

Jorge Garza-Vargas

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POSITIONS

Massachusetts Institute of Technology

Assistant Professor, Mathematics Department

Boston, MA

July 2026 – Present

Princeton University

Assistant Professor, Mathematics Department

Princeton, NJ

September 2025 – June 2026

California Institute of Technology

CMS Postdoctoral Fellow.

Pasadena, CA

January 2023 – August 2025

EDUCATION

University of California, Berkeley

Ph.D. from the Mathematics Department.

Berkeley, CA

Aug. 2017 – Dec. 2022

Universidad Nacional Autónoma de México

B. Sc. in Mathematics.

Mexico City

Aug. 2012 – May 2017

PUBLISHED PAPERS

- C. F. Chen, J. Garza-Vargas, R. van Handel. *A new approach to strong convergence II. The Classical Ensembles*. To appear in Geometric and Functional Analysis.
- C. F. Chen, J. Garza-Vargas, J.A. Tropp, R. van Handel. *A new approach to strong convergence*. Annals of Mathematics, Vol. 203, No. 2, 555-602, 2026.
- J. Banks, J. Garza-Vargas, N. Srivastava. *Global Convergence of Hessenberg Shifted QR III: Approximate Ritz Values via Shifted Inverse Iteration*. SIAM Journal on Matrix Analysis and Applications, Vol. 46, No. 2, 1212-1246, 2025.
- J. Banks, J. Garza-Vargas, N. Srivastava. *Global Convergence of Hessenberg Shifted QR II: Numerical Stability*. SIAM Journal on Matrix Analysis and Applications, Vol. 46, No. 2, 2025.
- J. Banks, J. Garza-Vargas, N. Srivastava. *Global Convergence of Hessenberg Shifted QR I: Exact Arithmetic*. Foundations of Computational Mathematics, Vol. 25, 1561-1594, 2024.
- J. Banks, J. Garza-Vargas, A. Kulkarni, N. Srivastava. *Overlaps, Eigenvalue Gaps, and Pseudospectrum Under Real Ginibre and Absolutely Continuous Perturbations*. Annales de l'Institut Henri Poincaré, Probability and Statistics, Vol. 60, No. 4, 2736-2766, 2024.
- J. Banks, J. Breuer, J. Garza-Vargas, E. Seelig, B. Simon. *A Useful Formula for Periodic Jacobi Matrices on Trees*. Proceedings of the National Academy of Sciences, Vol. 121, No. 23, 2024.
- B. Au, J. Garza-Vargas. *Spectral Asymptotics for Contracted Tensor Ensembles*. Electronic Journal of Probability, Vol. 28, 2023.
- J. Garza-Vargas, A. Kulkarni. *Spectra of Infinite Graphs via Freeness with Amalgamation*. Canadian Journal of Mathematics, Vol. 75, No. 5, 1633-1684, 2023.
- O. Arizmendi, J. Garza-Vargas, D. Perales. *Finite Free Cumulants: Multiplicative Convolutions, Genus Expansion and Infinitesimal Distributions*. Transactions of the American Mathematical Society, Vol. 376, 4383-4420, 2023.
- J. Banks, J. Garza-Vargas, A. Kulkarni, N. Srivastava. *Pseudospectral Shattering, the Sign Function, and Diagonalization in Nearly Matrix Multiplication Time*. Published as extended abstract in FOCS 2020, invited to SICOMP Special Issue for FOCS 2020. Full version in Foundations of Computational Mathematics, Vol. 23, No. 6, 1959-2047, 2023.
- J. Banks, J. Garza-Vargas, S. Mukherjee. *Point Spectrum of Periodic Operators on Universal Covering Trees*. International Mathematics Research Notices, Vol. 2022, No. 22, 17713-17744, 2022.
- J. Garza-Vargas, D.V. Voiculescu. *Boolean Extremes and Dagum Distributions*. Indiana University Mathematics Journal, Vol. 70, No. 2, 595-603, 2021.
- J. Garza-Vargas, A. Kulkarni. *The Lanczos Algorithm Under Few Iterations: Concentration and Location of the Output*. SIAM Journal on Matrix Analysis and Applications, Vol. 41, No. 3, 1312-1346, 2020.
- J. Garza-Vargas, I. Hubard. *Politopality of Maniplexes*. Discrete Mathematics, Vol. 341, No. 7, 2068-2079, 2018.

