Leonid Petrov. Curriculum Vitae

For a brief version see https://lpetrov.cc/research/petrovCVbrief.pdf

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Research areas

Probability, Mathematical Physics, Algebraic Combinatorics, Representation Theory.

Education

2007–2010: Ph.D. studies,
Institute for Information Transmission Problems (Moscow, Russia).
Advisor: Grigori Olshanski.
Thesis "Markov Chains on Partitions and Infinite–Dimensional Diffusion Processes".

2002–2007: Diploma with excellence,
Lomonosov Moscow State University (Russia),
Department of Mathematics and Mechanics, specialization in Probability.

1997–2002: Moscow High School No. 2.

Appointments

Since 2024: Professor
at Department of Mathematics, University of Virginia, Charlottesville, VA, USA.

2019–2024: Associate Professor
at Department of Mathematics, University of Virginia, Charlottesville, VA, USA.

2014–2019: Assistant Professor
at Department of Mathematics, University of Virginia, Charlottesville, VA, USA.

2011–2014: Research Instructor
at Department of Mathematics, Northeastern University, Boston, MA, USA.

2009–2011: Research associate
at Dobrushin Mathematics Laboratory, Institute for Information Transmission Problems, Moscow, Russia.

Visiting Appointments

Spring 2024: Senior Fellow
IPAM Program "Geometry, Statistical Mechanics, and Integrability"

Fall 2021: Research Professor
MSRI Program "Universality and Integrability in Random Matrix Theory and Interacting Particle Systems"

2017–2018: Visiting Assistant Professor
at Department of Mathematics, MIT, Cambridge, MA, USA.

Recent prizes/funding

2025–2030: Simons Foundation International Travel Support for Mathematicians SFI-MPS-TSM-00013561 "Combinatorial Structures at Large Scale through Integrability", $42,000.

2022–2026: NSF DMS grant 2153869 "Random Systems from Symmetric Functions and Vertex Models", $320,654.

2022–2024: 4-VA at UVA Collaborative Research Grant program "Randomness by algebraic structures", $30,000.

2020–2025: Simons Collaboration Grant for Mathematicians 709055 "Distributional symmetries in stochastic systems", $42,000.

2019: The 2020 Bernoulli prize for an outstanding survey article in probability (jointly with Alexei Borodin for the paper *Integrable probability: From representation theory to Macdonald processes*)

2018-2019: PI, NSF DMS conference grant 1839534 "Workshop on Representation Theory, Combinatorics, and Geometry", $15,000 (PI with co-PIs Jennifer Morse and Weiqiang Wang).

2017: Simons Foundation Collaboration Grant for Mathematicians. Recommended for funding but not awarded due to the receipt of the NSF DMS grant 1664617 (as per the rules of Collaboration Grants).

2017–2022: PI, NSF DMS grant 1664617 "FRG: Collaborative Research: Integrable Probability". Joint with PIs Jinho Baik (University of Michigan), Alexei Borodin, Vadim Gorin (MIT), and Ivan Corwin (Columbia University). Amount: $193,453 (UVA part).

2016–2017: Co-PI, NSF DMS conference grant 1663552 "2017 Seminar on Stochastic Processes", $46,020.00 (co-PI with PI Tai Melcher and another co-PI Christian Gromoll).

Publications

Preprints (∗), accepted, or published

[49] (∗) Alisa Knizel, Leonid Petrov. *Random Lozenge Waterfall: Dimensional Collapse of Gibbs Measures*, arXiv:2507.22011 [math.PR].

[48] (∗) Alexey Bufetov, Leonid Petrov, Panagiotis Zografos. *Domino Tilings of the Aztec Diamond in Random Environment and Schur Generating Functions*, arXiv:2507.08560 [math.PR].

[47] (∗) Leonid Petrov, Jeanne Scott. *Random Fibonacci Words via Clone Schur Functions*, arXiv:2412.21126 [math.PR].

[46] (∗) Greta Panova, Leonid Petrov. *Hook-length Formulas for Skew Shapes via Contour Integrals and Vertex Models*, arXiv:2409.17842 [math.CO].

[45] Alejandro H. Morales, Greta Panova, Leonid Petrov, Damir Yeliussizov. *Grothendieck Shenanigans: Permutons from Pipe Dreams via Integrable Probability*, Advances in Mathematics, 480 (2025), Part C, 110510.. FPSAC 2025 poster. arXiv:2407.21653 [math.PR].

[44] Amol Aggarwal, Matthew Nicoletti, Leonid Petrov. *Colored Interacting Particle Systems on the Ring: Stationary Measures from Yang–Baxter Equation*, Compositio Math. 161 (2025), no. 8, 1855–1922. arXiv:2309.11865 [math.PR].

[43] Svetlana Gavrilova, Leonid Petrov. *Tilted biorthogonal ensembles, Grothendieck random partitions, and determinantal tests*, Selecta Math. (2024), Volume 30, article 56. arXiv:2305.17747 [math.PR].

