

ALEXEY GORDEEV

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EDUCATION

Ph.D.:

St.Petersburg Department of V.A.Steklov Institute of Mathematics 2017 – 2022
of the Russian Academy of Sciences (PDMI RAS)

Mathematics

Thesis title: Applications of polynomial method in combinatorics

Specialist degree (equivalent to B.Sc. + M.Sc.):

Saint Petersburg State University 2012 – 2017

Fundamental Mathematics and Mechanics

Thesis title: Applications of polynomial method to Dyson-type identity

Advisor: Fedor Petrov

RESEARCH POSITIONS AND VISITS

Umeå University, Department of Mathematics and Mathematical Statistics 2023 – 2025

Umeå, Sweden

Postdoctoral Researcher

Bulgarian Academy of Sciences, Institute of Mathematics and Informatics June 2023

Sofia, Bulgaria

Visiting Researcher

The Euler International Mathematical Institute 2019 – 2022

Saint Petersburg, Russia

Junior Researcher

RESEARCH INTERESTS

list colorings of graphs and hypergraphs, polynomial method in combinatorics, extremal hypergraph problems, maximal distance minimizers, row-column designs

PUBLICATIONS

A. Gordeev, Y. Teplitskaya, *On regularity of maximal distance minimizers in \mathbb{R}^n* , https://doi.org/10.2422/2036-2145.202208_004, The Annali della Scuola Normale di Pisa - Classe di Scienze, 2023. arXiv version: <https://arxiv.org/abs/2207.13745>.

Z. Li, Z. Shao, F. Petrov, A. Gordeev, *The Alon–Tarsi Number of A Toroidal Grid*, <https://doi.org/10.1016/j.ejc.2023.103697>, European Journal of Combinatorics, 111, 103697, 2023. arXiv version: <https://arxiv.org/abs/1912.12466>.

D. Cherkashin, A. Gordeev, G. Strukov, *Erdős–Hajnal problem for H -free hypergraphs*, <https://arxiv.org/abs/2207.05840>, to appear in Graphs and Combinatorics.

D. Cherkashin, A. Gordeev, *On list chromatic numbers of 2-colorable hypergraphs*, <https://mipt.ru/upload/medialibrary/745/05.pdf>, Proceedings of MIPT, 14(1), 49–57, 2022. arXiv version: <https://arxiv.org/abs/2102.02746>.

F. Petrov, A. Gordeev, *Alon–Tarsi numbers of direct products*, <https://doi.org/10.2140/moscow.2021.10.271>, Moscow Journal of Combinatorics and Number Theory 10(4), 271–279, 2021. arXiv version: <https://arxiv.org/abs/2007.07140>.

A. Gordeev, *Constant terms of near-Dyson polynomials*, <https://doi.org/10.37236/7087>, The Electronic Journal of Combinatorics 25(4), 2018.

PREPRINTS

A. Gordeev, *Combinatorial Nullstellensatz and Turán numbers of complete r -partite r -uniform hypergraphs*, <https://arxiv.org/abs/2307.04447>, 2023.

D. Cherkashin, A. Gordeev, G. Strukov, Y. Teplitskaya, *Maximal distance minimizers for a rectangle*, <https://arxiv.org/abs/2106.00809>, 2021.

D. Cherkashin, A. Gordeev, G. Strukov, Y. Teplitskaya, *On minimizers of the maximal distance functional for a planar convex closed smooth curve*, <https://arxiv.org/abs/2011.10463>, 2020.

TEACHING

Teaching as a Lecturer at Saint Petersburg State University

a 3 semester undergraduate course on algorithms and data structures
“Modern Programming” Bachelor programme

Algorithms and Data Structures II	Fall 2021
Algorithms and Data Structures I	Spring 2021
Algorithms and Data Structures III	Fall 2020
Algorithms and Data Structures II	Spring 2020
Algorithms and Data Structures I	Fall 2019
Algorithms and Data Structures III	Fall 2019
Algorithms and Data Structures II	Spring 2019

Teaching to high school students at Summer Informatics Camp

a 3 week course with lectures and practice sessions on algorithms and data structures

Perm, Russia, <https://sicamp.ru>

August 2013 – 2019, September 2021

TALKS

“Planar bubble cluster. Connectivity and other problems” December 1, 2021
Conference of Small Research Groups (Saint Petersburg, Russia)

“On list chromatic numbers of 2-colorable hypergraphs” August 13, 2021
Groups and Graphs, Semigroups and Synchronization (the talk was given online via zoom)

“Proof of the List Coloring Conjecture for line perfect graphs” May 14, 2019
Conference on Graphs, Networks, and Their Applications (Moscow, Russia)

“Constant terms of near-Dyson polynomials” June 29, 2017
TuCo 2017 (Saint Petersburg, Russia)

PARTICIPATION IN EVENTS

Conference of Small Research Groups November 29 – December 2, 2021
Saint Petersburg, Russia

Groups and Graphs, Semigroups and Synchronization August 9 – 13, 2021
Sirius Mathematics Center, Sochi, Russia

International School-conference in Algorithms, Combinatorics, and Complexity May 24 – 28, 2021
Saint Petersburg, Russia (was held online)

Workshop on Open Problems in Combinatorics and Geometry <i>Adygea, Russia</i>	October 13 – 19, 2019
3rd Hungarian-Russian Combinatorics workshop <i>Moscow, Petrozavodsk, Russia</i>	May 20 – 25, 2019
Conference on Graphs, Networks, and Their Applications <i>Moscow, Russia</i>	May 13 – 18, 2019
The Second Alan Turing Contest in Theoretical Computer Science and Discrete Mathematics for Russian-speaking students (TuCo 2017) <i>Saint Petersburg, Russia</i>	June, 2017

ACADEMIC AND COMMUNITY SERVICE

Reviewed papers for: SIAM Journal on Discrete Mathematics, Combinatorica, etc.

Took part in organizing the Summer Informatics Camp in Perm, Russia (<https://sicamp.ru>) in 2013–19 and 2021

Supervised “Steiner trees” track during the Science School in Mathematics and Computer Science for high school students in Sirius, Sochi, Russia in January 2022

OTHER EMPLOYMENT

WorldQuant Research (Eurasia), Saint Petersburg Research Office <i>Quantitative Researcher</i>	2017 – 2019
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ACHIEVEMENTS

VK Cup <i>Awardee, 8th absolute place</i>	2018
Google Hash Code <i>Finalist</i>	2017
ACM ICPC World Finals <i>World champion as part of SPbSU team</i>	2016
International Olympiad in Informatics <i>Gold medal, 20th absolute place</i>	2013

PROGRAMMING SKILLS

C++, Python, SageMath