

Dmitrii Pavlov

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Academic employment

- 10/24 – **Postdoctoral researcher**, TU Dresden, *Real Algebraic Geometry group*.
08/24–09/24 **Postdoctoral researcher**, Max Planck Institute for Mathematics in the Sciences, *Numerical Nonlinear Algebra group*.

Education

- 08/22–08/24 **PhD in Mathematics**, Max Planck Institute for Mathematics in the Sciences, *Thesis: Real Algebraic Geometry for Physics and Optimization, Advisors: Bernd Sturmfels and Simon Telen*.
09/16–06/22 **Specialist (equivalent to Masters) in Fundamental Mathematics**, Moscow State University, *Advisors: Yury P. Razmyslov and Gleb Pogudin*.
GPA: 5.0/5.0

Non-academic employment

- 2021–2022 **Huawei Russian Research Institute, Moscow Optic Algorithm Laboratory**, *Junior research engineer*.
Research in digital signal processing, discrete optimization and numerical methods for solving the Nonlinear Schrödinger equation.
2019–2021 **Moscow Center for Continuous Mathematical Education**, *Editor of interactive courses and textbooks in mathematics*.
2019–2020 **Yandex.Math**, *Consultant of interactive courses in mathematics*.
2018–2019 **Mathematical Circle of MSU Faculty of Mechanics and Mathematics**, *Tutor*.

Scholarships

- 2021 **Kolmogorov Scholarship for Academic Excellence**, Moscow State University

Preprints

- From Feynman Diagrams to the Amplituhedron: A Gentle Review** S. De, D. Pavlov, M. Spradlin, A. Volovich, <https://arxiv.org/abs/2410.11757>, 2024.
Hyperplane Arrangements in the Grassmannian E. Mazzucchelli, D. Pavlov and K. Wang, <https://arxiv.org/abs/2409.04288>, 2024.
Santaló Geometry of Convex Polytopes D. Pavlov and S. Telen, <https://arxiv.org/abs/2402.18955>, 2024. Accepted in *SIAM Journal on Applied Algebra and Geometry*.

Algebraic Geometry of Quantum Graphical Models E. Duarte, D. Pavlov, and M. Wiesmann, <https://arxiv.org/abs/2308.11538>, 2023.

Combinatorics of $m = 1$ Grasstopes Y. Mandelshtam, D. Pavlov, and E. Pratt, <https://arxiv.org/abs/2307.09603>, 2023.

On real and observable realizations of input-output equations S. Falkensteiner, D. Pavlov, and J. R. Sendra, <http://arxiv.org/abs/2303.16799>, 2023.

Published articles

Logarithmically Sparse Symmetric Matrices D. Pavlov, *Beiträge zur Algebra und Geometrie*, <https://doi.org/10.1007/s13366-024-00753-y>, 2024.

Gibbs Manifolds D. Pavlov, B. Sturmfels, and S. Telen, *Information Geometry*, <https://doi.org/10.1007/s41884-023-00111-2>, 2023.

On realizing differential-algebraic equations by rational dynamical systems D. Pavlov and G. Pogudin, *Proceedings of the ACM International Symposium on Symbolic and Algebraic Computation (ISSAC 2022)*, <https://doi.org/10.1145/3476446.3535492>, 2022.

From algebra to analysis: new proofs of theorems by Ritt and Seidenberg D. Pavlov, G. Pogudin, and Yu. Razmyslov, *Proceedings of the American Mathematical Society*, <https://doi.org/10.1090/proc/16065>, 2022.

Talks

- 29 Nov 2024 **From Feynman Diagrams to the Amplituhedron**, *Positive Geometry Seminar*, MPI MiS (online).
- 20 Nov 2024 **Hyperplane Arrangements in the Grassmannian**, *Statistics and Data Science Seminar*, TU Munich.
- 12 Nov 2024 **Santaló Geometry of Convex Polytopes**, *Geometry Seminar*, TU Dresden.
- 25 Sep 2024 **Santaló Geometry of Convex Polytopes**, *Wachspress Geometry Workshop*, Universität Leipzig.
- 29 Apr 2024 **Santaló Geometry of Convex Polytopes**, *Algebra Seminar*, Brown University, Providence.
- 17 Apr 2024 **Santaló Geometry of Convex Polytopes**, *Discrete Mathematics and Discrete Geometry Seminar*, TU Berlin.
- 8 Mar 2024 **What is a Grasstopes?**, *What is... talks*, MPI CBG, Dresden.
- 31 Jan 2024 **Combinatorics of $m = 1$ Grasstopes**, *Quantum Field Theory Group Seminar*, MPI for Physics, Munich.
- 5 Dec 2023 **Combinatorics of $m = 1$ Grasstopes**, *Geometry Seminar*, TU Dresden.
- 29 Nov 2023 **Algebraic Geometry of Quantum Graphical Models**, *InterCity Seminar*, Universität Konstanz.
- 20 Oct 2023 **Realizations of input-output equations: rational, observable, and real**, *Kolchin Seminar in Differential Algebra (online)*.

- 11 Jul 2023 **Gibbs manifolds**, *SIAM AG23, Minisimposium on Geometric and Algebraic Methods in Quantum Information, Eindhoven.*
- 10 May 2023 **Real realizations of algebraic differential equations**, *Nonlinear Algebra Seminar, MPI MiS.*
- 21 Mar 2023 **Gibbs manifolds**, *New Directions in Real Algebraic Geometry, Mathematisches Forschungsinstitut Oberwolfach.*
- 9 Mar 2023 **What is a Gibbs manifold?**, *Algebra, Geometry and Computation, CWI Amsterdam.*
- 1 Mar 2023 **What is a Gibbs manifold?**, *Nonlinear Algebra Seminar, MPI MiS.*
- 5 Oct 2022 **Realizability of algebraic differential equations by rational dynamical systems**, *Nonlinear Algebra Seminar, MPI MiS.*
- 12 Apr 2022 **Realizability of algebraic differential equations by rational dynamical systems**, *Algebra and Model Theory Seminar, Moscow State University.*
- 8 Dec 2020 **Analytic spectrum of a differential \mathbb{C} -algebra with several commuting derivations**, *Algebra and Model Theory Seminar, Moscow State University.*
- 8 May 2019 **Differentially flat systems**, *Algebra and Model Theory Seminar, Moscow State University.*

Poster presentations

- July 2024 **Santaló Geometry of Convex Polytopes**, *MEGA 2024, Leipzig.*

Teaching

- WS24/25 **Differentialgleichungen und Mannigfaltigkeiten**, *TU Dresden, Exercise Sessions (in German).*

Events organized

- May 2024 **Combinatorial Algebraic Geometry from Physics Summer School**, *Leipzig.*
- Nov 2023 **1st IMPRS COMBO Autumn School**, *Leipzig.*

Computer skills

- Languages: Python, Julia, Macaulay2, Sage, C/C++
- Software: LaTeX, GitLab, Linux

Language proficiency

Russian (native), English (C2), French (B2), German (B2)