

Leonid Petrov. Publication List

Preprints (*), accepted, or published works

- [50] (*) Natasha Blitvić, Leonid Petrov. *Colored Interlacing Triangles and Genocchi Medians*, [arXiv:2602.04390](#) [[math.CO](#)]. ([PDF link](#)). 21 pages.
- [49] (*) Alisa Knizel, Leonid Petrov. *Random Lozenge Waterfall: Dimensional Collapse of Gibbs Measures*, [arXiv:2507.22011](#) [[math.PR](#)]. ([PDF link](#)). 65 pages.
- [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](#)]. ([PDF link](#)). 33 pages.
- [47] Leonid Petrov, Jeanne Scott. *Random Fibonacci Words via Clone Schur Functions*, **Forum Math. Sigma** **14** (2026), e15. [arXiv:2412.21126](#) [[math.PR](#)]. ([PDF link](#)). 92 pages.
- [46] Greta Panova, Leonid Petrov. *Hook-length Formulas for Skew Shapes via Contour Integrals and Vertex Models*, **to appear in Annales de l'Institut Henri Poincaré D**. [arXiv:2409.17842](#) [[math.CO](#)]. ([PDF link](#)). 33 pages.
- [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](#)]. ([PDF link](#)). 50 pages.
- [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](#)]. ([PDF link](#)). 73 pages.
- [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](#)]. ([PDF link](#)). 47 pages.
- [42] Leonid Petrov, Mikhail Tikhonov. *Asymptotics of noncolliding q -exchangeable random walks*, **J. Phys. A: Math. Theor.** **56** 365203. [arXiv:2303.02380](#) [[math.PR](#)]. ([PDF link](#)). 34 pages.
- [41] Leonid Petrov, Axel Saenz. *Rewriting History in Integrable Stochastic Particle Systems*, **Commun. Math. Phys.**, **405** (300), 2024. [arXiv:2212.01643](#) [[math.PR](#)]. ([PDF link](#)). 76 pages.
- [40] Leonid Petrov. *Noncolliding Macdonald walks with an absorbing wall*, **SIGMA** **18** (2022), 079, 21 pages. [arXiv:2204.09206](#) [[math.PR](#)]. ([PDF link](#)). 21 pages.

- [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 \[math.PR\]](#). (PDF link). 59 pages.
- [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 \[math.PR\]](#). (PDF link). 138 pages.
- [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 \[math.CO\]](#). (PDF link). 40 pages.
- [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 \[math.PR\]](#). (PDF link). 86 pages.
- [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 \[math.PR\]](#). (PDF link). 15 pages.
- [34] Leonid Petrov. *Parameter permutation symmetry in particle systems and random polymers*, **SIGMA** **17** (2021), 021, 34 pages. [arXiv:1912.06067 \[math.PR\]](#). (PDF link). 34 pages.
- [33] Leonid Petrov. *PushTASEP in inhomogeneous space*, **Electronic Journal of Probability**, vol. 25 (2020), paper no. 114. [arXiv:1910.08994 \[math.PR\]](#). (PDF link). 26 pages.
- [32] Leonid Petrov, Axel Saenz. *Mapping TASEP back in time*, **Probability Theory and Related Fields**, **182**, pages 481-530 (2022). [arXiv:1907.09155 \[math.PR\]](#). (PDF link). 50 pages.
- [31] Alexey Bufetov, Matteo Mucciconi, Leonid Petrov. *Yang-Baxter random fields and stochastic vertex models*, **Advances in Mathematics** **388** (2021), 107865. [arXiv:1905.06815 \[math.PR\]](#). (PDF link). 94 pages.
- [30] Ivan Corwin, Konstantin Matveev, Leonid Petrov. *The q -Hahn PushTASEP*, **International Mathematics Research Notices** (2019), rnz106. [arXiv:1811.06475 \[math.PR\]](#). (PDF link). 40 pages.
- [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 \[math.PR\]](#). (PDF link). 68 pages.
- [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 \[math.PR\]](#). (PDF link). 12 pages.
- [27] Alexey Bufetov, Leonid Petrov. *Yang-Baxter field for spin Hall-Littlewood symmetric functions*, **Forum of Mathematics Sigma** **7** (2019), e39. [arXiv:1712.04584 \[math.PR\]](#). (PDF link). 70 pages.

- [26] Michael Damron, Leonid Petrov, David Sivakoff. *Coarsening model on \mathbb{Z}^d 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]. (PDF link). 33 pages.
- [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]. (PDF link). 24 pages.
- [24] Alexei Borodin, Leonid Petrov. *Inhomogeneous exponential jump model*, **Probability Theory and Related Fields** 172 (2018), 323-385. [arXiv:1703.03857](#) [math.PR]. (PDF link). 63 pages.
- [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]. (PDF link). 53 pages.
- [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]. (PDF link). 68 pages.
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- [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]. (PDF link). 50 pages.
- [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]. (PDF link). 79 pages.
- [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]. (PDF link). 68 pages.

- [15] Alexei Borodin, Leonid Petrov. *Integrable probability: From representation theory to Macdonald processes*, **Probability Surveys**, **11** (2014), **1-58**. [arXiv:1310.8007 \[math-ph\]](#). (PDF link). 58 pages.
- [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 \[math-ph\]](#). (PDF link). 67 pages.
- [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 \[math.PR\]](#). (PDF link). 22 pages.
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- [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 \[math.CO\]](#). (PDF link). 36 pages.
- [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 \[math.PR\]](#). (PDF link). 43 pages.
- [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 \[math.PR\]](#). (PDF link). 59 pages.
- [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 \[math.CO\]](#). (PDF link). 58 pages.
- [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 \[math.CO\]](#). (PDF link). 7 pages.
- [6] Leonid Petrov. *Pfaffian Stochastic Dynamics of Strict Partitions*, **Electronic Journal of Probability** **16** (2011), **2246-2295**. [arXiv:1011.3329 \[math.PR\]](#). (PDF link). 50 pages.
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- [4] Leonid Petrov. *Random Walks on Strict Partitions*, **Journal of Mathematical Sciences** **168** (2010), **no. 3, 437-463**. [arXiv:0904.1823 \[math.PR\]](#). (PDF link). 27 pages.
- [3] Leonid Petrov. *Limit Behavior of Certain Random Walks on Strict Partitions*, **Russian Mathematical Surveys** **64** (2009), **no. 6, 1139-1141**. (PDF link). 3 pages.

- [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 \[math.PR\]](#). (PDF link). 18 pages.
- [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. (PDF link). 4 pages.

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)**. ([PDF link](#)). 15 pages.