming from random matrices". In: *Probability Theory and Related Fields* (Feb. 2018), pp. 1–53. DOI: 10.1007/s00440-018-0832-2. arXiv: 1611.08885 [math.PR]

13. Ioana Dumitriu and Elliot Paquette. "Spectra of Overlapping Wishart Matrices and the Gaussian Free Field". In: *Random Matrix Theory and Applications* 7.02 (2018). DOI: doi:10.1142/S201032631850003X. arXiv: 1410.7268 [math.PR]

12. Elliot Paquette and Ofer Zeitouni. "The maximum of the CUE field". In: *International Mathematics Research Notices* 2018.16 (2018), pp. 5028–5119. DOI: 10.1093/imrn/rnx033. arXiv: 1602.08875 [math.PR]

2017 11. Elliot Paquette and Ofer Zeitouni. "Extremal eigenvalue correlations in the GUE minor process and a law of fractional logarithm". In: *The Annals of Probability* 45.6A (2017), pp. 4112–4166. DOI: doi:10.1214/16-AOP1161. arXiv: 1505.05627 [math.PR]

10. Elliot Paquette and Younghwan Son. "Birkhoff sum fluctuations in substitution dynamical systems". In: *Ergodic Theory and Dynamical Systems* (2017), pp. 1–35. DOI: doi:10.1017/etds.2017.83. arXiv: 1505.01428 [math.DS]

9. Christopher Hoffman, Matthew Kahle, and Elliot Paquette. "The threshold for integer homology in random d-complexes". In: *Discrete & Computational Geometry* 57.4 (2017), pp. 810–823. DOI: 10.1007/s00454-017-9863-1. arXiv: 1308.6232 [math.AT]

2016 8. Pascal Maillard and Elliot Paquette. "Choices and intervals". In: *Israel J. Math.* 212.1 (2016), pp. 337–384. DOI: 10.1007/s11856-016-1289-6. eprint: 1402.3931

2015 7. Ohad Noy Feldheim, Elliot Paquette, and Ofer Zeitouni. "Regularization of non-normal matrices by Gaussian noise". In: *Int. Math. Res. Not. IMRN* 18 (2015), pp. 8724–8751. DOI: 10.1093/imrn/rnu213. eprint: 1404.3491

6. Yury Malyshkin and Elliot Paquette. "The power of choice over preferential attachment". In: *ALEA Lat. Am. J. Probab. Math. Stat.* 12.2 (2015), pp. 903–915. eprint: 1311.1091

2014 5. Yury Malyshkin and Elliot Paquette. "The power of choice combined with preferential attachment". In: *Electron. Commun. Probab.* 19 (2014), no. 44, 13. DOI: 10.1214/ECP.v19-3461. eprint: 1403.4301

2013 4. Ioana Dumitriu, Tobias Johnson, Soumik Pal, and Elliot Paquette. "Functional limit theorems for random regular graphs". In: *Probab. Theory Related Fields* 156.3-4 (2013), pp. 921–975. DOI: 10.1007/s00440-012-0447-y. eprint: 1109.4094

2012 3. Ioana Dumitriu and Elliot Paquette. "Global fluctuations for linear statistics of β-Jacobi ensembles". In: *Random Matrices Theory Appl.* 1.4 (2012), p. 60. DOI: 10.1142/S201032631250013X. eprint: 1203.6103

2010 2. Tamás Keleti and Elliot Paquette. "The trouble with von Koch curves built from n-gons". In: *Amer. Math. Monthly* 117.2 (2010), pp. 124–137. DOI: 10.4169/000298910X476040

2009 1. Elliot Paquette and Christopher Seaton. "The index of a vector field on an orbifold with boundary". In: *Involve* 2.2 (2009), pp. 161–175. DOI: 10.2140/involve.2009.2.161. eprint: 0806.2113

Other articles

- Elliot Paquette and Andrew Vander Werf. "Random geometric graphs and the spherical Wishart matrix". In: *arXiv e-prints*, arXiv:2110.10785 (Oct. 2021), 28pp. arXiv: 2110.10785 [math.PR]

