Aleksandr Beznosikov

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Scholar arXiv

EDUCATION

Moscow Institute of Physics and Technology — **Moscow, Russia**
MSc in Applied Mathematics and Physics — *Sep 2020 – Present*

Moscow Institute of Physics and Technology — **Moscow, Russia**
BSc in Applied Mathematics and Physics — *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

Laboratory of Advanced Combinatorics and Network Applications, MIPT — **Moscow, Russia**
Junior Researcher — *Mar 2021 – Present*

International Laboratory of SA and HDI, HSE — **Moscow, Russia**
Research assistant — *Feb 2021 – Present*

MADE: Big Data Academy Mail.Ru group — **Moscow, Russia**
Teaching assistant — *Feb 2021 - Present*

Moscow Institute of Physics and Technology — **Moscow, Russia**
Teaching assistant at the Department of Mathematical Fundamentals of Control — *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. Dvurechensky, A. Koloskova, V. Samokhin, S. Stich, A. Gasnikov. **Decentralized Local Stochastic Extra-Gradient for Variational Inequalities**, arXiv preprint arXiv:2106.08315 (June 2021)
  Status: Under review
- A. Beznosikov, V. Sushko, A. Sadiev, A. Gasnikov. **Decentralized Personalized Federated Min-Max Problems**, arXiv preprint arXiv:2106.07289 (June 2021)
  Status: Under review
- 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: Accepted to MOTOR 21, in process of publishing in Communications in Computer and Information Science (CCIS) series.
- 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: Accepted to MOTOR 21, in process of publishing in Lecture Notes in Computer Science (LNCS) series.
- A. Beznosikov, V. Samokhin, A. Gasnikov. **Distributed Saddle-Point Problems: Lower Bounds, Optimal and Robust Algorithms**, arXiv preprint arXiv:2010.13112 (February 2021)
  Status: Under review,
  Poster at Communication Efficient Distributed Optimization Workshop.
- 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: in process of publishing in Lecture Notes in Computer Science (LNCS) series.
- A. Sadiev, A. Beznosikov, P. Dvurechensky, A. Gasnikov. **Zeroth-Order Algorithms for Smooth Saddle-Point Problems**, arXiv preprint arXiv:2009.09908 (September 2020)
  Status: Accepted to MOTOR 21, in process of publishing in Communications in Computer and Information Science (CCIS) series.
- 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, published in IFAC-PapersOnLine.

TALKS

- 11 June 2021 Control, Information and Optimization Summer School, Moscow, Russia, A. Beznosikov, "On Saddle-Point Problems and Variational Inequalities" (1,5 hour lecture)
- 2 June 2021 Moscow Conference on Combinatorics and Applications, Moscow, Russia (online), A. Beznosikov, "On Distributed Saddle-Point Problems" (30 min oral talk)
- 13 April 2021, MADE: Big Data Academy Mail.Ru group, Moscow, Russia (online), A. Beznosikov, "Saddle-Point Problems and Variational Inequalities: Theory and Practice" (3 hour lecture)
- 9 April 2021, Communication Efficient Distributed Optimization Workshop, (online), A. Beznosikov, "Distributed Saddle-Point Problems: Lower Bounds, Optimal Algorithms and Federated GANs" (poster session)
- 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" (15 min oral talk)
- 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" (video and poster)
- 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" (15 min oral talk)
- 23 November 2019, The 62th MIPT Conference, Moscow, Russia, A. Beznosikov, E. Gorbunov, A. Gasnikov "Derivative-Free Sliding For Distributed Optimization" (15 min oral talk), **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" (15 min oral talk), **winner**

RESEARCH VISITS

- 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)

SCHOLARSHIPS, HONORS AND AWARDS

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

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*

- 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.