

BÁLINT VIRÁG
CURRICULUM VITAE

PERSONAL

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Date of Birth: November 2, 1973.

Citizenship: Hungarian, Canadian.

EDUCATION

University of California, Berkeley, 1996-2000

Ph.D. in Statistics June 2000.

Thesis: Random walks and geometry on graphs of exponential growth.

Advisor: Yuval Peres.

Eric Lehmann citation for Ph.D. thesis.

Harvard University, 1992-1996

B.A. Magna Cum Laude in Mathematics, June 1996.

Thesis: Random walk on finite convex sets of lattice points. Advisor: Persi Diaconis.

Thomas Temple Hoopes Prize awarded for outstanding honours thesis.

EMPLOYMENT HISTORY

University of Toronto, 2003-present

Professor, July 2011-present

Canada Research Chair, 2003-2013

Associate Professor (tenured), 2008-2011

Assistant professor, 2003-2008

Rényi Institute, Budapest, 2013-2015

Visiting professor, Marie Curie Research Fellowship

Senior researcher, 2016-present.

Mathematical Sciences Research Institute, spring 2005

Semester-long workshop on probability, algorithms and statistical physics.

Institut Henri Poincaré Paris, spring 2003

Visiting Researcher

Massachusetts Institute of Technology, 2000-2003

C.L.E. Moore Instructor, Department of Mathematics

Clay Mathematics Institute, summer 2000

Liftoff Program, research support.

Research Interests: Random matrices, random polynomials, random walks, randomness in groups, first and last passage percolation, KPZ universality

HONOURS, GRANTS AND AWARDS

George Pólya Prize, SIAM, with D. Dauvergne and J. Ortmann, “for the directed landscape [12], the fundamental object underlying the KPZ universality class”, 2026.

Frontiers of Science Award, International Congress for Basic Science. For the paper [12], with D. Dauvergne and J. Ortmann, 2025.

Fellow of the Royal Society of Canada, inducted November 2025.

Cathleen Synge Morawetz Prize, 2024. “awarded to the authors of an outstanding research publication” Jointly with D. Dauvergne. [12], [?]

CRM-Fields-Pims Prize, 2021. “the premier Canadian award for research achievements in the mathematical sciences.”

Institute of Mathematical Statistics Fellow, elected 2021.

Best Paper of the Year, Annales de l’Institut Henri Poincaré, 2019. For the paper [23].

Momentum Grant, Hungarian Academy of Sciences, 2016. A \$1M research grant. Given to 11 researchers in all sciences.

John L. Synge Award, Royal Society of Canada, 2014. “The award is given for outstanding research in any of the branches of the mathematical sciences.”

Invited Speaker, International Congress of Mathematicians, 2014.

Marie Curie Research Fellowship, European Union, 2013–2015.

Institute of Mathematical Statistics Medallion Lecturer, 2013. “is an honor and an acknowledgment of a significant research contribution.”

Coxeter-James Prize, Canadian Mathematical Society, 2010. For “young mathematicians who have made outstanding contributions to mathematical research.”

Rollo Davidson Prize, 2008. Awarded annually to early-career probabilists by the R.D. trustees at Cambridge University.

Sloan Research Fellow, 2004–2008.

Connaught Research Grant, 2004–2008.

NSERC Research Grant, 2004–present.

NSERC Discovery Accelerator Grant, 2009–present.

Canada Research Chair, 2003–2013.

NSF Research Grant, 2001–2004.

Loève Fellowship in Probability, 1998–2000.

Hewlett Scholarship, 1996–97. Given to Berkeley graduate students in recognition of distinguished academic record.

Putnam Mathematical Competition, 1996. Placed among the 25 highest-ranking individuals.

Hoopess Prize, 1996. Given to thirty students in the Harvard graduating class for the best honors theses.

RECENT INTERNATIONAL WORKSHOPS, CONFERENCES ORGANIZED

KPZ meets KPZ. (w. D. Dauvergne, E. Gwynne and X. Sun) Fields Institute, Toronto 5/2024

Measured group theory, stochastic processes and Borel combinatorics CIRM Luminy. (w. M. Abert, D. Gaboriau, A. Tserumyan) 5/2023

Permutations and probability. Banff International Research Station (second, hybrid occasion). (w. O. Angel, and J. Martin) 9/2021

PUBLICATIONS

Book

- [1] *Zeros of Gaussian analytic functions and determinantal point processes*, volume 51 of *University Lecture Series*. American Mathematical Society, Providence, RI, 2009 (with J. B. Hough, M. Krishnapur, and Y. Peres).

