

Aleksandr Beznosikov

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🎓 Scholar

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📄 arXiv

EDUCATION

Moscow Institute of Physics and Technology

MSc in Applied Mathematics and Physics

Moscow, Russia

Sep 2020 – Present

- GPA – 3.93/4, 4.93/5, 9.4/10

Moscow Institute of Physics and Technology

BSc in Applied Mathematics and Physics

Moscow, Russia

Sep 2016 – Aug 2020

- Thesis: "Distributed decentralized gradient-free methods for solving non-smooth stochastic convex optimization problems", Advisor: Alexander Gasnikov
- GPA – 3.99/4, 4.99/5, 9.35/10

WORK EXPERIENCE

Yandex Research

Research intern

Moscow, Russia

Jul 2021 – Present

Laboratory of Advanced Combinatorics and Network Applications, MIPT

Junior Researcher

Moscow, Russia

Mar 2021 – Present

International Laboratory of SA and HDI, HSE

Research assistant

Moscow, Russia

Feb 2021 – Present

MADE: Big Data Academy Mail.Ru group

Teaching assistant

Moscow, Russia

Feb 2021 - Present

Moscow Institute of Physics and Technology

Teaching assistant at the Department of Mathematical Fundamentals of Control

Moscow, Russia

Sep 2017 – Present

RESEARCH INTERESTS

- Stochastic Optimization
- Distributed Optimization
- Machine Learning
- Federated Learning

COMPUTER SKILLS

- Programming Language: Python, C#, C++, C, SQL
- \LaTeX
- Operating Systems: Microsoft Windows, Linux, Mac OSX

LANGUAGE

- **Russian:** [Mothertongue]
- **English:** [Upper Intermediate]

INTERESTS

- **Basketball:** Candidate Master of Sports in Russia

PUBLICATIONS

- A. Beznosikov, P. Richtárik, M. Diskin, M. Ryabinin, A. Gasnikov
Distributed Methods with Compressed Communication for Solving Variational Inequalities, with Theoretical Guarantees
October 2021, [arxiv.org:2110.03313](https://arxiv.org/abs/2110.03313)
- A. Beznosikov, G. Scutari, A. Rogozin, A. Gasnikov
Distributed Saddle-Point Problems Under Similarity
July 2021, **NeurIPS 2021**, poster in the main conference
- A. Sadiev, D. Dvinskikh, A. Beznosikov, A. Gasnikov
Decentralized and Personalized Federated Learning
July 2021, [arXiv:2107.07190](https://arxiv.org/abs/2107.07190)
- A. Beznosikov, A. Rogozin, D. Kovalev, A. Gasnikov
Near-Optimal Decentralized Algorithms for Saddle Point Problems over Time-Varying Networks
July 2021, OPTIMA 2021 (LNCS series)
- I. Stepanov, A. Voronov, A. Beznosikov, A. Gasnikov
One-Point Gradient-Free Methods for Composite Optimization with Applications to Distributed Optimization
July 2021, [arXiv:2107.05951](https://arxiv.org/abs/2107.05951)
- A. Beznosikov, P. Dvurechensky, A. Koloskova, V. Samokhin, S. Stich, A. Gasnikov
Decentralized Local Stochastic Extra-Gradient for Variational Inequalities
June 2021, [arXiv:2106.08315](https://arxiv.org/abs/2106.08315)
- A. Beznosikov, V. Sushko, A. Sadiev, A. Gasnikov
Decentralized Personalized Federated Min-Max Problems
June 2021, [arXiv:2106.07289](https://arxiv.org/abs/2106.07289)
- E. Gladin, A. Sadiev, A. Gasnikov, P. Dvurechensky, A. Beznosikov, M. Alkousa
Solving smooth min-min and min-max problems by mixed oracle algorithms
March 2021, MOTOR 2021 (CCIS series)
- A. Beznosikov, V. Novitskii, A. Gasnikov
One-Point Gradient-Free Methods for Smooth and Non-Smooth Saddle-Point Problems
March 2021, MOTOR 2021 (LNCS series)
- A. Beznosikov, V. Samokhin, A. Gasnikov
Distributed Saddle-Point Problems: Lower Bounds, Optimal and Robust Algorithms
February 2021, Communication Efficient Distributed Optimization Workshop, poster
- A. Rogozin, A. Beznosikov, D. Dvinskikh, D. Kovalev, P. Dvurechensky, A. Gasnikov
Decentralized Distributed Optimization for Saddle Point Problems
February 2021, [arXiv:2102.07758](https://arxiv.org/abs/2102.07758)
- E. Gorbunov, A. Rogozin, A. Beznosikov, D. Dvinskikh, A. Gasnikov
Recent theoretical advances in decentralized distributed convex optimization
November 2020, High Dimensional Optimization and Probability Journal
- A. Sadiev, A. Beznosikov, P. Dvurechensky, A. Gasnikov

Zeroth-Order Algorithms for Smooth Saddle-Point Problems

September 2020, MOTOR 2021 (CCIS series)