[42] Leonid Petrov, Mikhail Tikhonov. *Asymptotics of noncolliding q-exchangeable random walks*, J. Phys. A: Math. Theor. 56 365203. arXiv:2303.02380 [math.PR].

[41] Leonid Petrov, Axel Saenz. *Rewriting History in Integrable Stochastic Particle Systems*, Commun. Math. Phys., 405 (300), 2024. arXiv:2212.01643 [math.PR].

[40] Leonid Petrov. *Noncolliding Macdonald walks with an absorbing wall*, SIGMA 18 (2022), 079, 21 pages. arXiv:2204.09206 [math.PR].

[39] Matthew Nicoletti, Leonid Petrov. *Irreversible Markov Dynamics and Hydrodynamics for KPZ States in the Stochastic Six Vertex Model*, Electronic Journal of Probability 2023, Vol. 28, paper no. 138, 1-55.. arXiv:2201.12497 [math.PR].

[38] Amol Aggarwal, Alexei Borodin, Leonid Petrov, Michael Wheeler. *Free Fermion Six Vertex Model: Symmetric Functions and Random Domino Tilings*, Selecta Math., 29, article 36 (2023). arXiv:2109.06718 [math.PR].

[37] Leonid Petrov. *Refined Cauchy identity for spin Hall-Littlewood symmetric rational functions*, Journal of Combinatorial Theory Ser. A, vol. 184 (2021), 105519. arXiv:2007.10886 [math.CO].

[36] Matteo Mucciconi, Leonid Petrov. *Spin q-Whittaker polynomials and deformed quantum Toda*, Communications in Mathematical Physics, 389, pages 1331-1416 (2022). arXiv:2003.14260 [math.PR].

[35] Leonid Petrov, Mikhail Tikhonov. *Parameter symmetry in perturbed GUE corners process and reflected drifted Brownian motions*, Journal of Statistical Physics, 181 (2020), 1996-2010. arXiv:1912.08671 [math.PR].

[34] Leonid Petrov. *Parameter permutation symmetry in particle systems and random polymers*, SIGMA 17 (2021), 021, 34 pages. arXiv:1912.06067 [math.PR].

[33] Leonid Petrov. *PushTASEP in inhomogeneous space*, Electronic Journal of Probability, vol. 25 (2020), paper no. 114. arXiv:1910.08994 [math.PR].

[32] Leonid Petrov, Axel Saenz. *Mapping TASEP back in time*, Probability Theory and Related Fields, 182, pages 481-530 (2022). arXiv:1907.09155 [math.PR].

[31] Alexey Bufetov, Matteo Mucciconi, Leonid Petrov. *Yang-Baxter random fields and stochastic vertex models*, Advances in Mathematics 388 (2021), 107865. arXiv:1905.06815 [math.PR].

[30] Ivan Corwin, Konstantin Matveev, Leonid Petrov. *The q-Hahn PushTASEP*, International Mathematics Research Notices (2019), rnz106. arXiv:1811.06475 [math.PR].

[29] Alisa Knizel, Leonid Petrov, Axel Saenz. *Generalizations of TASEP in discrete and continuous inhomogeneous space*, Communications in Mathematical Physics 372 (2019), no. 3, pp 797-864. arXiv:1808.09855 [math.PR].

[28] Christian Gromoll, Mark Meckes, Leonid Petrov. *Quenched Central Limit Theorem in a Corner Growth Setting*, Electronic Communications in Probability (2018), Vol. 23, paper no. 101, 1-12. arXiv:1804.04222 [math.PR].

[27] Alexey Bufetov, Leonid Petrov. *Yang-Baxter field for spin Hall-Littlewood symmetric functions*, Forum of Mathematics Sigma 7 (2019), e39. arXiv:1712.04584 [math.PR].

[26] Michael Damron, Leonid Petrov, David Sivakoff. *Coarsening model on Zd with biased zero-energy flips and an exponential large deviation bound for ASEP*, Communications in Mathematical Physics 362 (2018), no. 1, 185-217. arXiv:1708.05806 [math.PR].

[25] Sevak Mkrtchyan, Leonid Petrov. *GUE corners limit of q-distributed lozenge tilings*, Electronic Journal of Probability, Volume 22 (2017), paper no. 101, 24 pp. arXiv:1703.07503 [math.PR].

[24] Alexei Borodin, Leonid Petrov. *Inhomogeneous exponential jump model*, Probability Theory and Related Fields 172 (2018), 323-385. arXiv:1703.03857 [math.PR].

[23] Daniel Orr, Leonid Petrov. *Stochastic higher spin six vertex model and q-TASEPs*, Advances in Mathematics 317 (2017), 473-525. arXiv:1610.10080 [math.PR].

