

# Mikhail Kornev

Steklov Mathematical Institute of RAS

Nationality: Russian

E-mail: [michaelkorneff@gmail.com](mailto:michaelkorneff@gmail.com)

Web-page: <https://magisterlud.github.io>

## RESEARCH AREAS

Homotopy Theory, Higher Geometry, Group Theory, and Combinatorics

## APPOINTMENTS

Sep. 2022 – PhD student and research assistant at Steklov Mathematical Institute of RAS  
Department of Geometry and Topology

Sep. 2021 – 2025 Research assistant at HSE University  
Laboratory of Algebraic Topology and Applications

## EDUCATION

Sep. 2016 – May 2022 Specialist degree Diploma with honors in Mathematics (equivalent to M.S.)  
Lomonosov Moscow State University

## RESEARCH PAPERS

### Mathematics

- Jan. 2026 *n*-Valued Monoids on  $\mathbb{CP}^1$  and Discriminants  
joint with Victor Buchstaber  
Uspekhi Mat. Nauk, 81:1(487) (2026), 207–208  
<https://doi.org/10.4213/rm10280>
- Jan. 2026 *On the Classification of n-Valued Monoids and Groups of Order 3*  
Mat. Zametki, 119:2 (2026), 244–252  
<https://doi.org/10.4213/mzm14803>
- Jan. 2024 *n*-Valued Coset Groups and Dynamics  
Mathematical Notes, 116:1 (2024), 66–76, 2024  
<https://doi.org/10.4213/mzm14243>
- Sep. 2023 *Homology Spheres*  
Transactions of the Moscow Mathematical Society, 84 (2023), 197–239  
<https://doi.org/10.1090/mosc/352>

### Mathematics and Music

- Sep. 2025 *The Technique of Musical Icosahedra*  
Music Academy, no. 3, 2025, pp. 64–83  
<https://doi.org/10.34690/479>

## PREPRINTS

- Oct. 2025 *Algebraic  $n$ -Valued Monoids on  $\mathbb{CP}^1$ , Discriminants and Projective Duality*  
joint with Victor Buchstaber  
arXiv:2510.14010
- Aug. 2025 *On the Classification of  $n$ -Valued Monoids and Groups of Order 3*  
arXiv:2508.04454
- May 2025  *$n$ -Valued Groups, Kronecker Sums, and Wendt's  $(x, y, z)$ -Matrices*  
joint with Victor Buchstaber  
arXiv:2505.04296
- Jan 2024  *$n$ -valued Coset Groups and Dynamics*  
arXiv:2401.12718

## CONFERENCE TALKS

- Aug. 2025  *$n$ -Valued Groups, Kronecker Sums, and Wendt Matrices*  
Joint work with Victor Buchstaber  
5th Conference of Mathematical Centers of Russia
- May 2024 *Homology Spheres, Acyclic Groups and Kan-Thurston Theorem*  
Conference “From Analysis to Homotopy Theory”, University of Greifswald,  
Greifswald, Germany
- Apr. 2023 *Dynamics and multivalued groups*  
Conference “SIMC Youth Race”, Steklov Mathematical Institute of RAS, Moscow,  
Russia
- Oct. 2022 *Inconcretness of homotopy categories*  
International School “Toric topology, combinatorics and data analysis”, Euler  
International Mathematical Institute, Saint Petersburg, Russia
- Apr. 2022 *Acyclic groups and spaces*  
29th International Scientific Conference for Undergraduate and Graduate Students  
and Young Scientists “Lomonosov”, Moscow, Russia
- Nov. 2021 *Acyclic groups and Kan-Thurston theorem*, International School “Toric Topology and  
Combinatoric”, Sirius Mathematics Center, Sochi, Russia

## SEMINAR TALKS

- Dec. 2025 *Fermat hypersurfaces, projective duality, and algebraic  $n$ -valued monoids*  
Seminar of the Department of Geometry and Topology “Geometry, Topology and  
Mathematical Physics”, Steklov Mathematical Institute of RAS (Novikov Seminar),  
Moscow, Russia
- Dec. 2025 *Discrete and Algebraic  $n$ -Valued Groups*  
Seminar on Discrete Geometry and Geometry of Numbers, Moscow State University
- Nov. 2025  *$n$ -Valued Algebraic Monoids, Cubics, and Discriminants*  
The Seminar of International Laboratory of Algebraic Topology and Its Applications,  
HSE University, Moscow, Russia
- May 2025  *$n$ -Valued Groups, Kronecker Sums, and Wendt Matrices*  
Joint work with Victor Buchstaber

	Seminar of the Department of Geometry and Topology “Geometry, Topology and Mathematical Physics”, Steklov Mathematical Institute of RAS (Novikov Seminar), Moscow, Russia
Apr. 2023	<i>Acyclic groups and Kan-Thurston theorem</i> Seminar by I. G. Lysenok and A. L. Talambutsa “Seminar on geometric group theory”, Steklov Mathematical Institute of RAS, Moscow, Russia
Dec. 2022	<i>Fundamental groups of homology spheres</i> Seminar “Geometry, Topology and their applications” at Sobolev Institute of Mathematics

