Leonid Petrov. Brief CV

Full version is at `https://lpetrov.cc/research/petrovCV.pdf`

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Research areas

Probability, Mathematical Physics, Algebraic Combinatorics, Representation Theory.

Education

2010: Ph.D., Institute for Information Transmission Problems.

2007: Diploma, Lomonosov Moscow State University, Department of Mathematics and Mechanics (Chair of Probability).

Employment

Since 2019: Associate Professor, Department of Mathematics, University of Virginia.

2014–2019: Assistant Professor, Department of Mathematics, University of Virginia.

2017–2018: Visiting Assistant Professor, Department of Mathematics, MIT.

2011–2014: Research Instructor, Department of Mathematics, Northeastern University.

2009–2011: Research associate, Dobrushin Mathematics Laboratory, Institute for Information Transmission Problems, Moscow, Russia (on leave since 2011).

Scholarships/prizes/funding

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", amount $15,000.

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).

2017–2020: 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".

2015: Prize of the Moscow Mathematical Society.

2014–2015: EDF Fellowship of the University of Virginia.

2014: AMS/NSF Travel Grant Award for ICM 2014.

2011–2013: RFBR–CNRS grant 11-01-93105 "Representation theory and noncommutative geometry".

2010–2012: RFBR–CNRS grant 10-01-93114 "New models of Markov processes on point configurations. Applications to stochastic queueing networks".

2010: Dynasty foundation fellowship for young scientists.

2010: Silver prize of The Fourteenth Möbius Contest.

2009: Alexander Kuznetsov/Independent University of Moscow graduate student scholarship.

2005, 2006: V. Potatin federal scholarship for academic excellence, leadership and creativity.

Publications (∗ — preprints)

[34] (∗) *Parameter permutation symmetry in particle systems and random polymers*, arXiv:1912.06067 [math.PR].

[33] (∗) *PushTASEP in inhomogeneous space*, arXiv:1910.08994 [math.PR]. Submitted.

[32] (∗) (with Axel Saenz) *Mapping TASEP back in time*, arXiv:1907.09155 [math.PR]. Submitted.

[31] (with Alexey Bufetov and Matteo Mucciconi) *Yang-Baxter random fields and stochastic vertex models*, arXiv:1905.06815 [math.PR]. Advances in Mathematics, to appear.

[30] (with Ivan Corwin and Konstantin Matveev) *The q-Hahn PushTASEP*, arXiv:1811.06475 [math.PR]. Intern. Math. Research Notices, to appear.

[29] (with Alisa Knizel and Axel Saenz) *Generalizations of TASEP in discrete and continuous inhomogeneous space*, Commun. Math. Phys. 372 (2019), no. 3, pp 797–864. `https://link.springer.com/article/10.1007%2Fs00220-019-03495-4`. arXiv:1808.09855 [math.PR].

[28] (with Christian Gromoll, Mark Meckes) *Quenched Central Limit Theorem in a Corner Growth Setting*, Electron. Comm. Probab. 23 (2018) paper no. 101, 12pp, arXiv:1804.04222 [math.PR].

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

[26] (with Michael Damron and David Sivakoff) *Coarsening model on $\mathbb{Z}^d$ with biased zero-energy flips and an exponential large deviation bound for ASEP*, Comm. Math. Phys. 362 (2018) no. 1, 185–217, arXiv:1708.05806 [math.PR].

[25] (with Sevak Mkrtchyan) *GUE corners limit of q-distributed lozenge tilings*, Electron. J. Probab. 22 (2017), paper no. 101, 24 pp, arXiv:1703.07503 [math.PR].

[24] (with Alexei Borodin) *Inhomogeneous exponential jump model*, Probab. Th. Rel. Fields 172 (2018) 323-385, arXiv:1703.03857 [math.PR].

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

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

[21] (with Alexei Borodin) *Lectures on Integrable probability: Stochastic vertex models and symmetric functions* (2016), arXiv:1605.01349 [math.PR]. Lecture Notes of the Les Houches Summer School, Volume 104, July 2015.