[22] Vadim Gorin, Leonid Petrov. *Universality of local statistics for noncolliding random walks*, Annals of Probability (2019), Vol. 47, No. 5, 2686-2753. arXiv:1608.03243 [math.PR].

[21] Alexei Borodin, Leonid Petrov. *Lectures on Integrable probability: Stochastic vertex models and symmetric functions*, Lecture Notes of the Les Houches Summer School, Volume 104, July 2015. arXiv:1605.01349 [math.PR].

[20] Alexei Borodin, Leonid Petrov. *Higher spin six vertex model and symmetric rational functions*, Selecta Mathematica 24 (2018), no. 2, 751-874. arXiv:1601.05770 [math.PR].

[19] Konstantin Matveev, Leonid Petrov. *q-randomized Robinson-Schensted-Knuth correspondences and random polymers*, Annales de l'Institut Henri Poincare D: Combinatorics, Physics and their Interactions 4 (2017), no. 1, 1-123. arXiv:1504.00666 [math.PR].

[18] Ivan Corwin, Leonid Petrov. *Stochastic higher spin vertex models on the line*, Communications in Mathematical Physics 343 (2016), no. 2, 651-700. arXiv:1502.07374 [math.PR].

[17] Alexei Borodin, Ivan Corwin, Leonid Petrov, Tomohiro Sasamoto. *Spectral theory for interacting particle systems solvable by coordinate Bethe ansatz*, Communications in Mathematical Physics 339 (2015), no. 3, 1167-1245. arXiv:1407.8534 [math-ph].

[16] Alexey Bufetov, Leonid Petrov. *Law of Large Numbers for Infinite Random Matrices over a Finite Field*, Selecta Mathematica 21 (2015), no. 4, 1271-1338. arXiv:1402.1772 [math.PR].

[15] Alexei Borodin, Leonid Petrov. *Integrable probability: From representation theory to Macdonald processes*, Probability Surveys, 11 (2014), 1-58. arXiv:1310.8007 [math-ph].

[14] Alexei Borodin, Ivan Corwin, Leonid Petrov, Tomohiro Sasamoto. *Spectral theory for the q-Boson particle system*, Compositio Mathematica, 151 (2015), no. 1, 1-67. arXiv:1308.3475 [math-ph].

[13] Ivan Corwin, Leonid Petrov. *The q-PushASEP: A New Integrable Model for Traffic in 1+1 Dimension*, Journal of Statistical Physics, 160 (2015), no. 4, 1005-1026. arXiv:1308.3124 [math.PR].

[12] Alexei Borodin, Leonid Petrov. *Nearest neighbor Markov dynamics on Macdonald processes*, Advances in Mathematics, 300 (2016), 71-155. arXiv:1305.5501 [math.PR].

[11] Leonid Petrov. *The Boundary of the Gelfand-Tsetlin Graph: New Proof of Borodin-Olshanski's Formula, and its q-analogue*, Moscow Mathematical Journal, 14 (2014) no. 1, 121-160. arXiv:1208.3443 [math.CO].

[10] Leonid Petrov. *Asymptotics of uniformly random lozenge tilings of polygons. Gaussian free field*, Annals of Probability, 43 (2014), no. 1, 1-43. arXiv:1206.5123 [math.PR].

[9] Leonid Petrov. *Asymptotics of Random Lozenge Tilings via Gelfand-Tsetlin Schemes*, Probability Theory and Related Fields, 160 (2014), no. 3, 429-487. arXiv:1202.3901 [math.PR].

[8] Leonid Petrov. *sl(2) Operators and Markov Processes on Branching Graphs*, Journal of Algebraic Combinatorics 38 (2013), no. 3, 663-720. arXiv:1111.3399 [math.CO].

[7] Leonid Petrov. *On Measures on Partitions Arising in Harmonic Analysis for Linear and Projective Characters of the Infinite Symmetric Group*, Proceedings of the international conference "50 years of IITP". arXiv:1107.0676 [math.CO].

[6] Leonid Petrov. *Pfaffian Stochastic Dynamics of Strict Partitions*, Electronic Journal of Probability 16 (2011), 2246-2295. arXiv:1011.3329 [math.PR].

[5] Leonid Petrov. *Random Strict Partitions and Determinantal Point Processes*, Electronic Communications in Probability 15 (2010), 162-175. arXiv:1002.2714 [math.PR].

[4] Leonid Petrov. *Random Walks on Strict Partitions*, Journal of Mathematical Sciences 168 (2010), no. 3, 437-463. arXiv:0904.1823 [math.PR].

[3] Leonid Petrov. *Limit Behavior of Certain Random Walks on Strict Partitions*, Russian Mathematical Surveys 64 (2009), no. 6, 1139-1141.

[2] Leonid Petrov. *A Two-parameter Family of Infinite-dimensional Diffusions in the Kingman Simplex*, Functional Analysis and Its Applications 43 (2009), no. 4, 279-296. arXiv:0708.1930 [math.PR].

