

Curriculum Vitae

SEVAK MKRTCHYAN

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Employment

2014 – present Assistant Professor, **University of Rochester**
2012 – 2014 Postdoctoral associate, **Carnegie Mellon University**
2012 Spring Postdoctoral Fellow, **Mathematical Sciences Research Institute (MSRI)**
2009 – 2012 G.C. Evans Instructor of Mathematics, **Rice University**

Long term visits

2015 Summer Galileo Galilei Institute - Statistical mechanics, integrability and combinatorics
2015 Spring ICERM - Phase Transitions and Emergent Properties

Education

2004 – 2009 **University of California, Berkeley**, Ph.D. in Mathematics
 Advisor: Nicolai Reshetikhin
2001 – 2004 **University of Pittsburgh**
2000 – 2001 **Moscow Institute of Physics and Technology**

Research interests

Random tilings, determinantal point processes and random matrix theory, asymptotic representation theory and asymptotic combinatorics.

Publications and preprints

1. *GUE corners limit of q -distributed lozenge tilings* (joint with L. Petrov), in preparation.
2. *Non-differentiable limit shapes in lozenge tilings*, in preparation.
3. *Symmetrizing Tableaux and the 5th case of the Foulkes Conjecture* (joint with M. Cheung, C. Ikenmeyer), **Journal of Symbolic Computation**, Accepted. [arXiv:1509.03944](https://arxiv.org/abs/1509.03944)
4. *Plane partitions with two-periodic weights*, **Letters in Mathematical Physics**, 104(9):1053-1078, 2014.
5. *Entropy of Schur–Weyl measures*, **Annales de l’Institut Henri Poincaré**, 50(2):678-713, 2014.
6. *Entropy and the Shannon-McMillan-Breiman theorem for beta random matrix ensembles* (joint with A. Bufetov, M. Shcherbina and A. Soshnikov), **Journal of Statistical Physics**, 152(1):1-14, 2013.
7. *Asymptotics of the maximal and the typical dimensions of isotypic components of tensor representations of the symmetric group*, **European Journal of Combinatorics**, special issue “Groups, graphs, and languages.” 33(7):1631-1652, 2012.
8. *Scaling limits of random skew plane partitions with arbitrarily sloped back walls*, **Communications in Mathematical Physics**, 305(3):711–739, 2011.
9. *Random skew plane partitions with a piecewise periodic back wall* (joint with C. Boutillier, N. Reshetikhin and P. Tingley), **Annales Henri Poincaré**, 13(2):271–296, 2012.
10. *Scaling limits of random skew plane partitions*, Ph.D. Thesis, University of California, Berkeley, 2009.

Honors and awards

- 2016 – 2021 Simons Foundation Grant # 422190
 2014 Emil Artin Junior Prize in Mathematics
 2013 – Spring MRC collaboration grant, AMS/NSF
 2012 Mathematical Sciences Research Institute Postdoctoral Fellowship
 2009 Outstanding Graduate Student Instructor Award, University of California, Berkeley
 2001 – 2004 Chancellor’s Scholarship, University of Pittsburgh
 2004 University Scholar, University of Pittsburgh
 2002 – 2004 Mathematics Department Culver Prize, University of Pittsburgh in 2004, 2003, 2002
 2002 – 2003 Second Prize (2003) and Honorable Mention (2002), William Lowell Putnam Competition
 1998 – 2000 Silver and Bronze Medals at the International Mathematical Olympiad in 2000, 1999, 1998

Invited lectures and presentations

Conferences

- 2017 Jan. *Large random structures in two dimensions*, Institut Henri Poincaré, Paris, France
 2015 Nov. *AMS Sectional Meeting* (Rutgers University, New Brunswick, NJ), Special Session on Probability, Combinatorics and Statistical Mechanics
 2015 Jul. *Workshop on Group Representations in Dynamical Systems and Geometry*, Marseille, France
 2015 Apr. *Finger Lakes Probability Seminar*
 2015 Apr. *Limit shapes Workshop*, ICERM
 2013 Feb. *Random Tilings Workshop*, Simons Center, Stony Brook
 2012 Jun. *Geometry and Representation Theory Related to Geometric Complexity and Other Variants of P v. NP.*, AMS MRC program
 2012 Jan. *Joint Mathematical Meetings of the AMS* (Boston), Special Session on Uniformly and Partially Hyperbolic Dynamical Systems
 2011 Sep. *Workshop on Representation Theory, Geometry and Combinatorics*, University of California, Berkeley
 2011 Aug. *The Sixth International Conference on Differential and Functional Differential Equations*, Steklov Mathematical Institute of the Russian Academy of Sciences
 2011 Jul. *International Conference on Dynamical Systems, Nonlinear Analysis and their Applications*, Institute of Mathematics, National Academy of Sciences of Armenia
 2011 Apr. *Workshop on Dynamical Systems and Related Topics*, University of Maryland
 2011 Mar. *Group Actions on Measure Spaces*, Texas A&M University
 2011 Mar. *Texas Ergodic Theory Workshop*, University of Houston
 2008 Sep. *Workshop on Random Tilings, Random Partitions and Stochastic Growth Processes*, Centre de recherches mathématiques (Montreal, Canada)

Seminars and colloquia

- 2017 Mar. *Probability Seminar*, University of Virginia
 2015 Dec. *Probability Seminar*, University of Pennsylvania
 2015 Oct. *Probability Seminar*, Cornell University
 2015 Jun. *Statistical mechanics, integrability and combinatorics seminar*, Galileo Galilei Institute, Florence, Italy
 2015 Apr. *Colloquium*, University of Massachusetts, Boston
 2015 Mar. *Simulation sessions at ICERM*
 2014 Nov. *Algebra and Number Theory Seminar*, Pennsylvania State University
 2014 Nov. *Probability Seminar*, University of Delaware
 2014 Apr. *Colloquium*, University of Alabama Birmingham

