Marianna Russkikh

Researcher in Mathematics

University of Notre Dame
Department of Mathematics
255 Hurley Bldg
Notre Dame, IN 46556
✉ mrusskik@nd.edu

Employment history

2023 – current	University of Notre Dame, Assistant Professor
Sep 2022 – Aug 2023	Caltech, Scott Russell Johnson Instructor in Mathematics *postdoc mentors : Tom Hutchcroft and Nikolai Makarov*
Sep 2019 – Aug 2022	MIT, Postdoctoral Fellow in Mathematics *postdoc mentor : Alexei Borodin*
Oct 2014 – Aug 2019	Université de Genève, teaching assistant, Ph.D. student in Mathematics *advisors : Stanislav Smirnov and Dmitry Chelkak*
Sep 2012 – Aug 2014	member of Chebyshev Laboratory, St. Petersburg State University *advisor : Stanislav Smirnov*

Education

Oct 2014 – May 20, 2019	**Université de Genève**, *Ph.D. in Mathematics,* *thesis : "Conformal Invariance and Universality of the Dimer Model",* *advisors : Stanislav Smirnov and Dmitry Chelkak*

Articles

Published articles :

- Dimers in piecewise Temperleyan domains, *Commun. Math. Phys. (2018) 359 : 189, 10.1007/s00220-018-3113-0*

- Dominos in hedgehog domains, *Ann. Inst. Henri Poincare Comb. Phys. Interact. Electronically published on December 10, 2020, doi : 10.4171/AIHPD/96*

- joint with R. Kenyon, W. Lam, S. Ramassamy, "Dimers and circle patterns", *Annales scientifiques de l'Ecole Normale Superieure, 55(3) :865–903, jul 2022.*

- joint with A. Ahn and R. Van Peski "Lozenge tilings and the Gaussian Free Field on a cylinder", *Commun. Math. Phys. 396, 1221–1275 (2022). https ://doi.org/10.1007/s00220-022-04491-x*

- joint with D. Chelkak, B. Laslier "Dimer model and holomorphic functions on t-embeddings of planar graphs", *Proceedings of the London Math. Society 126, 1656–1739 (2023). https ://doi.org/10.1112/plms.12516*

- joint with T. Berggren, M. Nicoletti "Perfect t-embeddings of uniformly weighted Aztec diamonds and tower graphs", *International Mathematics Research Notices, 2023, rnad299, https ://doi.org/10.1093/imrn/rnad299*

Preprints :

- joint with D. Chelkak, B. Laslier "Bipartite dimer model : perfect t-embeddings and Lorentz-minimal surfaces", *arXiv:2109.06272*

- joint with T. Berggren, M. Nicoletti "Perfect t-embeddings and lozenge tilings", *arXiv:2408.05441* (submitted to Advances in Mathematics)

Awards

2024 – 2029	Travel Support for Mathematicians from the Simons Foundation
2021 – 2022	SNF postdoc mobility fellowship
2019 – 2021	SNF early postdoc mobility fellowship

Teaching experience

2023 – current	Assistant Professor at University of Notre Dame :
-	SP25-MATH-20550-02 Calculus III
-	SP25-MATH-60850-01 Probability
-	FA24-MATH-20550-02 Calculus III
-	FA23-MATH-30530-01 Introduction to Probability
-	FA23-MATH-60370-01 Basic Complex Analysis I
2022 – 2023	Instructor at Caltech :
-	Ma/ACM/IDS 140A (WI 2022-23) Probability
-	Ma 108C (SP 2022-23) Complex Analysis
Sep – Dec 2020	Teaching assistant (exercises) at MIT : 18.112 Functions of a Complex Variable
Aug 2018	Mini-school for talented children, University of Geneva
Oct 2014 – Jun 2019	Teaching assistant at the University of Geneva :
-	Méthodes élémentaire
-	Analyse III : Lebesgue measure (3rd year class)
-	Advanced course on Brownian Motion and Stochastic Calculus (master class)
-	Mathématiques générale : program R, mathematics and statistics for students from other faculties (1st year class)
-	Introduction à l'informatique : program Matlab (1st year class)
-	Laboratoire de programmation mathématique (informaticiens)
-	Corrections Analyse (1st year class)
Feb – May 2014	Course at the Phys-Math Club of Steklov Institute of Mathematics at St. Petersburg and the Chebyshev Laboratory (with D. Chelkak and M. Basok) :
-	Random Walk in Domino World (master class, lectures and exercises)

Lectures and mini-courses

Sep 2025	(Upcoming) SFB Summer School: Discrete Random Structures (mini-course), Hotel Dermuth, Portschach am Worthersee, Austria
Jul 2024	Virginia Integrable Probability Summer School (mini-course), University of Virginia, Charlottesville, VA
Mar 2024	Geometry, Statistical Mechanics, and Integrability Tutorials (2 lectures, with M. Lis), IPAM, CA
Oct 2020	Junior Integrable Probability Seminar (2 lectures), online via Zoom, Columbia University and Tokyo Institute of Technology