[1] Leonid Petrov. *Asymptotic Behavior of a Certain Collection of Particles on a Line Under Synchronization*, Proceedings of the XXVIII Conference of Young Scientists of Department of Mechanics and Mathematics of the Lomonosov Moscow State University (2006), 152-156, in Russian.

Errata

[18] Ivan Corwin, Leonid Petrov. *Correction to "Stochastic higher spin vertex models on the line"*, Commun. Math. Phys. 371, 353–355 (2019). (PDF link). 3 pages.

[17] Alexei Borodin, Ivan Corwin, Leonid Petrov, Tomohiro Sasamoto. *Correction to "Spectral theory for interacting particle systems solvable by coordinate Bethe ansatz"*, Commun. Math. Phys. 370, 1069–1072 (2019). (PDF link). 4 pages.

Unpublished lecture notes

[7] Random matrices, graduate topics course at University of Virginia, Spring 2025. Course webpage with lecture notes. (PDF link), 3.4MB, 232 pages.

[6] Asymptotic Representation Theory, graduate topics course at University of Virginia, Fall 2022. Course webpage with lecture notes. (PDF link), 102 MB.

[5] Particle systems, graduate topics course at University of Virginia, Spring 2021. Lecture notes in Obsidian format on github. (PDF link), 312 MB.

[4] Random matrices, graduate topics course at University of Virginia, Fall 2019. Course webpage with lecture notes. (PDF link), 38 MB.

[3] Random matrices, graduate topics course at University of Virginia, Spring 2016. Lecture notes on github. (PDF link), 700 KB.

[2] Topics in Probability, graduate topics course at Northeastern University, Fall 2012. Lecture notes at AMS Open Notes. (PDF link), 1.7 MB.

[1] Course notes "Asymptotic representation theory", taught by G. Olshanski at the Independent University of Moscow, Fall 2009 and Spring 2010 (in Russian) . Webpage with notes. (PDF link), 2.6 MB.

Other works

[1] Sihan Li, Andrew Mecca, Jeewoo Kim, Giusy Caprara, Elizabeth Wagner, Ting-Ting Du, Leonid Petrov, Wenhao Xu, Runjia Cui, Ivan Rebustini, Bechara Kachar, Anthony Peng, and Jung-Bum Shin, *Myosin-VIIa is expressed in multiple isoforms and essential for tensioning the hair cell mechanotransduction complex*. Nature Communications, 11, Article number: 2066 (2020). https://www.nature.com/articles/s41467-020-15936-z. 15 pages.

Students and postdocs

1. Yizhen Li, UVA Ph.D. student 2024-29
2. Mikhail Tikhonov, UVA Ph.D. student 2020-26
3. Daniel Slonim, UVA postdoc 2022-24 (now Tenure Track at Hillsdale College)
4. Svetlana Gavrilova, HSE bachelor thesis, 2020-21 (now Ph.D. student at MIT)
5. Axel Saenz, UVA postdoc 2016-19 (now Tenure Track at Oregon State)

Organization and service

2026: Coin Flippers 2026: The ICM Satellite Edition, University of Delaware, Newark, DE, July 21-22, 2026.

2026: AMS Special Session on Random Tilings, Random Permutations, and Particle Systems, Joint Mathematics Meetings, Washington, DC, January 4-7, 2026.

2025: Section at the Mathematical Congress of the Americas 2025, University of Miami, Miami, FL, July 21-25, 2025.

2025: AIM workshop "All roads to the KPZ universality class", AIM, Caltech, Pasadena, CA, March 17-21, 2025.

2024: Blue Ridge Probability Day at University of Virginia, October 4, 2024.

2024: Virginia Integrable Probability Summer School 2024, July 8-19, 2024.

2024: Workshop "Randomness and Lie-Theoretic Structures at University of Virginia", March 4-5, 2024.

2024: AMS-AWM Special Session on Solvable Lattice Models and their Applications Associated with the Noether Lecture at the Joint Mathematics Meetings 2024, San Francisco, CA, January 3-6, 2024.

2023: SouthEastern Probability Conference - II at University of Virginia, August 14-15, Charlottesville, VA, 2023.

2014-current: University of Virginia Probability Seminar

2020, 2022: (postponed then canceled due to COVID) Special Session on Integrable Probability at the 2020 AMS Spring Southeastern Sectional Meeting at University of Virginia, March 13-15, 2020; March 11-13, 2022.

2021: Program "Integrability and combinatorics at finite temperature" at MATRIX Institute, Australia (virtual), June 7-18, 2021.

2020: Online conference on Statistical Mechanics, Integrable Systems and Probability, April 27 - May 1, 2020.

2020: (postponed due to COVID) Program "Integrability and combinatorics at finite temperature" at MATRIX Institute, Australia, June 1-19, 2020.

2019: Virginia Integrable Probability Summer School 2019, May 17 - June 8, 2019.