- 2014 Feb. *Colloquium*, City College - City University of New York
 2014 Feb. *Colloquium*, University of Rochester
 2014 Feb. *Colloquium*, DePaul University
 2014 Feb. *Colloquium*, University of Mississippi
 2013 Oct. *Probability and Computational Finance Seminar*, Carnegie Mellon University
 2013 Oct. *Algebra, Geometry and Combinatorics Seminar*, University of Pittsburgh
 2013 Mar. *Geometry Seminar*, Texas A&M University
 2013 Jan. *Colloquium*, University of Pittsburgh
 2012 Oct. *Probability and Computational Finance Seminar*, Carnegie Mellon University
 2012 Oct. *Algebra, Geometry and Combinatorics Seminar*, University of Pittsburgh (2 lectures)
 2012 Sep. *Algorithms, Combinatorics and Optimization Seminar*, Carnegie Mellon University
 2012 Apr. *FRAGMENT Seminar*, Colorado State University and University of Colorado, Boulder
 2012 Mar. *Colloquium*, University of Mississippi
 2012 Mar. *Probability Seminar*, University of Rochester
 2012 Feb. *Postdoc seminar*, MSRI
 2012 Feb. *sRTGC seminar*, University of California, Berkeley
 2012 Feb. *Mathematical Physics and Probability Seminar*, University of California, Davis
 2011 Nov. *Geometry-Analysis Seminar*, Rice University
 2011 Feb. *Geometry-Analysis Seminar*, Rice University
 2010 Oct. *Groups and Dynamics Seminar*, Texas A&M University
 2009 Oct. *Laboratoire de Probabilités*, Paris VI
 2009 Sep. *Geometry-Analysis Seminar*, Rice University

Review activities

Moscow mathematical journal, Letters in mathematical physics, FPSAC, Cambridge University Press, AMS MathSciNet

Departmental service

University of Rochester

- 2015 – 2017 Hiring Committee (member)
 2014 – 2017 Probability seminar organizer
 2016 Spring Grader for Rochester Math Olympiad

Rice University

- 2011 Fall Departmental Colloquium Committee (member)
 2010 Fall Putnam Seminar organizer (joint with Michael Boshernitzan)
 2009 – 2010 Current Math Seminar organizer (joint with Prudence Heck)

Supervising activities

- 2016 Summer Supervised Shuchen Wu, an undergraduate student at UR, in an independence study of Information Theory.
 2010 Summer Designed and organized a new 8-week VIGRE Summer Research Experience for Undergraduates. Rice University. At the beginning of the REU taught the required background material and later provided daily supervision and guidance for the students' research activities.
Topic: Exact Sampling of Skew Young Diagrams
Students: Georgene Jalbuena, Joshua Cory
Results: The results are published online at <http://cnx.org/content/m34949/latest/>.

Teaching experience

University of Rochester

- 2017 Spring Topics in Advanced Probability - Random matrix theory (Math 506)
- 2016 Fall Introduction to Financial Math (Honors) - (Math 210H)
- 2016 Fall Introduction to Probability - (Math 201)
- 2016 Spring Linear Algebra - (Math 235)
- 2015 Fall Introduction to Probability - (Math 201)
- 2015 Fall Topics in Advanced Probability - Statistical mechanics: the dimer model (Math 506)
- 2014 Fall Introduction to Probability - (Math 201)
- 2014 Fall Graduate Probability - (Math 503)

Carnegie Mellon University

- 2013 Fall Algebraic Structures - (Math 21-373)
- 2013 Fall Linear Algebra I - (Math 21-341)
- 2012 Fall Probability - (Math 21-325)
- 2012 Fall Linear Algebra I - (Math 21-341)

Rice University

- 2011 Fall Introduction to Random Matrix Theory - (Math 521) - Graduate topics course offered for the first time at Rice University
- 2011 Fall Ordinary Differential Equations and Linear Algebra - (Math 211)
- 2011 Spring Calculus 2 - (Math 102)
- 2010 Fall Lie Theory - (Math 371) - Offered for the first time at Rice University. Designed and taught the course.
- 2010 Fall Ordinary Differential Equations and Linear Algebra - (Math 211)
- 2010 Spring Calculus 2 - (Math 102)
- 2009 Fall Introduction to Partial Differential Equations - (Math 381)
- 2009 Fall Calculus 2 - (Math 102)

University of California, Berkeley

- 2008 Fall Analytical Geometry and Calculus - (Math 16A)
- 2008 Summer Linear Algebra and Differential Equations - (Math 54)
- 2006 Fall Linear Algebra and Differential Equations - (Math 54)
- 2006 Summer Linear Algebra and Differential Equations - (Math 54)
- 2005 Fall Calculus 2 - (Math 1B)
- 2005 Spring Linear Algebra and Differential Equations - (Math 54)
- 2004 Fall Calculus 2 - (Math 1B)

Exam committees

- 2014 Oct. Vyacheslav Kiria-Kaiserberg, Oral exam

Outreach

- 2014 Apr. Undergraduate Colloquium, Carnegie Mellon University
- 2013 Jul. Summer Undergraduate Applied Mathematics Institute REU, Carnegie Mellon University
- 2012 Nov. Math Club, Carnegie Mellon University
- 2012 Oct. Undergraduate Colloquium, Carnegie Mellon University
- 2012 Apr. Undergraduate Colloquium, University of Northern Colorado
- 2012 Jan. A lecture at the Marin Math Circle
- 2011 Jul. A mini-course (with Alexander Bufetov) at a summer school organized by the Russian Academy of Sciences
Topic: Orthogonal Polynomials