VLADISLAV KARGIN

Curriculum Vitae

Associate Professor
Department of Mathematics and Statistics
Binghamton University (SUNY)
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RESEARCH INTERESTS

Random matrix theory and free probability, with focus on spectral properties, fluctuations, local laws, and operator-algebraic aspects of free convolution. Recent work also includes probabilistic combinatorics (random trees, ribbon tilings) and problems motivated by statistical learning and education.

EDUCATION

Ph.D., Mathematics, Courant Institute of Mathematical Sciences, NYU, 2008
Advisor: Gérard Ben Arous. Thesis: "Limit Theorems in Free Probability Theory"

Ph.D., Economics, Boston University, 2001
Advisor: Robert W. Rosenthal. Thesis: "Essays on Finance and Agency Theory"

M.A., Economics, New Economic School (Moscow), 1996

Diploma with Honors, Mathematics, Moscow State University, 1993
Kolmogorov High School #18 for gifted students in mathematics and sciences, Moscow, 1985

ACADEMIC APPOINTMENTS

2017–present Associate Professor, Binghamton University (SUNY)
2014–2017 Assistant Professor, Binghamton University (SUNY)
2011–2012 Lecturer (fixed-term), University of Cambridge
Fall 2010 Research Member, Mathematical Sciences Research Institute, Berkeley (on leave from Stanford)
2008–2011 Szegő Assistant Professor, Stanford University
2007–2008 Teaching Fellow, New York University
2001–2006 Associate, Cornerstone Research (economic consulting)
1996–2001 Teaching Fellow / Research Assistant, Boston University

PUBLICATIONS

42 peer-reviewed publications and 2 preprints in probability theory, random matrices, and related areas.

[44] V. Kargin. *An algebraic characterization of non-singular matrix semicircles*. Preprint, arXiv:2604.23089, 2026.

[43] V. Kargin. *Free compressions of R-diagonal random variables and the semigroup of Brown measures*. Preprint, arXiv:2604.22114, 2026.

[42] V. Kargin and A. Onatski. *The smallest singular value of large random rectangular Toeplitz and circulant matrices*. Electron. J. Probab. **31** (2026), 1–30. DOI: 10.1214/25-EJP1462.

[41] S. R. Blackburn, Y. Chen, and V. Kargin. *An upper bound on the per-tile entropy of ribbon tilings*. Combin. Theory **5** (2025), 1–10. DOI: 10.5070/C65365562.

[40] V. Kargin. *On the joint distribution of the area and the number of peaks for Bernoulli excursions*. Bernoulli **30** (2024), 2700–2720.

[39] V. Kargin. *Scaling limits of slim and fat trees*. J. Theoret. Probab. **36** (2023), 2192–2228.

[38] Y. Chen and V. Kargin. *On number of ribbon tilings for strips*. Discrete Appl. Math. **340** (2023), 85–103.

[37] Y. Chen and V. Kargin. *On enumeration and entropy of ribbon tilings*. Electron. J. Combin. **30(2)** (2023), P2.15.

[36] V. Kargin. *Cycles in random meander systems*. J. Stat. Phys. **181** (2020), 2322–2345.

[35] V. Kargin. *A 3D Ginibre point field*. J. Stat. Phys. **171** (2018), 1067–1095.

[34] V. Kargin. *Variation of word frequencies in Russian literary texts*. Phys. A **445** (2016), 328–334.

[33] V. Kargin. *Limit theorems for linear eigenvalue statistics of overlapping matrices*. Electron. J. Probab. **20** (2015), art. 121, 1–30.

[32] V. Kargin. *On estimation in the reduced-rank regression with a large number of responses and predictors*. J. Multivariate Anal. **140** (2015), 377–394.

[31] V. Kargin. *Subordination of the resolvent for a sum of random matrices*. Ann. Probab. **43** (2015), 2119–2150.

[30] V. Kargin. *On the largest Lyapunov exponent for products of Gaussian matrices*. J. Stat. Phys. **157** (2014), 70–83.