Refereed publications

- [2] Amenability of quadratic automaton groups. *Groups Geom. Dyn.*, 19(1):169–185, 2025 (with G. Amir and O. Angel).
- [3] KPZ fluctuations in the planar stochastic heat equation. *Duke Math. J.*, 174(7):1261–1340, 2025 (with J. Quastel and A. Ramírez).
- [4] The directed landscape seen from its trees. *Electron. Commun. Probab.*, 30:1–14, 2025 (with M. Rahman).
- [5] Infinite geodesics, competition interfaces and the second class particle in the scaling limit. *Ann. Inst. Henri Poincaré Probab. Stat.*, 2025 (with M. Rahman).
- [6] The geometry of coalescing random walks, the Brownian web distance and KPZ universality. *Ann. Probab.*, 2025 (with B. Vető).
- [7] Upper tail large deviations of the directed landscape. *arXiv:2405.14924*, 2024 (with S. Das and D. Dauvergne), To appear in *Duke Math Journal*.
- [8] Eigenvectors of the square grid plus GUE. *Comm. Math. Phys.*, 405(1):1–49, 2024 (with A. Mészáros).
- [9] Uniform convergence to the Airy line ensemble. *Ann. Inst. Henri Poincaré Probab. Stat.*, 59(4):2220–2256, 2023 (with D. Dauvergne and M. Nica).
- [10] Palm measures for dirac operators and the Sine-beta process. *Stochastic Process. Appl.*, 163:106–135, 2023 (with B. Valkó).
- [11] RSK in last passage percolation: a unified approach. *Probab. Surv.*, 19:65–112, 2022 (with D. Dauvergne and M. Nica).
- [12] The directed landscape. *Acta Math.*, 229(2):201–285, 2022 (with D. Dauvergne and J. Ortmann).
- [13] Three-halves variation of geodesics in the directed landscape. *Ann. Probab.*, 50(5):1947–1985, 2022 (with D. Dauvergne and S. Sarkar).

- [14] Large deviations for the interchange process on the interval and incompressible flows. *Geom. Funct. Anal.*, 1–71, 2022 (with M. Kotowski).
- [15] The many faces of the stochastic zeta function. *Geom. Funct. Anal.*, 32(5):1160–1231, 2022 (with B. Valkó).
- [16] Bulk properties of the Airy line ensemble. *Ann. Probab.*, 49(4):1738–1777, 2021 (with D. Dauvergne).
- [17] The bead process for beta ensembles. *Probab. Theory Related Fields*, 179(3):589–647, 2021 (with J. Najnudel).
- [18] Uniform point variance bounds in classical beta ensembles. *Random Matrices: Theory and Applications*, 10(04):2150033, 2021 (with J. Najnudel).
- [19] Brownian absolute continuity of the KPZ fixed point with arbitrary initial condition. *Ann. Probab.*, 49(4):1718–1737, 2021 (with S. Sarkar).
- [20] Entropy and expansion. *Ann. Inst. Henri Poincaré Probab. Stat.*, 56(4):2428–2444, 2020 (with E. Csóka and V. Harangi).
- [21] Circular support in random sorting networks. *Trans. Amer. Math. Soc.*, 373(3):1529–1553, 2020 (with D. Dauvergne).
- [22] Operator limit of the circular beta ensemble. *Ann. Probab.*, 48(3):1286–1316, 2020 (with B. Valkó).
- [23] The local limit of random sorting networks. *Ann. Inst. Henri Poincaré Probab. Stat.*, 55(1):412–440, 2019 (with O. Angel, D. Dauvergne, and A. E. Holroyd).
- [24] A short introduction to operator limits of random matrices. In Alexei Borodin, Ivan Corwin, and Alice Guionnet, editors, *Random Matrices*, volume 26, 213–251. American Mathematical Society, 2019 (with D. Holcomb).
- [25] Tracy-Widom fluctuations in 2d random Schrödinger operators. *Comm. Math. Phys.*, 370(3):873–893, 2019 (with M. Kotowski).
- [26] Geometry of permutation limits. *Combinatorica*, 39(4):933–960, 2019 (with M. Rahman and M. Vizer).
- [27] Eigenvectors of the 1-dimensional critical random Schrödinger operator. *Geom. Funct. Anal.*, 28(5):1394–1419, 2018 (with B. Rifkind).
- [28] Speed exponents of random walks on groups. *Int. Math. Res. Not. IMRN*, 2017(9):2567–2598, 2017 (with G. Amir).
- [29] Spectral measures of factor of i.i.d. processes on vertex-transitive graphs. *Ann. Inst. Henri Poincaré Probab. Stat.*, 53(4):2260–2278, 2017 (with Á. Backhausz).
- [30] Mean quantum percolation. *J. Eur. Math. Soc.*, 19(12):3679–3707, 2017 (with C. Bordenave and A. Sen).
- [31] Hölder continuity of the integrated density of states in the one-dimensional Anderson model. *Comm. Math. Phys.*, 355(3):839–863, 2017 (with E. Hart).
- [32] Dyson’s spike for random Schrödinger operators and Novikov-Shubin invariants of groups. *Comm. Math. Phys.*, 352(3):905–933, 2017 (with M. Kotowski).