2018-19: Reading seminar on Integrable Probability.

2018: Workshop on Representation Theory, Combinatorics, and Geometry at University of Virginia, October 19-21, 2018.

2018: Conference "Integrable Probability Boston 2018 (IntProb Boston)" at MIT, May 14-18, 2018.

2017+: Developer of the website and forum for the FRG "Integrable Probability".

2017+: Developer of the University of Virginia Math Department website.

2017: Conference "Seminar on Stochastic Processes 2017" at University of Virginia, March 8-11, 2017.

2016-17: Reading seminar on Integrable Probability.

2014-17: Undergraduate Math Club at the University of Virginia.

Talks and conferences

Seminar talks

2026, March	Stanford University, Stanford, CA (Probability seminar) University of California, Berkeley (Probability seminar)
2025, October	The Ohio State University, Columbus, OH (Probability seminar)
2025, June	Carnegie Mellon University Seminar on AI in Math Teaching (online)
2025, March	Rutgers University, Piscataway, NJ Symmetric Functions and Probability Seminar
2025, February	University of Illinois at Urbana-Champaign, Colloquium and Integrability and Representation Theory Seminar (2 talks)
2024, March	University of Southern California, Combinatorics Seminar, Los Angeles, CA
2024, February	CUNY Probability Seminar, New York, NY Columbia Integrable Probability Working Group, New York, NY
2024, January	MPI Leipzig Oberseminar Analysis-Probability, Germany, QMUL Probability and Applications Seminar, UK
2023, November	Duke Probability Seminar, Durham, NC Physically Inspired Math at UNC, Chapel Hill, NC
2023, October	MIT Integrable Probability Working Group, Cambridge, MA
2023, September	Colloquium at IUPUI, Indianapolis, IN
2023, June	Statistical Mechanics Seminar at University of Warwick
2023, January	Probability and Statistical Physics Seminar at University of Chicago
2022, November	Solvable Lattice Models Seminar, Stanford (online)
2022, October	Probability Seminar at University of Colorado, Boulder
2022, September	Probability Seminar at University of Delaware (online)

2021, November	Oregon State University, Colloquium Talk at MSRI Program on random matrices
2021, October	University of California, Davis University of California, Los Angeles
2021, September	Solvable Lattice Models Seminar, Stanford (online)
2021, February	Solvable Lattice Models Seminar, Stanford (online) Combinatorics and Probability Seminar at The Ohio State University (online)
2020, December	Representation Theory and Mathematical Physics Seminar at KSU (online)
2020, October	Columbia University Integrable Probability Seminar (online) UVa Math Circle (online)
2020, May	Institute for Information Transmission Problems (Dobrushin Lab Seminar, online)
2020, April	Russian Integrable Probability Seminar (online)
2020, February	University of Connecticut (colloquium and probability seminar)
2019, November	University of Virginia (Department of Physics)
2019, September	Tulane University
2019, May	Virginia Tech
2019, February	Kansas State University University of Kansas (colloquium)
2019, January	University of Minnesota
2018, December	Rutgers University
2018, November	University of Utah
2018, October	University of Warwick
2018, May	MIT
2018, March	MIT
2018, February	University of California, Davis

	University of California, San Diego University of California, Los Angeles
2018, January	Skoltech Center for Advances Studies (Moscow, Russia)
2017, November	Columbia University Northeastern University
2017, October	Brandeis University
2017, August	Institute for Information Transmission Problems (Dobrushin Lab Seminar)
2017, January	Case Western Reserve University
2016, May	MIT
2016, March	University of Rochester
2016, March	University of California, Davis
2016, January	University of Wisconsin, Madison
2015, December	MSU (Meeting of the Moscow Mathematical Society)
2015, October	Penn/Temple Probability Seminar
2015, August	Institute for Information Transmission Problems (Dobrushin Lab Seminar)
2015, May	Imperial College London
2015, March	University of Michigan
2014, November	Virginia Tech
2014, September	Duke University
2014, February	MIT
2014, January	Purdue University University of British Columbia
2013, December	University of Colorado, Boulder Penn State University Worcester Polytechnic Institute

	University of Virginia Carnegie Mellon University
2013, November	University of Minnesota Penn State University
2013, October	University of Southern California University of California, Los Angeles Rutgers University
2013, June	Institute for Information Transmission Problems (Dobrushin Lab Seminar)
2013, March	Independent University of Moscow (General Seminar "Globus")
2013, February	Arizona State University
2012, October	Princeton University Columbia University
2012, September	MIT
2012, August	Institute for Information Transmission Problems (Yakov Sinai's Seminar)
2012, March	New York University
2011, October	Brown University University of Michigan
2011, May	Alfréd Rényi Institute of Mathematics Budapest University of Technology and Economics
2008, October	St. Petersburg Department of Steklov Mathematical Institute

Conference talks

68. Simons Symposium on Solvable Lattice Models and Interacting Particle Systems, August 2025, Krün, Germany.

67. Mathematical Congress of the Americas 2025, University of Miami, July 2025, Miami, FL. *Special session talk.*

66. $(IP)^3$ InterPlay between Integrable Probability and Interacting Particle systems, July 2025, Angers, France.