[29] V. Kargin. *Statistical properties of zeta functions' zeros*. Probab. Surveys **11** (2014), 121–160.

[28] V. Kargin. *On Pfaffian random point fields*. J. Stat. Phys. **154** (2014), 681–704.

[27] V. Kargin. *On fluctuations of Riemann's zeta zeros*. Probab. Theory Related Fields **157** (2013), 575–604.

[26] V. Kargin. *An inequality for the distance between densities of free convolutions*. Ann. Probab. **41** (2013), 3241–3260.

[25] V. Kargin. *A concentration inequality and a local law for the sum of two random matrices*. Probab. Theory Related Fields **154** (2012), 677–702.

[24] V. Kargin. *On eigenvalues of the sum of two random projections*. J. Stat. Phys. **149** (2012), 246–258.

[23] V. Kargin. *On free stochastic differential equations*. J. Theoret. Probab. **24** (2011), 821–848.

[22] V. Kargin. *Relaxation time is monotone in temperature in the mean-field Ising model*. Statist. Probab. Lett. **81** (2011), 1094–1097.

[21] V. Kargin. *Bounds for mixing time of quantum walks on finite graphs*. J. Phys. A **43** (2010), 335302.

[20] V. Kargin. *Continuous-time quantum walk on integer lattices and homogeneous trees*. J. Stat. Phys. **140** (2010), 393–408.

[19] V. Kargin. *Products of random matrices: Dimension and growth in norm*. Ann. Appl. Probab. **20** (2010), 890–906.

[18] G. Ben Arous and V. Kargin. *Free point processes and free extreme values*. Probab. Theory Related Fields **147** (2010), 161–183.

[17] V. Kargin. *Spectrum of random Toeplitz matrices with band structure*. Electron. Comm. Probab. **14** (2009), 412–423.

[16] V. Kargin. *Lyapunov exponents of free operators*. J. Funct. Anal. **255** (2008), 1874–1888.

[15] A. Onatski and V. Kargin. *Curve forecasting by functional autoregression*. J. Multivariate Anal. **99** (2008), 2508–2526.

[14] V. Kargin. *Coordination games with quantum correlations*. Internat. J. Game Theory **37** (2008), 211–218.

[13] V. Kargin. *On the asymptotic growth of the support of free multiplicative convolutions*. Electron. Comm. Probab. **13** (2008), 415–421.

[12] V. Kargin. *A limit theorem for products of free unitary operators*. Probab. Theory Related Fields **141** (2008), 603–623.

[11] V. Kargin. *On superconvergence of convolutions of free random variables*. Ann. Probab. **35** (2007), 1931–1949.

[10] V. Kargin. *A large deviation inequality for vector functions on finite reversible Markov chains*. Ann. Appl. Probab. **17** (2007), 1202–1221.

[9] V. Kargin. *The norm of products of free random variables*. Probab. Theory Related Fields **139** (2007), 397–413.

[8] V. Kargin. *Berry–Esseen for free random variables*. J. Theoret. Probab. **20** (2007), 381–395.

[7] V. Kargin. *A proof of a non-commutative central limit theorem by the Lindeberg method*. Electron. Comm. Probab. **12** (2007), 36–50.

[6] V. Kargin. *On the Chernoff bound for efficiency of quantum hypothesis testing*. Ann. Statist. **33** (2005), 959–976.

[5] V. Kargin. *Lattice option pricing by multidimensional interpolation*. Math. Finance **15** (2005), 635–647.

[4] V. Kargin. *Uncertainty of the Shapley value*. Internat. Game Theory Rev. **7** (2005), 517–529.

[3] V. Kargin. *Optimal asset allocation with asymptotic criteria*. Int. J. Theor. Appl. Finance **6** (2003), 593–604.

[2] V. Kargin. *Prevention of herding by experts*. Econom. Lett. **78** (2003), 401–407.

[1] V. Kargin. *Value investing in emerging markets: Risks and benefits*. Emerging Markets Rev. **3** (2002), 233–244.