- [33] Local algorithms for independent sets are half-optimal. *Ann. Probab.*, 45(3):1543–1577, 2017 (with M. Rahman).
- [34] The Sine_β operator. *Invent. Math.*, 209(1):275–327, 2017 (with B. Valkó).
- [35] The measurable Kesten theorem. *Ann. Probab.*, 44(3):1601–1646, 2016 (with M. Abért and Y. Glasner).
- [36] The Liouville property for groups acting on rooted trees. *Ann. Inst. Henri Poincaré Probab. Stat.*, 52(4):1763–1783, 2016 (with G. Amir, O. Angel, and N. Matte Bon).
- [37] Limits of spiked random matrices II. *Ann. Probab.*, 44(4):2726–2769, 2016 (with A. Bloemendal).
- [38] Universality of the stochastic Airy operator. *Comm. Pure Appl. Math.*, 69(1):145–199, 2016 (with M. Krishnapur and B. Rider).
- [39] A central limit theorem for products of random matrices and GOE statistics for the Anderson model on long boxes. *Comm. Math. Phys.*, 343(3):881–919, 2016 (with C. Sadel).
- [40] Ramanujan graphings and correlation decay in local algorithms. *Random Structures Algorithms*, 47(3):424–435, 2015 (with Á. Backhausz and B. Szegedy).
- [41] Invariant Gaussian processes and independent sets on regular graphs of large girth. *Random Structures Algorithms*, 47(2):284–303, 2015 (with E. Csóka, B. Gerencsér, and V. Harangi).
- [42] Independence ratio and random eigenvectors in transitive graphs. *Ann. Probab.*, 43(5):2810–2840, 2015 (with V. Harangi).
- [43] Non-Liouville groups with return probability exponent at most $1/2$. *Electron. Commun. Probab.*, 20:no. 12, 12, 2015 (with M. Kotowski).
- [44] Kesten’s theorem for invariant random subgroups. *Duke Math. J.*, 163(3):465–488, 2014 (with M. Abért and Y. Glasner).
- [45] Positive speed for high-degree automaton groups. *Groups Geom. Dyn.*, 8(1):23–38, 2014 (with G. Amir).
- [46] The Ginibre ensemble and Gaussian analytic functions. *Int. Math. Res. Not. IMRN*, 2014(6):1441–1464, 2014 (with M. Krishnapur).
- [47] Random Schrödinger operators on long boxes, noise explosion and the GOE. *Trans. Amer. Math. Soc.*, 366(7):3709–3728, 2014 (with B. Valkó).
- [48] Operator limits of random matrices. *Proceedings of the International Congress of Mathematicians*, 4:247–272, 2014.
- [49] Amenability of linear-activity automaton groups. *J. Eur. Math. Soc. (JEMS)*, 15(3):705–730, 2013 (with G. Amir and O. Angel).
- [50] Limits of spiked random matrices I. *Probab. Theory Related Fields*, 156(3-4):795–825, 2013 (with A. Bloemendal).
- [51] Patterns in Sinai’s walk. *Ann. Probab.*, 41(3B):1900–1937, 2013 (with D. Cheliotis).

