

# Aleksandr Beznosikov

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🎓 Scholar

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📄 arXiv

## EDUCATION

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**Moscow Institute of Physics and Technology**

*MSc in Applied Mathematics and Physics*

**Moscow, Russia**

*Sep 2020 – Present*

**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

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**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*

**Moscow Institute of Physics and Technology**

*Teaching assistant at the Department of Mathematical Fundamentals of Control*

**Moscow, Russia**

*Sep 2017 – Present*

## RESEARCH INTERESTS

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

## COMPUTER SKILLS

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- Programming Language: **Python, C#, C++, C, SQL**
- $\text{\LaTeX}$
- Operating Systems: **Microsoft Windows, Linux, Mac OSX**

## LANGUAGE

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- **Russian:** [Mother tongue]
- **English:** [Upper Intermediate]

## INTERESTS

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

## PUBLICATIONS

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- E. Gladin, A. Sadiev, A. Gasnikov, P. Dvurechensky, A. Beznosikov, Mohammad Alkousa. **Solving smooth min-min and min-max problems by mixed oracle algorithms**, arXiv preprint arXiv:2103.00434 (March 2021)  
Status: Under review.
- A. Beznosikov, V. Novitskii, A. Gasnikov. **One-Point Gradient-Free Methods for Smooth and Non-Smooth Saddle-Point Problems**, arXiv preprint arXiv:2103.00321 (March 2021)  
Status: Under review.
- A. Beznosikov, V. Samokhin, A. Gasnikov. **Distributed Saddle-Point Problems: Lower Bounds, Optimal Algorithms and Federated GANs**, arXiv preprint arXiv:2010.13112 (February 2021)  
Status: Under review.
- A. Rogozin, A. Beznosikov, D. Dvinskikh, D. Kovalev, P. Dvurechensky, A. Gasnikov. **Decentralized Distributed Optimization for Saddle Point Problems**, arXiv preprint arXiv:2102.07758 (February 2021)  
Status: Under review.
- E. Gorbunov, A. Rogozin, A. Beznosikov, D. Dvinskikh, A. Gasnikov. **Recent theoretical advances in decentralized distributed convex optimization**, arXiv preprint arXiv:2011.13259 (November 2020)  
Status: Under review.
- A. Sadiev, A. Beznosikov, P. Dvurechensky, A. Gasnikov. **Zeroth-Order Algorithms for Smooth Saddle-Point Problems**, arXiv preprint arXiv:2009.09908 (September 2020)  
Status: Under review.
- A. Bazarova, A. Beznosikov, A. Gasnikov. **Linearly Convergent Gradient-Free Methods for Minimization of Symmetric Parabolic Approximation**, arXiv preprint arXiv:2009.04906 (September 2020)  
Status: Under review.
- A. Beznosikov, A. Sadiev, A. Gasnikov. **Gradient-Free Methods for Saddle-Point Problem**, arXiv preprint arXiv:2005.05913 (May 2020)  
Status: Accepted to MOTOR 20, published in Communications in Computer and Information Science (CCIS) series.
- A. Beznosikov, S. Horváth, P. Richtárik, M. Safaryan. **On Biased Compression for Distributed Learning**, arXiv preprint arXiv:2002.12410 (February 2020)  
Status: Oral talk at NeurIPS 2020 Workshop on Scalability, Privacy, and Security in Federated Learning.
- A. Beznosikov, E. Gorbunov, A. Gasnikov. **Derivative-Free Method For Decentralized Distributed Non-Smooth Optimization**, arXiv preprint arXiv:1911.10645 (November 2019)  
Status: Accepted to IFAC World Congress 2020, in process of publishing in IFAC-PapersOnLine.

## CONFERENCE TALKS

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- 15 July 2020, Mathematical Optimization Theory and Operations Research (MOTOR 2020), Novosibirsk, Russia (online), A. Beznosikov, A. Sadiev, A. Gasnikov "Gradient-Free Methods for Saddle-Point Problem"
- 12 July 2020, 21st IFAC World Congress 2020, Berlin, Germany (online), A. Beznosikov, E. Gorbunov, A. Gasnikov "Derivative-Free Method For Decentralized Distributed Non-Smooth Optimization"
- 2 December 2019, Quasilinear Equations, Inverse Problems and Their Applications 2019, Moscow, Russia, A. Beznosikov, E. Gorbunov, A. Gasnikov "A Derivative Free Method for Distributed Optimization"
- 23 November 2019, The 62th MIPT Conference, Moscow, Russia, A. Beznosikov, E. Gorbunov, A.

- Gasnikov "Derivative-Free Sliding For Distributed Optimization", **winner**
- 25 November 2017, The 60th MIPT Conference, Moscow, Russia, A. Beznosikov, K. Teimurazov "The problem of creating models of the electronic queue and student accounting system and their application in practice", **winner**

## RESEARCH VISITS

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- 2 August – 23 August 2020, Sirius University of Science and Technology, Sochi, Russia
- 9 January – 12 February 2020, Visual Computing Center, KAUST, Thuwal, Saudi Arabia (worked with Peter Richtárik)

## GRANTS

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- 30 million RUB per year, 2021-2024, Russian Science Foundation, project number 21-71-30005, in group of A. Gasnikov joint with P. Dvurechensky, F. Stonyakin, E. Gorbunov, A. Rogozin, D. Dvinskikh, D. Kamzolov and groups of B. Polyak, A. Raigorodskii, Yu. Yevtushenko,
- 5 million RUB per year, 2019-2021, RFBR, project number 19-31-51001, in group of A. Gasnikov joint with F. Stonyakin, E. Gorbunov, A. Rogozin, D. Dvinskikh, A. Ivanova and D. Selikhanovych.

## SCHOLARSHIPS, HONORS AND AWARDS

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**University** *2016 - Present*

- 2021 1st degree prof. Andrei Raigorodskii personal scholarship
- **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

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**Moscow Institute of Physics and Technology** **Moscow, Russia**  
*Teaching assistant at the Department of Mathematical Fundamentals of Control* *Sep 2017 - Present*

- 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**

*Director, Head of teaching staff*

**Syktyvkar, Russia**  
*Aug 2018, Aug 2019*

- Summer school for gifted children from provincial towns and villages

## REVIEWING

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- Automatica: 1 paper in 2021.