LECTURE NOTES

V. Kargin. *Lecture Notes on Free Probability*. arXiv:1305.2611, 2013; revised 2025. 197 pp.

V. Kargin and E. Yudovina. *Lecture Notes on Random Matrix Theory*. arXiv:1305.2153, 2013.

CONFERENCE AND SEMINAR PRESENTATIONS

Feb 2023 University of Cambridge, Cambridge, UK
Jun 2021 European Congress of Mathematicians, Portorož, Slovenia
Feb 2020 Joint Seminar of U. of Pennsylvania and Temple U., Philadelphia, PA
Aug 2018 International Congress of Mathematicians, Rio de Janeiro, Brazil
Jul 2018 International Conference on Probability and Mathematical Statistics, Vilnius, Lithuania
Jul 2018 18th Workshop in Non-commutative Probability, Będlewo, Poland
Mar 2018 AMS Sectional Meeting, Columbus, OH
Apr 2017 Syracuse University, Syracuse, NY
Aug 2016 Workshop on Random Product Matrices, Bielefeld, Germany
Oct 2014 Stanford University, Palo Alto, CA
Mar 2014 SUNY Binghamton, Binghamton, NY
Mar 2014 UC Davis, Davis, CA
Apr 2013 University of Bristol, Bristol, UK
Jan 2013 Ohio State University, Columbus, OH
Jan 2013 Carnegie Mellon University, Pittsburgh, PA
Jun 2012 University of Warwick, Coventry, UK
May 2012 Mathematical Sciences Research Institute, Berkeley, CA
Nov 2011 University of Cambridge, Cambridge, UK
May 2011 London School of Economics, London, UK
Apr 2011 University of Oxford, Oxford, UK
Mar 2011 University of Cambridge, Cambridge, UK
Mar 2011 Imperial College London, London, UK
Feb 2011 Indiana University–Purdue University Indianapolis, IN
Feb 2011 University of Delaware, Newark, DE
Feb 2011 Georgia Institute of Technology, Atlanta, GA
Jan 2011 University of Pittsburgh, Pittsburgh, PA
Jan 2011 University of Michigan, Ann Arbor, MI
Nov 2010 MSRI, Berkeley, CA
Oct 2010 UC Davis, Davis, CA
May 2010 Stanford University, Stanford, CA
Dec 2009 UC Berkeley, Berkeley, CA
Mar 2009 Workshop on Stochastic Processes, Stanford, CA
Oct 2008 Stanford University, Stanford, CA
Oct 2008 UC Davis, Davis, CA
Feb 2008 Johns Hopkins University, Baltimore, MD
Jan 2008 UC Davis, Davis, CA
Jan 2008 McGill University, Montreal, Quebec
Jan 2008 Workshop on Free Probability and its Applications, Banff, Alberta
Oct 2007 Courant Institute Probability Seminar, New York, NY
Mar 2007 Courant Institute Graduate/Postdoc Seminar, New York, NY
Nov 2006 Free Probability Seminar, Texas A&M University, College Station, TX
Jul 2006 Workshop on Stochastic Eigen-Analysis and Its Applications, Boston, MA
Jan 2006 North American Winter Meeting of the Econometric Society, Boston, MA
Aug 2005 Joint Statistical Meetings, Minneapolis, MN
Jul 2005 SIAM Annual Meeting, New Orleans, LA
Aug 2004 IMS/Bernoulli Society World Congress, Barcelona, Spain
Jul 2004 International Conference on Game Theory, Stony Brook, NY

Jun 2004 North American Summer Meeting of the Econometric Society, Providence, RI
May 2004 Second Erich L. Lehmann Symposium, Houston, TX
Jan 2004 Joint Mathematics Meetings (AMS), Phoenix, AZ
Jun 2003 North American Summer Meeting of the Econometric Society, Evanston, IL
Jun 2001 North American Summer Meeting of the Econometric Society, Washington, DC
Jul 1997 International Conference on Game Theory, Stony Brook, NY