- A. Bazarova, A. Beznosikov, A. Gasnikov
Linearly Convergent Gradient-Free Methods for Minimization of Symmetric Parabolic Approximation
September 2020, arXiv:2009.04906
- A. Beznosikov, A. Sadiev, A. Gasnikov
Gradient-Free Methods for Saddle-Point Problem
May 2020, MOTOR 2020 (CCIS series)
- A. Beznosikov, S. Horváth, P. Richtárik, M. Safaryan
On Biased Compression for Distributed Learning
February 2020, **NeurIPS**, oral talk at 2020 Workshop on Scalability, Privacy, and Security in Federated Learning
- A. Beznosikov, E. Gorbunov, A. Gasnikov
Derivative-Free Method For Composite Optimization With Applications To Decentralized Distributed Optimization
November 2019, IFAC World Congress 2020 (IFAC-PapersOnline)

TALKS

- September 2021, International Conference Optimization and Applications (OPTIMA 2021), Petrovac, Montenegro (online) – 15 min oral talk
- July 2021 Modern Methods of Information Theory, Optimization and Control (summer school), Sochi, Russia – 1 hour lecture
- June 2021 All-Russian Optimization Seminar, Moscow, Russia – 45 min oral talk
- June 2021 Control, Information and Optimization Summer School, Moscow, Russia – 1,5 hour lecture
- June 2021 Moscow Conference on Combinatorics and Applications, Moscow, Russia (online) – 30 min oral talk
- April 2021, MADE: Big Data Academy Mail.Ru group, Moscow, Russia (online) – 3 hour lecture
- April 2021, Communication Efficient Distributed Optimization Workshop, (online) – poster session
- July 2020, Mathematical Optimization Theory and Operations Research (MOTOR 2020), Novosibirsk, Russia (online) – 15 min oral talk
- July 2020, 21st IFAC World Congress 2020, Berlin, Germany (online) – video and poster
- December 2019, Quasilinear Equations, Inverse Problems and Their Applications 2019, Moscow, Russia – 15 min oral talk
- November 2019, The 62th MIPT Conference – 15 min oral talk, **winner**
- November 2017, The 60th MIPT Conference, Moscow, Russia – 15 min oral talk, **winner**

RESEARCH VISITS

- October – November 2021, MBZUAI, Abu Dhabi, United Arab Emirates (worked with Martin Takac)
- July – August 2021, Sirius University of Science and Technology, Sochi, Russia
- August – August 2020, Sirius University of Science and Technology, Sochi, Russia
- January – February 2020, Visual Computing Center, KAUST, Thuwal, Saudi Arabia (worked with Peter Richtárik)

SCHOLARSHIPS, HONORS AND AWARDS

University

2016 - Present

- **Fall 2021-2022** 1st degree personal scholarship for contributions to the development of numerical optimization methods
- **Fall 2021-2022** Increased State Academic Scholarship for 4 year bachelor and master students at MIPT
- **Spring 2020-2021** 1st degree personal scholarship for contributions to the development of numerical optimization methods
- **Spring 2020-2021** Increased State Academic Scholarship for 4 year bachelor and master students at MIPT
- **Fall 2020-2021** Increased State Academic Scholarship for 4 year bachelor and master students at MIPT
- **2020** Gazprom Bank personal scholarship
- **2020** Moscow region government scholarship
- **2020** Personal merit scholarship at MIPT
- **Spring 2019-2020** Increased State Academic Scholarship for 4 year bachelor and master students at MIPT
- **Fall 2019-2020** Increased State Academic Scholarship for 4 year bachelor and master students at MIPT
- **Spring 2018-2019** Increased State Academic Scholarship for 4 year bachelor and master students at MIPT
- **Fall 2018-2019** Author of problems and organizer of the student olympiad in discrete mathematics
- **2017:** First Prize at MIPT's Team Mathematical Tournament
- **2017-2019:** Abramov scholarship for 1-3 year bachelor students with the best grades at MIPT

School

2016 and earlier

- **2015:** Silver medal in IEPHO (International Experimental Physics Olympiad)
- **2014-2015:** Russian President's Scholarship, for high school student
- **2015:** Prize-Winner, All-Russian School Physics Olympiad, Final Round
- **2014:** Prize-Winner, All-Russian School Physics Olympiad, Final Round
- **2014-2015:** Russian President's Scholarship, for high school student
- **2015-2016:** Winner, All-Russian School Programming Olympiad, Region Round
- **2014-2016:** Winner, All-Russian School Physics Olympiad, Region Round
- **2014-2016:** Winner, All-Russian School Maths Olympiad, Region Round

TEACHING

MADE: Big Data Academy Mail.Ru group

Moscow, Russia

Teaching assistant

Feb 2021 - Present

- Spring 2021: Optimization in Machine Learning

Moscow Institute of Physics and Technology

Moscow, Russia

Teaching assistant at the Department of Mathematical Fundamentals of Control

Sep 2017 - Present

- Fall 2021: Probability theory
- Spring 2021: Stochastic process
- Fall 2020: Probability theory
- Fall 2020: Discrete analysis
- Spring 2020: Stochastic process
- Fall 2019: Probability theory
- Fall 2019: Discrete analysis
- Fall 2018: Discrete analysis
- Fall 2018: Databases
- Fall 2017: Databases

Summer school in Physics and Mathematics Lyceum

Syktyvkar, Russia

Director, Head of teaching staff

Aug 2018, Aug 2019

- Summer school for gifted children from provincial towns and villages

REVIEWING

- Automatica: 1 paper in 2021.
- IEEE Transactions on Information Theory: 1 paper in 2021.