- [52] The right tail exponent of the Tracy–Widom β distribution. *Ann. Inst. Henri Poincaré Probab. Stat.*, 49(4):915–933, 2013 (with L. Dumaz).
- [53] Random walks veering left. *Electron. J. Probab.*, 18, 2013 (with R. Normand).
- [54] The scaling limit of the critical one-dimensional random Schrödinger operator. *Comm. Math. Phys.*, 314(3):775–806, 2012 (with E. Kritchevski and B. Valkó).
- [55] Beta ensembles, stochastic Airy spectrum, and a diffusion. *J. Amer. Math. Soc.*, 24(4):919–944, 2011 (with J. A. Ramírez and B. Rider).
- [56] Absolute continuity of the limiting eigenvalue distribution of the random Toeplitz matrix. *Electron. Comm. Probab.*, 16:706–711, 2011 (with A. Sen).
- [57] The spectrum of the random environment and localization of noise. *Probab. Theory Related Fields*, 148(1-2):141–158, 2010 (with D. Cheliotis).
- [58] Large gaps between random eigenvalues. *Ann. Probab.*, 38(3):1263–1279, 2010 (with B. Valkó).
- [59] On the girth of random Cayley graphs. *Random Structures Algorithms*, 35(1):100–117, 2009 (with A. Gamburd, S. Hoory, M. Shahshahani, and A. Shalev).
- [60] Continuum limits of random matrices and the Brownian carousel. *Invent. Math.*, 177(3):463–508, 2009 (with B. Valkó).
- [61] Random sorting networks. *Adv. Math.*, 215(2):839–868, 2007 (with O. Angel, A. E. Holroyd, and D. Romik).
- [62] Complex determinantal processes and H^1 noise. *Electron. J. Probab.*, 12:no. 45, 1238–1257, 2007 (with B. Rider).
- [63] The noise in the circular law and the Gaussian free field. *Int. Math. Res. Not. IMRN*, (2):Art. ID rnm006, 33, 2007 (with B. Rider).
- [64] Determinantal processes and independence. *Probab. Surv.*, 3:206–229, 2006 (with J. B. Hough, M. Krishnapur, and Y. Peres).
- [65] Dimension and randomness in groups acting on rooted trees. *J. Amer. Math. Soc.*, 18(1):157–192, 2005 (with M. Abért).
- [66] Amenability via random walks. *Duke Math. J.*, 130(1):39–56, 2005 (with L. Bartholdi).
- [67] Zeros of the i.i.d. Gaussian power series: a conformally invariant determinantal process. *Acta Math.*, 194(1):1–35, 2005 (with Y. Peres).
- [68] Random walks that avoid their past convex hull. *Electron. Comm. Probab.*, 8:6–16, 2003 (with O. Angel and I. Benjamini).
- [69] Brownian beads. *Probab. Theory Related Fields*, 127(3):367–387, 2003.
- [70] Fast graphs for the random walker. *Probab. Theory Related Fields*, 124(1):50–72, 2002.
- [71] Anchored expansion and random walk. *Geom. Funct. Anal.*, 10(6):1588–1605, 2000.
- [72] On the speed of random walks on graphs. *Ann. Probab.*, 28(1):379–394, 2000.
- [73] Random walks on finite convex sets of lattice points. *J. Theoret. Probab.*, 11(4):935–951, 1998.

Preprints

- [74] Actions in the Airy line ensemble and convergence to the Airy sheet. *arXiv*, 2511.11207, 2025 (with X. Wu).
- [75] The directed landscape from Brownian motion. *arXiv*, 2405.00194, 2024 (with D. Dauvergne).
- [76] The scaling limit of the longest increasing subsequence. *arXiv*, 2104.08210, 2021 (with D. Dauvergne).
- [77] The heat and the landscape I. *arXiv*, 2008.07241, 2020.
- [78] Brownian motion as limit of the interchange process. *arXiv*, 1609.07745, 2016 (with M. Rahman).

RECENT MINICOURSES, SUMMER SCHOOLS

A brief user's manual to the directed landscape

Simons School on Stochastic Interacting Particle Systems and Random Matrices, Rényi Institute, Budapest, June 2025

Operator limits of random matrices

International Center for Mathematics in Ukraine. Winter school "Random matrices, random analytic functions and non-linear PDEs" Mukachevo, Ukraine, January 2025

Random plane geometry

The Statistical Physics of Continuum Particle Systems, IMS Singapore, August 2022

Graphs, Groups, Stochastic Processes, Erdős Center, Rényi Institute, Budapest, June 2022

SELECTED INVITED LECTURES

Continuum RSK: the directed landscape from Brownian motion

Princeton University Probability Seminar, April 2026

The directed landscape: a user's guide

Frontiers of Science Award Lecture, International Congress for Basic Science (ICBS), Beijing, July 2025