TEACHING

Binghamton University

MATH 447: Probability Theory — *F2015, S2016, F2018, S2018, F2020, S2021, F2024*
MATH 457: Introduction to Statistical Learning — *F2021, F2023, F2024, F2025*
MATH 448: Mathematical Statistics — *F2019, S2019, S2020, F2022, S2025*
MATH 571: Advanced Probability (graduate) — *F2016, F2019, F2023*
MATH 573: Applied Probability and Stochastic Processes (graduate) — *F2018*
MATH 530: Linear Algebra for Statistics / Computational Linear Algebra (graduate) — *F2020, F2021, F2022*
MATH 450: Long-term Actuarial Mathematics I — *F2016, F2017*
MATH 452: Long-term Actuarial Mathematics II — *S2017*
MATH 404: Advanced Linear Algebra — *S2024*
MATH 323: Multivariate Calculus — *F2015, F2017*

University of Cambridge

Random Matrices (Part III / graduate) — *F2011*
Stochastic Finance Models — *F2011*

Stanford University

MATH 136: Discrete Probabilistic Methods (graduate) — *W2011*
MATH 393: Free Probability (graduate seminar) — *S2009*
MATH 171: Elementary Functional Analysis — *S2010*
MATH 151: Introduction to Probability Theory — *W2010, W2011*
MATH 51: Linear Algebra and Multivariate Calculus — *F2008, W2009, S2009, F2009*
MATH 53: Ordinary Differential Equations — *S2011*

New York University

Probability and Statistics — *S2008*
Calculus III (Functions of Several Variables) — *F2007*
Calculus II (Integration, Analytic Geometry, Series) — *Summer 2007*
Calculus I (Derivatives, Integrals, Transcendentals) — *Summer 2008*

GRADUATE ADVISING

Doctoral Students

- Yinsong Chen (Ph.D. 2020) — Dissertation Chair

Ph.D. Qualifying Examination Committees

- Zhongyuan Zhao (2025)
- Kexuan Li, Wei Yang (2020)
- Yinsong Chen (2019, Chair)

Ph.D. Thesis Committees

- Kexuan Li (2021)
- Yinsong Chen (2020, Chair)
- P. Milano (2018)

SERVICE

Department Administration

- Director of Undergraduate Studies, 2025–present
- Chair, Hiring Committee (Applied Mathematics), 2024–25
- Chair, Colloquium Committee, 2016–17

Committee Memberships

- Graduate Committee, 2019–present
- Statistics Committee, 2018–present
- Junior Personnel Committee, 2017–present
- Undergraduate Advising Committee, 2016–2019, 2023–present
- Hiring Committee, 2015–16, 2024–25
- Colloquium Committee, 2015–present
- Actuarial Committee, 2015–present

External Service

- Organizer, Special Session at AMS Sectional Meeting, Binghamton University, Fall 2019
- Organizer, Stanford Probability Seminar, 2009–10
- Member, Admission Committee for Financial Mathematics Program, Stanford, 2008–10

REFEREEING AND REVIEWING

- Reviewer for MathSciNet (179 reviews)

Referee for journals including: Annals of Mathematics, Annals of Probability, Probability Theory and Related Fields, Bernoulli, Electronic Journal of Probability, Electronic Communications in Probability, Journal of Theoretical Probability, Journal of Mathematical Analysis and Applications, Journal of Physics A, Journal of Futures Markets, Proceedings of the Royal Society A, Statistics and Probability Letters.

GRANTS, FELLOWSHIPS, AND AWARDS

- Simons Foundation Collaboration Grant ($42,000), 2017–2022
- MSRI Postdoctoral Fellowship, Spring 2012
- MSRI Postdoctoral Fellowship, Fall 2010 (declined due to conflict)
- Research Stipend, Mathematics Department of NYU, 2006–08
- Research Assistantship, Economics Department of Boston University, 1998–2001
- Teaching Fellowship, Economics Department of Boston University, 1996–97

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