- Matías Carrasco, Pablo Lessa, and Elliot Paquette. "A Furstenberg type formula for the speed of distance stationary sequences". In: *submitted* (Oct. 2017). arXiv: 1710.00733 [math.PR]

- Diane Holcomb and Elliot Paquette. "Tridiagonal Models for Dyson Brownian Motion". In: *submitted* (July 2017). arXiv: 1707.02700 [math.PR]

- Tobias Johnson and Elliot Paquette. "Quantitative Small Subgraph Conditioning". In: *ArXiv e-prints* (July 2013). arXiv: 1307.4858 [math.PR]

Invited Talks Given (2017-present)

December 2024 - E. Paquette. *Random matrix theory for high dimensional optimization, and an application to scaling laws.* Probability and statistics seminar. USC.

December 2024 - E. Paquette. *Kahane's coverage question and the image of Gaussian analytic function.* Probability seminar. UC San Diego.

October 2024 - E. Paquette. *Kahane's coverage question and the image of Gaussian analytic function.* **Workshop on random matrices and scaling limits**, Institut Mittag Leffler, Stockholm.

May 2024 - E. Paquette. *The random matrix Fyodorov-Hiary-Keating conjecture.* **Random matrices and related topics in Jeju**, Jeju Island, Korea.

April 2024 - E. Paquette. *Random matrix theory for high dimensional optimization, and an application to scaling laws.* **Vector Distinguished Lecture Series**, Vector Institute, Toronto.

January 2024 - E. Paquette. *High dimensional limits of SGD.* **Mathematics of Data Science Conference**, NUS Singapore.

June 2023 - E. Paquette. *The extremal landscape of the circular β-ensemble.* Probability seminar. Université de Lille.

June 2023 - E. Paquette. *The extremal landscape of the circular β-ensemble.* Probability seminar. University of Sussex.

May 2023 - E. Paquette. *The scaling limits of the Gaussian beta ensemble characteristic polynomial.* **Midrasha on random Schrödinger operators and random matrices.** Israel Institute Advanced Study, Jerusalem, Israel.

April 2023 - E. Paquette. *The homogenization of SGD in high dimensions.* Probability seminar. KTH, Stockholm, Sweden.

April 2023 ◦ E. Paquette. *The homogenization of SGD in high dimensions.* DACO seminar. ETH, Zürich.

March 2023 ◦ E. Paquette. *The extremal landscape of the circular β-ensemble.* Probability seminar. Cornell University.

March 2023 ◦ E. Paquette. *The homogenization of SGD in high dimensions.* Probability seminar. University of Waterloo, Ontario.

January 2023 ◦ E. Paquette. *Homogenization of SGD in the Large.* **Topics in High Dimensional Probability.** ICTS-TIFR, Bangalore, India.

November 2022 ◦ E. Paquette. *The extremal landscape of the circular β-ensemble.* **Colloquium** University of Toronto.

November 2022 ◦ E. Paquette. *Homogenization of SGD in the Large.* Lehigh–Minnesota Probability seminar Lehigh & University of Minnesota.

October 2022 ◦ E. Paquette. *Homogenization of SGD in the Large.* Lefschetz dynamical systems seminar Brown University.

October 2022 ◦ E. Paquette. *The extremal landscape of the circular β-ensemble.* Large deviations and random media Conference. NYU.

June 2022 ◦ E. Paquette. *Optimization Algorithms in the Large: Generalization and Universality.* Conference on Random Matrix Theory and Numerical Linear Algebra. Seattle.

Dynamics 2021 ◦ E. Paquette. *Dynamics of Stochastic Momentum Methods on Large-scale, Quadratic Models .* NeurIPS '21. Vancouver.

November 2021 ◦ E. Paquette. *The edge scaling limit of the Gaussian beta-ensemble characteristic polynomial.* Probability seminar. University of Washington.

October 2021 ◦ E. Paquette. *The threshold for simple–connectedness in hypercube percolation.* Probability seminar. University of Groningen.

August 2021 ◦ E. Paquette. *SGD in the Large.* Conference on Learning Theory '21. Boulder.

April 2021 ◦ E. Paquette. *The edge scaling limit of the Gaussian beta-ensemble characteristic polynomial.* Probability seminar. Jerusalem.