Large deviations of the directed geodesic

Large Scale Stochastic Dynamics, Mathematisches Forschungsinstitut Oberwolfach, September 2025

The Brownian web distance

Probability seminar, University of Illinois, Urbana-Champaign, March 2025

The directed landscape from Brownian motion

Budapest-Vienna probability seminar, March 2025

Math Colloquium, University of Illinois, Urbana-Champaign, March 2025

Probability and Statistical Physics workshop, BIMSA, Sanya, China, January 2025

Random matrices and scaling limits, Institut Mittag-Leffler, Sweden, September 2024

The planar stochastic heat equation and the directed landscape

Workshop on critical phenomena, Warwick, December 2023

Stochastic processes and related fields, RIMS, Kyoto September 2023

Workshop on random growth models and KPZ universality, BIRS, June 2023

Probability seminar, University of Madison, Wisconsin, March 2022

Random geometry and statistical physics, University of Pennsylvania, October 2022

Amenability of quadratic automaton groups

Online Seminar on Probabilistic and Geometric Group Theory, June 2022

Bisectors in random plane geometry

Probability seminar, Institute for Advanced Study, Princeton, March 2023

Rényi100, Hungarian Academy of Sciences, June 2022

National University of Singapore colloquium, September 2022

Random Matrices and Beyond, Kurt Johansson's 60th birthday, Stockholm, Sweden, June 2022

Random Matrices, Random Geometry and SPDEs, Oberwolfach, Germany, June 2022

Random plane geometry: a gentle introduction

SAAC Mini Symposium, Weizmann Institute of Science, June 2024

Focused workshop on the Brownian web, the Brownian net and their geometry, April 2025

Séminaire des mathématiques, École normale supérieure, Paris, February 2024

Colloquium, UM Wisconsin, March 2022

CMS-Fields prize colloquium, CRM, Montreal, November 2022

CMS-Fields prize lecture, UBC, Vancouver, September 2022

The many faces of the stochastic zeta function

Leipzig probability seminar, April 2021

Workshop on random functions, Ohio, April 2021

The directed landscape

Focused workshop on the Brownian web, the Brownian net and their geometry, Erdős Center, 2025

Kutzsem, Rényi Institute, January, 2022

Random geometry and statistical physics seminar, UPenn, December 2021

Universality and integrability in random matrix theory MSRI, September 2021

POSTDOCTORAL FELLOWS

Jnaneshwar Basklinger (June 2025–present)

Andras Meszaros (2021–2024) Currently Research Fellow at the Rényi Institute of Mathematics, Budapest.

Sourav Sarkar (2019–2021) Currently University Associate Professor at Cambridge University.

Mihai Nica (2017–2020) Currently Associate Professor of Mathematics and Statistics at the University of Guelph.

Aukosh Jagannath (2017–2018) Currently Canada Research Chair in Mathematical Foundations of Data Science at University of Waterloo.

Janosch Ortmann (2012–2015) Currently Professor at Université du Québec à Montréal.

Viktor Harangi (2012–2014) Currently Research Fellow at the Rényi Institute of Mathematics, Budapest.

Raoul Normand (2012–2013) Currently clinical assistant professor at NYU.

Tom Alberts (2008–2011) Currently Associate Professor of Mathematics at the University of Utah.

Gabor Pete (2008–2011) Currently Research Fellow at the Rényi Institute of Mathematics, Budapest.

Gideon Amir (2007–2010) Currently Professor of Mathematics at Bar-Ilan University, Israel.

Manjunath Krishnapur (2006–2009) Currently Associate Professor of Mathematics at the Indian Institute of Science, Bangalore.

Benedek Valko (2005–2008) Currently Professor of Mathematics at University of Wisconsin, Madison.

Dimitris Cheliotis (2004–2007) Currently Professor of Mathematics at the University of Athens.

CURRENT PHD STUDENTS

Craig Belair (2024–present) Planar web distances. NSERC graduate scholar.

Daniel Spivak (2024–present) Large deviations for geodesics in last passage percolation.

Pranay Aggarwal (2024–present) Upper tail large deviations in last passage percolation.

Yiming Tang (2023–present) Properties of the multi-layer directed landscape.

Stanislav Balchev (2019–present) The directed landscape in other geometries.

PAST PHD STUDENTS

Virginia Maria Pedreira (2018–2024) Ordering of the Tracy-Widom beta distributions and fractal dimension of the level sets of the directed landscape in the temporal direction.

