

# Leonid Petrov. Publication List

## Preprints (\*), accepted, or published works

- [1] (\*) Matthew Nicoletti, Leonid Petrov. *Irreversible Markov Dynamics and Hydrodynamics for KPZ States in the Stochastic Six Vertex Model*, [arXiv:2201.?????](#) [[math.PR](#)]. (PDF [link](#))
- [2] (\*) Amol Aggarwal, Alexei Borodin, Leonid Petrov, Michael Wheeler. *Free Fermion Six Vertex Model: Symmetric Functions and Random Domino Tilings*, [arXiv:2109.06718](#) [[math.PR](#)]. (PDF [link](#))
- [3] 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](#))
- [4] Matteo Mucciconi, Leonid Petrov. *Spin  $q$ -Whittaker polynomials and deformed quantum Toda*, Communications in Mathematical Physics, to appear. [arXiv:2003.14260](#) [[math.PR](#)]. (PDF [link](#))
- [5] 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](#))
- [6] Leonid Petrov. *Parameter permutation symmetry in particle systems and random polymers*, SIGMA 17 (2021), 021, 34 pages. [arXiv:1912.06067](#) [[math.PR](#)]. (PDF [link](#))
- [7] Leonid Petrov. *PushTASEP in inhomogeneous space*, Electronic Journal of Probability, vol. 25 (2020), paper no. 114.. [arXiv:1910.08994](#) [[math.PR](#)]. (PDF [link](#))
- [8] Leonid Petrov, Axel Saenz. *Mapping TASEP back in time*, Probability Theory and Related Fields, online first (2021).. [arXiv:1907.09155](#) [[math.PR](#)]. (PDF [link](#))
- [9] 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](#))
- [10] Ivan Corwin, Konstantin Matveev, Leonid Petrov. *The  $q$ -Hahn PushTASEP*, Intern. Math. Research Notices (2019), rnz106. [arXiv:1811.06475](#) [[math.PR](#)]. (PDF [link](#))
- [11] 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](#))

- [12] 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)
- [13] 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)
- [14] 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)
- [15] 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)
- [16] Alexei Borodin, Leonid Petrov. *Inhomogeneous exponential jump model*, Probability Theory and Related Fields 172 (2018), 323–385. [arXiv:1703.03857](#) [math.PR]. (PDF link)
- [17] 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)
- [18] Vadim Gorin, Leonid Petrov. *Universality of local statistics for noncolliding random walks*, Ann. Probab. (2019), Vol. 47, No. 5, 2686–2753.. [arXiv:1608.03243](#) [math.PR]. (PDF link)
- [19] 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]. (PDF link)
- [20] Alexei Borodin, Leonid Petrov. *Higher spin six vertex model and symmetric rational functions*, Selecta Math. 24 (2018), no. 2, 751–874. [arXiv:1601.05770](#) [math.PR]. (PDF link)
- [21] Konstantin Matveev, Leonid Petrov.  *$q$ -randomized Robinson-Schensted-Knuth correspondences and random polymers*, Annales de l’Institut Henri Poincaré D: Combinatorics, Physics and their Interactions 4 (2017), no. 1, 1–123. [arXiv:1504.00666](#) [math.PR]. (PDF link)
- [22] Ivan Corwin, Leonid Petrov. *Stochastic higher spin vertex models on the line*, Comm. Math. Phys. 343 (2016), no. 2, 651–700. [arXiv:1502.07374](#) [math.PR]. (PDF link)
- [23] Alexei Borodin, Ivan Corwin, Leonid Petrov, Tomohiro Sasamoto. *Spectral theory for interacting particle systems solvable by coordinate Bethe ansatz*, Comm. Math. Phys. 339 (2015), no. 3, 1167–1245. [arXiv:1407.8534](#) [math-ph]. (PDF link)

- [24] Alexey Bufetov, Leonid Petrov. *Law of Large Numbers for Infinite Random Matrices over a Finite Field*, Selecta Math. 21 (2015), no. 4, 1271–1338. [arXiv:1402.1772 \[math.PR\]](#). (PDF link)
- [25] 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)
- [26] 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)
- [27] 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)
- [28] Alexei Borodin, Leonid Petrov. *Nearest neighbor Markov dynamics on Macdonald processes*, Advances in Mathematics, 300 (2016), 71–155. [arXiv:1305.5501 \[math.PR\]](#). (PDF link)
- [29] 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)
- [30] 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)
- [31] 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)
- [32] 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)
- [33] 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)
- [34] Leonid Petrov. *Pfaffian Stochastic Dynamics of Strict Partitions*, Electronic Journal of Probability 16 (2011), 2246–2295. [arXiv:1011.3329 \[math.PR\]](#). (PDF link)
- [35] Leonid Petrov. *Random Strict Partitions and Determinantal Point Processes*, Electronic Communications in Probability 15 (2010), 162–175. [arXiv:1002.2714 \[math.PR\]](#). (PDF link)
- [36] Leonid Petrov. *Random Walks on Strict Partitions*, Journal of Mathematical Sciences 168 (2010), no. 3, 437–463. [arXiv:0904.1823 \[math.PR\]](#). (PDF link)

- [37] Leonid Petrov. *Limit Behavior of Certain Random Walks on Strict Partitions*, Russian Mathematical Surveys 64 (2009), no. 6, 1139-1141. ([PDF link](#))
- [38] 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](#))
- [39] 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](#))

## 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>.