PREPRINTS

- J. Garza-Vargas, Z. Stier, N. Srivastava. *Finite Free Information Inequalities*, arXiv:2602.15822. Preprint.

TEACHING

- Instructor for MAT 202 (Introduction to Linear Algebra), Princeton University, Spring 2026.
- Instructor for MAT 103 (Introduction to Calculus), Princeton University, Fall 2025.
- Instructor for ACM 270 (An introductory course in free probability), Caltech, Spring 2024.
- T.A. for Math 202A (Introduction to Analysis and Topology), UC Berkeley, Fall 2022.
- Mentor for Berkeley Connect in Mathematics, 2019-2021.
- T.A. for Math 202B (Introduction to Analysis and Topology), UC Berkeley, Spring 2019.
- T.A. for Math 54 (Linear Algebra and Differential Equations), UC Berkeley, Fall 2018.
- T.A. for Math 1B (Calculus), UC Berkeley, Spring 2018.
- T.A. for Math 1A (Calculus), UC Berkeley, Fall 2017.

AWARDS

- Alston S. Householder Prize 2025.
- Friedman Memorial Prize in Applied Mathematics, 2022, UC Berkeley Mathematics Department.
- Outstanding Math Graduate Student Instructor Award, 2020, UC Berkeley Mathematics Department.
- Sotero Prieto Award, 2018, Mexican Mathematical Society.
- College Competitions: International Mathematical Competition 2013, 2015 (Silver medals), Iberoamerican Mathematical Competition 2012, 2013, 2014 (Silver, Bronze, and Gold medals).
- Math Olympiads: IMO 2011, 2012 (Bronze medals), Asian Pacific Mathematical Olympiad 2012 (Gold medal), Iberoamerican Mathematical Olympiad 2011 (Silver medal), Central American and Caribbean Mathematical Olympiad 2009 (Gold medal).

INVITED TALKS

- French-Mexican XI School in Probability and Stochastic Processes, July 2026.
- University of Michigan Random Matrix Theory Summer School, June 2026.
- Princeton, Probability Seminar, April 2026.
- Free Probability, Random Matrices, and Applications. Houston, April 2026.
- Columbia University, Probability Seminar, April 2026.
- AMS Eastern Sectional Meeting, Special Session SLE and RMT, March 2026.
- MIT, Special Seminar, March 2026.
- MSU, High Dimensional Probability and Statistics Seminar, February 2026.
- UVA, Probability Seminar, December 2025.
- Simons Institute, Randomness, Invariants, and Complexity, November 2025.
- University of Notre Dame, Felix Klein Seminar, October 2025.
- Princeton, PACM Colloquium, October 2025.
- RMT+NLA II, Seattle, June 2025.
- Householder Symposium XXII, Householder Prize Lecture, June 2025.
- Casa Matematica Oaxaca, Free Probability and Random Matrices, June 2025.