Other Services to the Community

Organisation of seminars

2022–2023	LA Probability Forum, Caltech, UCLA, and USC
2021–2022	MIT Probability Seminar
2020–2022	Integrable Probability Seminar, MIT

Organisation of conferences

Mar 2024	Workshop: Statistical Mechanics and Discrete Geometry, IPAM, Los Angeles, US, member of the Organizing Committee
Nov 2020	Mini-workshop 2047b "Dimers, Ising and Spanning Trees beyond the Critical Isoradial Case", Oberwolfach, Germany, member of the Organizing Committee
Feb 2020	Workshop on Mathematical Physics, Les Diablerets, Switzerland, member of the Organizing Committee
Feb 2019	Workshop on Statistical Mechanics, Les Diablerets, Switzerland, member of the Organizing Committee
Feb 2018	Conference Topics in Geometric Function Theory, Les Diablerets, Switzerland, member of the Organizing Committee

Organisation of semester programs

Spring 2024	Semester program "Geometry, statistical mechanics, integrability" at IPAM, member of the Organizing Committee

Talks

Conference talks :

Aug 2025	(Upcoming) 28th Brazilian School of Probability, Belo Horizonte, Minas Gerais, Brazil
Jul 2025	(Upcoming) Mathematical Congress of the Americas, Miami, Florida
Jun 2025	(Upcoming) Perfectly matched perspectives on statistical mechanics, combinatorics and geometry, CIRM, Marseille, France
Feb 2025	Workshop: Circle packings, minimal surfaces, and discrete differential geometry, ICERM, Providence
Jun 2024	Conference: Statistical and Dynamical Combinatorics, MIT, MA
May 2024	Workshop: Vertex Models: Algebraic and Probabilistic Aspects of Universality, IPAM, CA
Mar 2024	Riemann-Hilbert problems, Toeplitz matrices, and applications, AIM, Pasadena, CA
Feb 2024	LA Probability Forum, Caltech/UCLA/USC
Jun 2023	Great Lakes Mathematical Physics Meeting, Oberlin College, Ohio
May 2023	Southern California Probability Symposium, UCSD, San Diego, California
May 2022	LA Probability Forum, Caltech and UCLA
Oct 2021	Integrable structures in random matrix theory and beyond, MSRI, Berkeley, California
Jun 2021	Integrability and Combinatorics at Finite Temperature, online via Zoom
Aug 2020	Dimers in Combinatorics and Cluster Algebras, University of Michigan, United States
Feb 2020	Workshop on Mathematical Physics, Les Diablerets, Switzerland
Jun 2019	Virginia Integrable Probability Summer School, University of Virginia, United States

Jun 2017	Random Geometry Workshop, Cambridge, United Kingdom

Seminar talks :

Feb 2025	IRT Colloquium, University of Illinois Urbana-Champaign
Jan 2025	Probability Seminar, Columbia University
Nov 2024	Probability Seminar, Princeton
Feb 2024	Probability and Statistical Physics Seminar, University of Chicago, IL
Jan 2024	Probability seminar, UC Berkeley, California
May 2023	joint Caltech/UCLA/USC Analysis Seminar, California
Apr 2023	CMX Student/Postdoc Seminar, Caltech, Pasadena
Nov 2022	Combinatorics Seminar, USC, California
Nov 2022	Probability Seminar, IAS, Princeton
Nov 2021	Random Matrix Theory seminar at KTH, online via Zoom
Nov 2021	UCLA Combinatorics Seminar, online via Zoom
Nov 2021	Hamiltonian Systems Seminar, online via Zoom, University of Arizona and University of Toronto
Oct 2021	Probability Seminar, University of Washington, Seattle
Oct 2021	Probability and Statistical Physics Seminar, University of Chicago, Chicago, US
Sep 2021	Probability seminar, University of Wisconsin, Madison, US
Jun 2021	ABP Probability seminar, online via Zoom
Nov 2020	Northeastern Probability Seminar, online via Zoom, Columbia University, US
May 2020	MIT Probability seminar, online via Zoom, MIT, Cambridge, United States
Feb 2020	Mathematical Physics seminar, University of Geneva, Geneva, Switzerland
Feb 2020	Probability seminar, ETH, Zurich, Switzerland
Oct 2019	Vienna Probability Seminar, IST, Vienna, Austria
May 2019	Mathematical Physics Seminar, University of Helsinki, Helsinki, Finland
Apr 2019	Probability seminar, ENS Lyon, France
Mar 2019	Probability seminar, EPFL, Lausanne, Switzerland
Nov 2018	Stochastic seminar, University of Bonn, Bonn, Germany
Oct 2018	Graduate Seminar in Probability, ETH and University of Zürich, Zurich, Switzerland
Jan 2018	Mathematical Physics Seminar, University of Helsinki, Helsinki, Finland
Sep 2017	Brown Discrete Math Seminar, Brown University, Providence, United States
Sep 2017	Integrable Probability Working Group, MIT, Cambridge, United States
Sep 2017	Mathematical Physics Seminar, Columbia University, New York, United States
Apr 2017	Groupe de travail Modélisation, Paris, France
Apr 2017	Mathematical Physics seminar, University of Geneva, Geneva, Switzerland