65. CMSA (Harvard) Program on Classical, quantum, and probabilistic integrable systems, May 2025, Cambridge, MA.

64. AMS Spring Eastern Sectional Meeting, April 2025, Hartford, CT. *Invited special session talk.*

63. Conference "Representation Theory and Probability" dedicated to Grigori Olshanski, October 2024, Leipzig, Germany.

62. Culminating workshop of the IPAM Program "Geometry, Statistical Mechanics, and Integrability", June 2024, Lake Arrowhead, CA.

61. Workshop "Vertex Models: Algebraic and Probabilistic Aspects of Universality" at IPAM Program "Geometry, Statistical Mechanics, and Integrability", May 2024, Los Angeles, CA.

60. Workshop "Integrability and Algebraic Combinatorics" at IPAM Program "Geometry, Statistical Mechanics, and Integrability", April 2024, Los Angeles, CA.

59. IPAM Program "Geometry, Statistical Mechanics, and Integrability" Opening Day and Tutorials mini-course, March 2024, Los Angeles, CA.

58. Panel on Best practices for AI integration in research and teaching at Mid-Atlantic Algebra, Geometry, and Combinatorics (MAAGC) Workshop, Virginia Commonwealth University, December 2023, Richmond, VA.

57. The Asymmetric Simple Exclusion Process Conference, Simons Center for Geometry and Physics, October 2023, Stony Brook, NY.

56. The 43rd Conference on Stochastic Processes and their Applications (SPA2023), July 2023, Lisbon, Portugal. *Contributed session talk.*

55. Mini-course at the 2023 Workshop in Analysis and Probability at Texas A&M University, Graduate concentration week (Summer school). July 2023, College Station, TX.

54. Simons Symposium on Solvable Lattice Models and Interacting Particle Systems, June 2023, Krün, Germany.

53. 16th International Symposium on Orthogonal Polynomials, Special Functions and Applications (*mini-symposium talk*). June 2022. Online.

52. Sergei Kerov memorial conference "New perspectives in asymptotic representation theory", August 2021. Online, organized by CRM Montreal.

51. Particle Systems and Partial Differential Equations (PSPDE) IX, July 2021. Online and Braga, Portugal.

50. 10th World Congress in Probability and Statistics (online), July 2021. Invited session and prize session talk.

49. Stochastic Spatial Processes at OSU (online), March 2021. Organized by Elliot Paquette and David Sivakoff.

48. New Connections in Integrable Systems (online), September 2020. Organized by Valentin Buciumas and Ole Warnaar.

47. Central and invariant measures and applications (online), August 2020. Organized by St. Petersburg Department of V. A. Steklov Mathematical Institute; Euler International Institute.

46. CMI-HIMR Integrable Probability Summer School (online), August 2020. Organized by Clay Mathematics Institute, the Heilbronn Institute for Mathematical Research, the Mathematical Institute at University of Oxford, and the NSF Integrable Probability Focused Research Grant.

45. Workshop on Asymptotic Algebraic Combinatorics at IPAM (UCLA), February 2020, Los Angeles, CA.

44. Joint Mathematics Meetings 2020, January 2020, Denver, CO. *Invited special session talk.*

43. BIRS Workshop "Dimers, Ising Model, and their Interactions", November 2019, Banff, Canada.

42. AMS Fall Eastern Sectional Meeting at Binghamton University, October 2019, Binghamton, NY. *Two special session talks.*

41. Workshop New Trends in Integrable Systems, September 2019, Osaka, Japan.

40. Workshop on Classical and Quantum Integrable Systems (CQIS-2019), July 2019, St. Petersburg, Russia.

39. Summer School "Contemporary Mathematics" (mini-course in Russian for high school and beginning undergraduate students), July 2019, Dubna, Russia.

38. BIRS Workshop "Asymptotic Algebraic Combinatorics", March 2019, Banff, Canada.

37. Conference "New Frontiers in Representation Theory" dedicated to the 70th birthday of G.I.Olshanski, SkolTech Center for Advances Studies, January 2019, Moscow, Russia.

36. AMS Fall Eastern Sectional Meeting at University of Delaware, September 2018, Newark, DE. *Special session talk.*

35. The 40th Conference on Stochastic Processes and their Applications (SPA2018), June 2018, Gothenburg, Sweden. *Invited session talk.*

34. Integrable Probability Boston 2018 (IntProb Boston) Conference, MIT, May 2018, Cambridge, MA, USA.

33. 2018 Southeastern Probability Conference, Duke University, May 2018, Durham, NC, USA.

