Leonid Petrov. Curriculum Vitae

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Research interests

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", defended June 21, 2010.

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

1997–2002: Moscow High School No. 2.

Employment

since 2014: 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.

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

Publications

[17] (with Alexei Borodin, Ivan Corwin, and Tomohiro Sasamoto) *Spectral theory for interacting particle systems solvable by coordinate Bethe ansatz* (2014), arXiv:1407.8534 [math-ph]. Submitted.

[16] (with Alexey Bufetov) *Law of Large Numbers for Infinite Random Matrices over a Finite Field* (2014), arXiv:1402.1772 [math.PR]. To appear in Selecta Math.

[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* (2013), arXiv:1308.3475 [math-ph]. To appear in Comp. Math.

[13] (with Ivan Corwin) *The q-PushASEP: A New Integrable Model for Traffic in 1+1 Dimension* (2013), arXiv:1308.3124 [math.PR]. Submitted.

[12] (with Alexei Borodin) *Nearest neighbor Markov dynamics on Macdonald processes* (2013), arXiv:1305.5501 [math.PR]. To appear in Advances in Mathematics.

[11] *The Boundary of the Gelfand-Tsetlin Graph: New Proof of Borodin-Olshanski's Formula, and its q-analogue* (2012), 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* (2012), Annals of Probability 43 (2014), no. 1, 1–43, arXiv:1206.5123 [math.PR].

[9] *Asymptotics of Random Lozenge Tilings via Gelfand-Tsetlin Schemes* (2012), 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.

Scholarships/prizes/funding

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-winner of The Fourteenth Moebius Contest.

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

2005, 2006: Federal stipendial program for excellent students of the Welfare Fund of V.Potanin.

Talks

Conference talks

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.

Seminar talks

2014, November	Virginia Tech
2014, September	Duke University
2014, February	MIT
2014, January	Purdue University University of British Columbia (2 talks)
2013, December	University of Colorado, Boulder Penn State University Worcester Polytechnic Institute University of Virginia Carnegie Mellon University (2 talks)
2013, November	University of Minnesota — Twin Cities (2 talks) Penn State University (2 talks)
2013, October	University of Southern California University of California, Los Angeles Rutgers University
2013, March	Independent University of Moscow
2013, February	Arizona State University
2012, October	Princeton University Columbia University
2012, September	MIT

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

In addition to that, I have presented results of my research in a number of talks given at various research seminars in Moscow, Russia (at Moscow State University, Institute for Information Transmission Problems, Independent University of Moscow, etc.) in 2005–2012, at Northeastern University, Boston, MA, USA in 2011–2014, and at University of Virginia, Charlottesville, VA, USA since 2014.

Teaching

Spring 2015: University of Virginia.
MATH 5110 — Introduction to Stochastic Processes.

Fall 2014: 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 Statitics, 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 novel Department of Mathematics' teaching experiment 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.

Spring 2012: Northeastern University.
MATH 3081 — Probability and Statitics, 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.

Other

I co-organize the Probability Seminar and the Undergraduate Math Club at the University of Virginia.
Prepared lecture notes for the courses:

1. A number of undergraduate mathematical courses at the Moscow State University, including advanced probability courses by A. Bulinski (2003–2006).
2. "Statistical Mechanics and the Renormalisation Group"taught by D. Brydges at the PIMS-UBC Summer School 2009. Available at `http://www.math.ubc.ca/~db5d/SummerSchool09/lectures-db/smrg.pdf`.
3. "Asymptotic representation theory", taught by G. Olshanski at the Independent University of Moscow, Fall 2009 and Spring 2010 (in Russian). Available at `http://ium.mccme.ru/postscript/f09/representation.zip`, `http://ium.mccme.ru/postscript/s10/representation2.pdf`.
4. "Topics in probability" course I taught at the Northeastern University, Fall 2012. Available at my homepage: `http://faculty.virginia.edu/petrov/7382F12/LectureNotes.pdf`.
5. "Integrable probability: From representation theory to Macdonald processes" taught by A. Borodin (with tutorial sessions given by myself) at the Cornell Probability Summer School 2013. See publication [15].

I regularly referee scholarly journal papers submitted to journals such as Comm. Math. Phys., Ann. Prob., Jour. Alg. Combinatorics, Comm. Pure Appl. Math., Intern. Math. Res. Notices, Jour. Appl. Probab., Jour. Comb. Theory A, Jour. of Stat. Physics, Electron. Comm. Probab., and Symposium on Theoretical Aspects of Computer Science. Also I am a regular reviewer for the Mathematical Reviews database.

For several years maintained web databases of mathematical seminar announcements at the Institute for Information Transmission Problems (Moscow, Russia).

My profile on MathOverflow: `http://www.mathoverflow.net/users/979/leonid-petrov`

Informatic skills : LaTeX, Mathematica, html, git, SVN, UNIX, C/C++, Qt

Personal

Date of birth: November 5, 1985

Languages: English (fluent), Russian (native)
Citizenship: Russia
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