Julian Ransford (2019–2024) Directed polymers in the intermediate disorder regime and the Seppäläinen–Johansson model. Currently on an NSERC postdoc at the University of Cambridge.

Lemone Alie-Lamarche (2019–2024) The Hausdorff dimension of the level sets of the directed landscape.

Lucas Ashbury-Bridgwood (2019–2023) Random canonical products and the secular function of the stochastic Airy operator. Currently mathematics teacher at TanenbaumCHAT high school, Toronto.

Alex Gatea (2019–2023) Grid entropy in last passage percolation, a variational formula for Gibbs Free Energy, and applications to a “choose the best of D samples” model. Currently compiler developer at IBM, Toronto.

Duncan Dauvergne (2015–2019) Random sorting networks, the directed landscape, and random polynomials. Winner of the 2020 Canadian Mathematical Society doctoral prize. Currently tenure-track at University of Toronto.

Andrew Stewart (2010–2016) On the range of the random walk bridge on the regular tree. Currently working in the blockchain industry.

Michal Kotowski (2012–2016) Return probabilities on groups and large deviations for permutation processes. Currently at the University of Warsaw.

Marcin Kotowski (2012–2016) Random Schrödinger operators with connections to spectral properties of groups and directed polymers. Currently at the University of Warsaw.

Mustazee Rahman (2011–2015) Sub-optimality of local algorithms on sparse random graphs. Currently on a tenure-track position at the University of Durham.

Eric Hart (2009–2014) Hölder continuity of the integrated density of states in the one-dimensional Anderson model. Currently Staff Data Scientist at Anheuser-Busch.

Ben Rifkind (2009–2014) Two random multiplicative processes: multiplicative cascades and eigenvectors of the random Schrödinger operator. Currently Staff Data Engineer, NextRoll.

Danny MacDonald (2012–2013) Random Sorting Networks (did not finish). Currently Sales and Marketing Development Associate at Baxter Media.

Alex Bloemendal (2006–2011) Finite rank perturbations of random matrices and their continuum limits. Currently at the Broad Institute of MIT and Harvard.

Guangyu Fu (2003–2006) Random walks and random polynomials. Currently Director, Global Analytics and Financial Engineering at Scotiabank, Toronto.

Hongzhou Lin (2012) Visiting from Ecole Normale Supérieure, Paris. Project title: Isoperimetric inequalities for eigenvectors on trees. Currently a postdoc in machine learning at MIT.

Raoul Normand (2011) Visiting for one year from Paris 6. Multifractal spectrum of tridiagonal operators. Currently clinical assistant professor at NYU.

Pierre Tarrago (2010) Visiting from Ecole Normale Supérieure, Paris. Project title: Measures associated with random matrices. Currently at Université Pierre et Marie Curie, Paris.

Laure Dumaz (2008) Visiting from Ecole Normale Supérieure, Paris. Project title: Large deviations for the Tracy-Widom β distribution. Currently at Ecole Normale Supérieure, Paris.

MASTERS STUDENTS

Cameron Martin (2021) Overlap in Gaussian processes.

Allen Lee (2019–2020) The directed landscape.

Gergely Odor (2017) Resistance limits of graphs.

Kyle Thompson (2010) Determinantal processes on spheres.

Charles Zhi Hao Li (2009) The volume of the Birkhoff polytope.

Anjie Zhou (2008) Stochastic analysis and its connection to PDEs.

Eckhard Schlemm (2007–2008) First passage formulas in one dimension.

Michael Andrushchenko (2007) Central limit theorems for the GUE ensemble.

Efstratios Ioannidis (2004) Informal supervision. Towards an understanding of last encounter routing in ad hoc networks.

UNDERGRADUATE RESEARCH PROJECTS

Sasha Voitovich (2021) The directed geodesic.

Jiongji Guo (2020) Random polymers. Convergence of discrete stochastic Airy operators. (Visiting student)

Danny Cao (2012) Eigenvalues of graphs. (USRA project)

Danny Cao (2012) Eigenvalues of graphs. (Reading course)

Kai Yang (2012) Compressed Jewish sensing.

Kai Yang (2011) Erdős-Rényi random graphs.

Kai Yang (2010) Mixing of Markov chains.

Janet Li (2008) Continuum percolation models.

Mu Cai (2007) Stochastic analysis of the Brownian Carousel.

Alexander Chestopalov (2006) Random walks in random environments and flows.

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