32. "Non-equilibrium systems and special functions" program at MATRIX Institute, January 2018, Creswick, Victoria, Australia.

31. Meeting of the FRG "Integrable Probability", Columbia University, October 2017, New York, NY, USA.

30. Chern-Simons Workshop "Integrability across mathematics and physics" at University of California, Berkeley, September 2017, Berkeley, CA, USA.

29. International Workshop on Classical and Quantum Integrable Systems (CQIS-2017), July 2017, Moscow, Russia.

28. The 39th Conference on Stochastic Processes and their Applications (SPA2017), July 2017, Moscow, Russia. *Invited session talk.*

27. PCMI Summer Session 2017 "Random Matrices", June–July 2017, Park City, UT, USA.

26. Conference "Qualitative Methods in KPZ Universality", CIRM, April 2017, Marseille, France.

25. Workshop on Asymptotic Representation Theory, Henri Poincaré Institute, February 2017, Paris, France.

24. Clifford Lectures "Random Matrices, Combinatorics and Tiling Problems" (main speaker: Pierre van Moerbeke) at Tulane University, November 2016, New Orleans, LA, USA.

23. Central Spring AMS Sectional Meeting at North Dakota State University, April 2016, Fargo, ND, USA. *Special session talk*.

22. Workshop "Six-vertex model, dimers, shapes, and all that" at the Simons Center for Geometry and Physics, March 2016, Stony Brook, NY, USA.

21. Program "New Approaches to Non-equilibrium and Random Systems: KPZ Integrability, Universality, Applications and Experiments" at the Kavli Institute for Theoretical Physics, March 2016, Santa Barbara, CA, USA.

20. Workshop on Classical and Quantum Integrable Systems (CQIS-2015), Institute for High Energy Physics, July 2015, Protvino, Russia. Tutorial lecture *"Integrable probability and Bethe ansatz"*.

19. "Random Interfaces and Integrable Probability" workshop (part of "Statistical Mechanics, Integrability and Combinatorics" program), Galileo Galilei Institute for Theoretical Physics, June 2015, Florence, Italy.

18. "Random Polymers and Algebraic Combinatorics" workshop, Mathematical Institute of the University of Oxford, May 2015, Oxford, UK.

17. "Limit shapes" workshop, ICERM, April 2015, Providence, RI, USA.

16. Central Spring AMS Sectional Meeting at Michigan State University, March 2015, East Lansing, MI, USA. *Special session talk*.

15. Columbia–Princeton Probability Day, March 2015, Princeton, NJ, USA. I was one of the two junior speakers at a one-day seminar series, with a talk *"Eigenfunctions of stochastic integrable particle systems"*.

14. Inhomogeneous Random Systems conference, Henri Poincaré Institute, January 2015, Paris, France.

13. International Congress of Mathematicians, August 2014, Seoul, South Korea. *Contributed talk*.

12. Workshop "From Macdonald Processes to Hecke Algebras and Quantum Integrable Systems" at Henri Poincaré Institute, May 2014, Paris, France.

11. Workshop "Random Matrices and Jacobi Operators" at Mittag-Leffler Institute, May 2014, Stockholm, Sweden.

10. Columbia / Courant Joint Probability Seminar Series on Kardar-Parisi-Zhang Universality. I was one of the three speakers of the seminar series, with a talk *"Markov Dynamics on Macdonald Processes"*. October 2013, New York, NY, USA.

9. Cornell Probability Summer School, July 2013, Ithaca, NY, USA. *Tutorial sessions for the lecture course of A. Borodin, and a short talk*.

8. Random Tilings Workshop at the Simons Center for Geometry and Physics, February 2013, Stony Brook, NY, USA.

7. MSRI "Random Spatial Processes" program, April 2012, Berkeley, CA, USA.

6. Interacting Particle Systems, Growth Models, and Random Matrices Workshop at the University of Warwick, March 2012, Warwick, UK.

