Aleksandr Zimin

Publications also under the name Alexander P. Zimin

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Education

2021–2026 **PhD in Mathematics**, *Massachusetts Institute of Technology*
Thesis: Advances in Probability and Statistics Using AI Methods and Agents

2019–2021 **Master's degree**, *Faculty of Mathematics, HSE University*, Moscow

- GPA: 10/10
- My term paper On existence of measure with given marginals supported on a hyperplane won first prize in the HSE University Student Research Paper Competition

2019–2021 **Master's degree**, *Mathematical and Theoretical Physics, Skolkovo Institute of Science and Technology*, Moscow

- GPA: 5/5

2015–2019 **Bachelor's degree**, *Faculty of Mathematics, HSE University*, Moscow

- Diploma with the Highest Distinction
- GPA: 9.79/10
- Thesis: Duality Theory for Multistochastic Monge-Kantorovich Problem
  – Final Grade: 10

Other Education

2017–2019 **Professional retraining diploma**, *Department «Computer science», Yandex School of Data Analysis*, Moscow

- 672 lecture hours on a broad range of theoretical and applied Computer Science

Research Positions

Aug. 2026– **Postdoctoral Associate**, *Broad Institute*, Cambridge, MA
Working with Caroline Uhler.

2018–2021 **Research Assistant**, *HSE University*, Moscow
International Laboratory of Stochastic Algorithms and High-Dimensional Inference.

Internships

June–Aug. 2025 **Tilde Research**, Machine Learning Research Intern.

June–Aug. 2019 **Huawei Moscow Research Center**, Trainee Researcher; fine-tuned face recognition models for smartphones, adapting them to the European market.

June–Aug. 2018 **Yandex**, Software Engineering Intern; backend API development for advertising algorithms.

Programming Skills

Programming Languages	C++, Python, Julia
Numerical Methods	Linear programming, numerical methods for PDEs and IEs, computer algebra, optimization algorithms
Machine Learning	Experience with deep learning (*PyTorch, TensorFlow*), reinforcement learning, Bayesian methods, large language models, and computer vision

Academic Interests

Probability and Combinatorics	Percolation, correlation inequalities, and computation-assisted mathematical discovery.
Optimal Transport	Multimarginal transport problems, computational methods, and applications in economics and computer science.
Machine Learning	Theoretical foundations, development of ML methods, and numerical experiments with transformers and large language models (LLMs).

Publications

2026 Bond percolation does not simulate site percolation. N. Gladkov, **Aleksandr Zimin** • *Electronic Communications in Probability*

2025 The bunkbed conjecture is false. N. Gladkov, I. Pak, **Aleksandr Zimin** • *Proceedings of the National Academy of Sciences*
Recipient of the 2026 Frontiers of Science Award (ICBS)

2025 Sorting with Teams. J. Boerma, A. Tsyvinski, **Alexander P. Zimin** • *Journal of Political Economy*

2022 The multistochastic Monge-Kantorovich problem. N. A. Gladkov, A. V. Kolesnikov, **Alexander P. Zimin** • *Journal of Mathematical Analysis and Applications*

2020 An explicit solution for a multimarginal mass transportation problem. N. A. Gladkov, **Alexander P. Zimin** • *SIAM Journal on Mathematical Analysis*

2019 On multistochastic Monge-Kantorovich problem, bitwise operations, and fractals. N. A. Gladkov, A. V. Kolesnikov, **Alexander P. Zimin** • *Calculus of Variations and Partial Differential Equations*

Preprints

2026 YuriiFormer: A Suite of Nesterov-Accelerated Transformers.
Aleksandr Zimin, Y. Polyanskiy, P. Rigollet • *arXiv: 2601.23236*

2022 Bunching and Taxing Multidimensional Skills. J. Boerma, A. Tsyvinski, **Alexander P. Zimin** • *NBER Working Paper 30015* • **Revision in progress for Econometrica**

2022 Beckmann's approach to multi-item multi-bidder auctions. A. V. Kolesnikov, F. Sandomirskiy, A. Tsyvinski, **Alexander P. Zimin** • *arXiv: 2203.06837*

2020 On existence of measure with given marginals supported on a hyperplane. **Alexander P. Zimin** • *arXiv: 2010.07263*

Honors and Awards

2026 Frontiers of Science Award, International Congress of Basic Science, for *The bunkbed conjecture is false*

2018 World Finalist, ACM International Collegiate Programming Contest, team HSE Bluebell

2015 Silver Medal, International Mathematical Olympiad

2015 Gold Medal, Romanian Master of Mathematics

2013 Gold Medal, China National Mathematical Olympiad

2011–2015 Prize-winner, All-Russian Mathematical Olympiad

Workshop Paper

2025 Learning Gaussian Mixture Models via Transformer Measure Flows.
Aleksandr Zimin, A. Kutakh, Y. Polyanskiy, P. Rigollet
Methods and Opportunities at Small Scale (MOSS) Workshop, ICML 2025

Invited Talks

April 2024 Probability Seminar, The University of British Columbia

April 2023 Fields Institute Colloquium on Applied Math, Toronto

April 2023 Seminar Series in Actuarial Science and Financial Mathematics, University of Waterloo

August 2022 Microeconomic Theory Workshop, Yale University

Selected Conference Participation

October 2024 Aspen Meeting on Foundation Models

July 2022 International Conference on Machine Learning, Baltimore

May 2021 New Frontiers in High-Dimensional Probability and Applications to Machine Learning, Sochi