January 2021 ◦ E. Paquette. *Secular coefficients and the holomorphic multiplicative chaos.* Analysis seminar. Tel Aviv University.

December 2020 ◦ E. Paquette. *The edge scaling limit of the Gaussian beta-ensemble characteristic polynomial.* Séminaire MEGA (Matrices et graphes aléatoires). Institut Henri Poincaré.

December 2020 ◦ E. Paquette. *The edge scaling limit of the Gaussian beta-ensemble characteristic polynomial.* University of Michigan seminar on integrable systems and random matrices.

October 2020 ◦ E. Paquette. *Random perturbations of non-normal matrices.* **Queen's university colloquium.**

October 2020 ◦ E. Paquette. *The threshold for simple–connectedness in hypercube percolation.* AMS "Southeastern" special session on random discrete structures.

August 2020 ◦ P. Maillard and E. Paquette. *On a class of interval fragmentations with interaction between the fragments.* One world symposium 2020. Special session on branching and coalescing structures.

March 2020 ◦ E. Paquette. *Random matrices and the Gaussian multiplicative chaos on the line.* UCSD probability seminar. San Diego.

January 2020 ◦ E. Paquette. *Random matrices and the Gaussian multiplicative chaos on the line.* AMS Joint Mathematics meeting. Special session on random matrices. Denver

October 2019 ◦ E. Paquette. *Random matrices and the Gaussian multiplicative chaos on the line.* CRM probability seminar. Montreal

July 2019 ◦ E. Paquette. *The characteristic polynomial of random matrices and the Gaussian multiplicative chaos.* Random geometries and multifractality. International Instistute of Physics. Natal, Brazil

February 2019 ◦ E. Paquette. *The Gaussian analytic function is either bounded or covers the plane.* Weizmann Institute Probability seminar.

February 2019 ◦ E. Paquette. *The characteristic polynomial of random matrices and the Gaussian multiplicative chaos.* McGill University.

January 2019 ◦ E. Paquette. *Random matrix point processes via stochastic processes*, UC Irvine Probability Seminar,

November 2018 ◦ E. Paquette. *Distributional approximation of the characteristic polynomial of a Gaussian beta-ensemble*, Cincinnati Symposium on Probability Theory, University of Cincinnati

October 2018 ◦ E. Paquette. *Distributional approximation of the characteristic polynomial of a Gaussian beta-ensemble*, Courant Probability Seminar, NYU

October 2018 ◦ E. Paquette. *Distributional approximation of the characteristic polynomial of a Gaussian beta-ensemble*, Wisconsin Probability Seminar, Madison

September 2018 ◦ E. Paquette. *Random matrix point processes via stochastic processes*, AMS Sectional Meeting, Newark Delaware

June 2018 ◦ E. Paquette. *Distributional approximation of the characteristic polynomial of a Gaussian beta-ensemble*, Gaussian Fields in Random Matrix Theory, Institute Mittag–Leffler

May 2018 ◦ E. Paquette. *Random matrix point processes via stochastic processes*, Weizmann

May 2018 ◦ E. Paquette. *Random matrix point processes via stochastic processes* , Southeastern Probability Conference, Duke

April 2018 ◦ E. Paquette. *Algebraic questions about combinatorial random matrices* , AMS sectional meeting, Nashville

January 2018 ◦ E. Paquette. *Perturbations of non-normal matrices* , AMS sectional meeting, UC Riverside

November 2017 ◦ E. Paquette. *Choices and intervals*, Georgia Tech Probability seminar

October 2017 ◦ E. Paquette. *The law of large numbers for the maximum of the log-potential of random matrices*, Northwestern University Probability seminar

July 2017 ◦ E. Paquette. *Tridiagonal models of β-Dyson Brownian motion*, PCMI Summer Session 2017: Random matrices

March 2017 ◦ E. Paquette. *Perturbations of non-normal matrices*, NYU Courant Probability seminar

February 2017 ◦ E. Paquette. *The law of fractional logarithm of the GUE minor process*, Michigan Probability seminar

February 2017 ◦ E. Paquette. *Probability and spectra*, Rabaden Lab, Columbia University

January 2017 ◦ E. Paquette. *Random perturbations of non-normal matrices*, UC Irvine Probability Seminar