5. International conference "50 years of IITP", July 2011, Moscow, Russia.

4. EURANDOM Workshop YEP VIII 2011 "Stochastic Models for Population Dynamics", March 2011, Eindhoven, Netherlands.

3. Mathematics – XXI century. PDMI 70th anniversary, September 2010, St. Petersburg, Russia.

2. PIMS/UBC School in Probability, June 2009, UBC, Vancouver, Canada.

1. Summer School "Large N Limits", August 2008, Bitche, France.

Research programs and focused collaborations

9. Simons Math Summer Workshop "Algebraic methods in probability", July 5-18, 2026 (2 weeks).
8. AIM SQuaRE "Combinatorics and Integrability of Interacting Particle Systems", American Institute of Mathematics (August 2024, October 2025).
7. AIM SQuaRE "Young tableau asymptotics", American Institute of Mathematics (October 2019, January 2021 (virtual), February 2023, April 2024).
6. IPAM Program "Geometry, Statistical Mechanics, and Integrability", Los Angeles, CA, March-June 2024.
5. MSRI Program "Universality and Integrability in Random Matrix Theory and Interacting Particle Systems", Berkeley, CA, August 16 - December 17, 2021.
4. "Non-equilibrium systems and special functions" program at MATRIX Institute, January 2018, Creswick, Victoria, Australia (2 weeks).
3. PCMI Summer Session 2017 "Random Matrices", June–July 2017, Park City, UT, USA (3 weeks).
2. Program "New Approaches to Non-equilibrium and Random Systems: KPZ Integrability, Universality, Applications and Experiments" at the Kavli Institute for Theoretical Physics (University of California, Santa Barbara), February–March 2016, Santa Barbara, CA, USA (3 weeks).
1. Program "Statistical Mechanics, Integrability and Combinatorics", Galileo Galilei Institute for Theoretical Physics, June 2015, Florence, Italy (1 month).

Teaching

Fall 2025: EGMT 1520 — Building Truth from Scratch (first-year seminar).

Spring 2025: MATH 8380 — Random matrices (graduate). Course webpage with lecture notes.

Fall 2024: MATH 2310 — Calculus III, 2 sections.

Fall 2023: MATH 3100 — Introduction to Probability, 2 sections.

Spring 2023: MATH 3340 — Complex Variables with Applications.

Fall 2022: MATH 3100 — Introduction to Probability. MATH 8852 — Asymptotic Representation Theory (graduate topics course). Course webpage with lecture notes.

Spring 2022: MATH 3100 — Introduction to Probability, 3 sections.

Spring 2021: MATH 7370 Probability Theory II. Particle systems (graduate topics course). Online. Lecture notes in Obsidian format. Integrable particle systems (graduate topics course). Online; in Russian; at Independent University of Moscow.

Fall 2020: MATH 3100 — Introduction to Probability, 2 sections. Online.

Spring 2020: MATH 3340 — Complex variables. Partially online. MATH 7310 — Real Analysis and Linear Spaces (graduate). Partially online.

Fall 2019: MATH 8380 — Random matrices (graduate). Course webpage with lecture notes.

Spring 2019: MATH 7310 — Real Analysis and Linear Spaces (graduate).

Fall 2018: MATH 3100 — Introduction to Probability, 2 sections.

Spring 2017: MATH 3100 — Introduction to Probability.

Fall 2016: MATH 2310 — Calculus III, 2 sections.

Summer 2016: Participation in the **Course Design Institute** at the University of Virginia (a week-long training on designing courses focusing on student learning), June 2016, Charlottesville, VA, USA.

Spring 2016: MATH 8380 — Random matrices. Course webpage on github.

Fall 2015: MATH 3100 — Introduction to Probability.

Spring 2015: MATH 5110 — Introduction to Stochastic Processes.

Fall 2014: From 2014, at University of Virginia.
MATH 3100 — Introduction to Probability.

Spring 2014: Northeastern University.
MATH 7241 — Probability 1 (graduate).

Fall 2013: Northeastern University.
MATH 3081 — Probability and Statistics, 2 sections.

Spring 2013: Northeastern University.
MATH 4581 — Statistics and Stochastic Processes.

Fall 2012: Northeastern University.
MATH 1342 — Calculus II for Sci&Eng (honors section). Part of a teaching experiment at Department of Mathematics with "inverted" sections: the instructor assigns watching video-lectures accompanying the textbook for homework, and spends class-time going over problems and clarifying the material.

MATH 7382 — Topics in Probability (graduate): an expository introductory-level graduate course on solvable probabilistic models, including tools of algebraic combinatorics and representation theory. Lecture notes at AMS Open Notes.

Spring 2012: Northeastern University.
MATH 3081 — Probability and Statistics, 2 sections.

Fall 2011: Northeastern University.
MATH 1342 — Calculus II for Sci&Eng.

Spring 2011: "Math in Moscow" programme in English for international students at the Independent University of Moscow. A course in Combinatorics.

2007—2008: Moscow High School No. 17. Teacher of mathematics.

Editing and reviewing

- Member of the editorial boards at "**Mathematical Physics, Analysis and Geometry**", "**Combinatorial Theory**", and "**Electronic Journal/Communications of Probability**".
- Program committee member for FPSAC (Formal Power Series and Algebraic Combinatorics), 2017, 2021, and 2024.
- I regularly referee scholarly journal papers submitted to numerous journals, including Ann. Prob., Adv. Math., Adv. Appl. Math., Comm. Math. Phys., Intern. J. Math., Arkiv för Mat., SIGMA, J. Alg. Comb., Comm. Pure Appl. Math., Intern. Math. Res. Notices, J. Appl. Probab., J. Comb. Theory A, Symp. Th. Aspects of Comp. Sci., J. of Stat. Physics, Electron. Comm. Probab.
- I am a regular reviewer for the Mathematical Reviews database.
- I reviewed grant proposals and served on panels for several funding agencies.