[20] (with Alexei Borodin) *Higher spin six vertex model and symmetric rational functions* (2016), Selecta Math. 24 (2018), no. 2, 751–874, arXiv:1601.05770 [math.PR].

[19] (with Konstantin Matveev) *q-randomized Robinson–Schensted–Knuth correspondences and random polymers* (2015), Annales de l'Institut Henri Poincaré D: Combinatorics, Physics and their Interactions 4 (2017), no. 1, 1-123, arXiv:1504.00666 [math.PR].

[18] (with Ivan Corwin) *Stochastic higher spin vertex models on the line*, Comm. Math. Phys. 343 (2016), no. 2, 651–700, DOI: 10.1007/s00220-015-2479-5, arXiv:1502.07374 [math.PR].

[17] (with Alexei Borodin, Ivan Corwin, and Tomohiro Sasamoto) *Spectral theory for interacting particle systems solvable by coordinate Bethe ansatz*, Comm. Math. Phys. 339 (2015), no. 3, 1167–1245, DOI: 10.1007/s00220-015-2424-7, arXiv:1407.8534 [math-ph].

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

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

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

[13] (with Ivan Corwin) *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] (with Alexei Borodin) *Nearest neighbor Markov dynamics on Macdonald processes*, Advances in Mathematics, 300 (2016), 71–155. Special volume honoring Andrei Zelevinsky. arXiv:1305.5501 [math.PR].

[11] *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] *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] *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] $\mathfrak{sl}(2)$ *Operators and Markov Processes on Branching Graphs*, Journal of Algebraic Combinatorics 38 (2013), no. 3, 663–720, arXiv:1111.3399 [math.CO].

[7] *On Measures on Partitions Arising in Harmonic Analysis for Linear and Projective Characters of the Infinite Symmetric Group* (2011), Proceedings of the international conference "50 years of IITP", arXiv:1107.0676 [math.CO].

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

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

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

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

[2] *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] *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.

Organization and service

2020: Special Session on Integrable Probability at the 2020 AMS Spring Southeastern Sectional Meeting at University of Virginia, March 13-15, 2020, `http://www.ams.org/meetings/sectional/2273_program.html`

2019: Virginia Integrable Probability Summer School, May 27 - June 8, 2019, `http://vipss.int-prob.org/`

2018-19: Reading seminar on Integrable Probability, `https://lpetrov.cc/reading-2019/`

2018: Workshop on Representation Theory, Combinatorics, and Geometry at UVA, October 19-21, 2018, `http://math.virginia.edu/ims/workshop-fall-2018/`

2018: Conference "Integrable Probability Boston 2018 (IntProb Boston)" at MIT, May 14-18, 2018, `http://frg.int-prob.org/conference2018/`

2017+: Developer of the website and forum for the FRG "Integrable Probability", `http://frg.int-prob.org/`

2017+: Developer of the University of Virginia Math Department website, `http://math.virginia.edu/`

2017: Conference "Seminar on Stochastic Processes 2017" at UVA, March 8-11, 2017, `http://faculty.virginia.edu/ssp17/`

2016-17: Reading seminar on Integrable Probability, `https://lpetrov.cc/2016/12/reading-seminar/`

2014-17: University of Virginia Probability Seminar, `http://math.virginia.edu/seminars/probability/`

2014-17: Undergraduate Math Club at the University of Virginia, `http://math.virginia.edu/seminars/mathclub/`

Teaching

University of Virginia (since 2014)

Introduction to Probability; Introduction to Stochastic Processes; Calculus III; Random matrices (graduate topics course); Real Analysis and Linear Spaces (graduate).

Northeastern University (2011–2014)

Calculus II for Sci&Eng; Probability and Statitics; Statistics and Stochastic Processes; Probability 1 (graduate course); Topics in Probability (graduate topics course).

Informatic skills

LaTeX, `Mathematica`, `git`, `Python`, `html/jekyll` and web design, `UNIX`, Computer experimentation, Probabilistic visualization, Cloud computing.