- UC Irvine, Probability and Combinatorics Seminar, May 2025.
- Online Operator Theory and Related Topics (2TART) Seminar, April 2025.
- Brazos Analysis Seminar, Baylor University, April 2025.
- University of Houston, pre-Brazos Workshop, April 2025.
- UC Berkeley, Probabilistic Operator Algebras Seminar (online), April 2025.
- Mini-School in Analytic Group Theory, UT Austin, March 2025.
- IPAM, Free Entropy Theory and Random Matrices, February 2025.
- MIT, Applied Mathematics Colloquium, January 2025.
- University of Washington, Applied Mathematics Colloquium, January 2025.
- UC Berkeley, Mathematics Colloquium, December 2024.
- Duke University, Mathematics Colloquium, December 2024.
- UMN, Mathematics Colloquium, December 2024.
- USC, Mathematics Colloquium, December 2024.
- University of Michigan, Mathematics Colloquium, November 2024.
- UC Berkeley, Functional Analysis Seminar, November 2024.
- Johns Hopkins University, Applied Mathematics Colloquium, November 2024.
- Seminario Interinstitucional de Matrices Aleatorias, Merida, October 2024.
- AMS Sectional Meeting, Special Session on Random Matrices, Related Structures, and Applications, October 2024.
- UCSD, Functional Analysis Seminar, October 2024.
- UCLA, Functional Analysis Seminar, October 2024.
- Caltech, Mathematics Colloquium, October 2024.
- LU-UMN joint Probability Seminar (online), September 2024.
- NYU Abu Dhabi, Stochastics Seminar (online), September 2024.
- IPAM, Groundwork for Operator Algebras Culminating Workshop, July 2024.
- UC Berkeley, Online Probabilistic Operator Algebras Seminar, July 2024.
- UC Irvine, Probability and Combinatorics Seminar, June 2024.
- Southern California Probability Symposium, April 2024.
- UC Berkeley, Probability Seminar, March 2024.
- Princeton University, Probability Seminar, March 2024.
- CU Boulder, Probability Seminar, February 2024.
- Duke University, Probability Seminar, February 2024.
- UCSD, Functional Analysis Seminar, January 2024.
- University of Washington, Applied Mathematics Seminar, December 2023.
- Fields Institute, Workshop on Operator Algebras and Applications: Free Probability, Toronto, November 2023.
- ISM, NC Probability Theory, Random Matrix Theory and their Applications, Tokyo, November 2023.
- MIT, Numerical Linear Algebra Seminar, October 2023.
- Wabash Modern Analysis Seminar, October 2023.
- Hebrew University of Jerusalem, Analysis Seminar, June 2023.
- FOCM, Workshop on Random Matrices, Paris, June 2023.

- Summer School on Random Matrix Theory and Its Applications (Lecturer), Ohio State University, May 2023.
- UC Irvine, Probability and Combinatorics Seminar, April 2023.
- University of Virginia, Probability Seminar, April 2023.
- University of Virginia, Operator Theory Seminar, April 2023.
- Banff International Research Station, Perspectives on Matrix Computations: TCS Meets NLA, March 2023.
- UCLA, Functional Analysis Seminar, March 2023.
- Caltech, CMX Student/Postdoc Seminar, February 2023.
- LA Probability Forum, February 2023.
- JMM, Workshop on Perspectives on Eigenvalue Computation, January 2023.
- JMM, Special Session on Advances in Operator Algebras, January 2023.
- International Workshop on Operator Theory and its Applications, Special Session on Noncommutative Probability, Operator Algebras, and Operator Theory, Krakow, 2022.
- Rocky Mountain Math Consortium Summer School, Free Probability, Random Matrices and Applications, 2022.
- UC Irvine, Combinatorics and Probability Seminar, Spring 2022.
- JMM, ILAS Special Session on The Interplay of Matrix Analysis and Operator Theory, 2022.
- CIRM, Random Tensors, Marseille, 2022.
- Ohio State, Online Combinatorics and Probability Seminar, Spring 2022.
- Algebraic and Combinatorial Perspectives in the Mathematical Sciences, Spring 2022 (European Online Seminar).
- IPAM, retreat for the Quantitative Linear Algebra program 2021.
- UC Berkeley, Online Probabilistic Operator Algebras Seminar, Fall 2021.
- Santa Clara University Mathematics Colloquium, Fall 2021.
- UCSD, Online Functional Analysis Seminar, Fall 2021.
- Seminario de Probabilidad Hispanohablante (Online), Fall 2020.
- UCSD, Online Probability Seminar, Fall 2020.
- UC Berkeley, Online Probability Seminar, Fall 2020.
- UC Berkeley, Online Probabilistic Operator Algebras Seminar, Summer 2020.
- CIMAT, Guanajuato, Online MAPLe seminar, Summer 2020.
- IPAM, retreat for the Quantitative Linear Algebra program 2019.
- AMS Sectional Meeting, Special Session on Advances in Operator Algebras, Riverside, Winter 2019.
- West Coast Operator Algebras Seminar, Seattle, 2018.
- l'École de Recherche CIMPA, Settat, Morocco, 2017.