

Marianna Russkikh

Researcher in Mathematics

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Employment history

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

Education

- Oct 2014 – **Université de Genève**, Ph.D. in Mathematics,
May 20, 2019 *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](https://doi.org/10.1007/s00220-018-3113-0)
- Dominos in hedgehog domains, *Ann. Inst. Henri Poincaré Comb. Phys. Interact.* Electronically published on December 10, 2020, doi : [10.4171/AIHPD/96](https://doi.org/10.4171/AIHPD/96)
- joint with R. Kenyon, W. Lam, S. Ramassamy, “Dimers and circle patterns”, *Annales scientifiques de l’Ecole Normale Supérieure*, 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*

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 2026 (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 :

- Jul 2025 Mathematical Congress of the Americas, Miami, Florida
- 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