## GRANTS AND AWARDS

### Prizes, fellowships and grants

2021 –	<i>The Russian Science Foundation Grant No. 23-11-00143</i>
2019	<i>Winner of the olympiad on Partial Differential Equations</i> Moscow State University
2018	<i>Winner of the olympiad on Ordinary Differential Equations</i> Moscow State University

## STUDY SEMINAR TALKS

### Texas Tech Quantum Homotopy Seminar

Dec. 2024	<i>An Introduction to Cartan Geometries</i>
Mar. 2024	<i>Euler-Lagrange dynamics via the <math>\infty</math>-jet bundle (2 talks)</i>

### Seminar On Homotopy Theory and Applications at Independent University of Moscow

Dec. 2023	<i>Principal <math>\infty</math>-bundles</i>
Apr. – May 2023	<i>A mini-course on the <math>\infty</math>-category of motivic coarse spaces (4 talks)</i>
Apr. 2023	<i>Elements of unstable motivic homotopy theory</i>
Feb. – Apr. 2023	<i>A mini-course on <math>\infty</math>-cosmoi (4 talks)</i>
Dec. 2022	<i>Applications of Reedy theory</i>
Nov. 2022	<i>Weighted (co-)limits, Gambino’s theorem, Reedy model structures</i>
Nov. 2022	<i>Homotopically final functors and examples of calculations with homotopy (co-)limits</i>
Nov. 2022	<i>Nerve—realization adjunction and bar construction</i>
Apr. 2022	<i>A series of 4 talks on sheaves of sets</i>
Apr. 2022	<i>Kan extensions. Additional topics</i>
Oct. 2021	<i>The categorical meaning of the Kan-Thurston theorem</i>
Jul. – Aug. 2021	<i>Quillen’s theorem, a closed model structure on <math>s\mathbf{Set}</math></i>

### Study And Scientific Seminar “Geometry And Topology” at Moscow State University

Sep. 2020	<i>Andreev’s theorem on hyperbolic polyhedra</i>
Nov. 2019	<i>The intersection form of 4-manifolds</i>
May 2019	<i>Nilmanifolds and Massey product in bigraded cohomology rings</i>

## CONFERENCES, WORKSHOPS AND SCHOOLS

May 2024	<i>Conference “From Analysis to Homotopy Theory”</i> University of Greifswald, Greifswald, Germany
Jul. 2023	<i>Summer School “Algebra and Geometry”</i> HSE University, Steklov Mathematical Institute of RAS, Suzdal, Russia
Jul. 2023	<i>Summer school on non-commutative and derived geometry of matrix factorisations</i> Centre of Pure Mathematics, Moscow Institute of Physics and Technology, Dolgoprudny, Russia
Jun. 2023	<i>Conference on algebra, algebraic geometry, and number theory on the occasion of academician Igor Rostislavovich Shafarevich 100th birthday</i> Steklov Mathematical Institute of RAS, Moscow, Russia
Apr. 2023	<i>Conference “Geometry, topology and mathematical physics” on the occasion of the 85th anniversary of S. P. Novikov and the 80th anniversary of V. M. Buchstaber</i> Steklov Mathematical Institute of RAS, Moscow, Russia
Mar. 2023	<i>Conference “SIMC Youth Race”</i> Steklov Mathematical Institute of RAS, Moscow
Oct. 2022	<i>International School “Toric topology, combinatorics and data analysis”</i> Euler International Mathematical Institute, Saint Petersburg, Russia
Jul. 2022	<i>Summer School “Algebra and Geometry”</i> HSE University, Steklov Mathematical Institute of RAS, Suzdal, Russia
Apr. 2022	<i>29th International Scientific Conference for Undergraduate and Graduate Students and Young Scientists “Lomonosov”</i> Lomonosov Moscow State University, Moscow, Russia
Nov. 2021	<i>International School “Toric Topology and Combinatorics”</i> HSE University, Sirius Mathematics Center, Sochi, Russia
Nov. 2020	<i>Topology and Geometry of Group Actions</i> HSE University, online
Nov. 2019	7th Summer School On Geometrical Methods Of Mathematical Physiques Landau Institute for Theoretical Physics, Lomonosov Moscow State University, Chernogolovka, Russia
Nov. 2019	<i>Geometry, Topology And Mathematical Physics</i> Landau Institute for Theoretical Physics, Lomonosov Moscow State University, Chernogolovka, Russia
Nov. 2018	<i>Geometry, Topology And Mathematical Physics</i> Landau Institute for Theoretical Physics, Lomonosov Moscow State University, Chernogolovka, Russia
Jul. 2018	<i>Summer school “Modern Mathematics”</i> HSE University, Lomonosov Moscow State University, Independent University of Moscow, Dubna, Russia
Jul. 2017	<i>Summer school “Modern Mathematics”</i> HSE University, Lomonosov Moscow State University, Independent University of Moscow, Dubna, Russia

## TEACHING

- May 2022 – *Teaching various courses (e. g., Algebraic Geometry, Algebraic Topology, Abstract Algebra, Differential Geometry, Linear Algebra, Probability Theory, Discrete Mathematics, Calculus, etc.) on Profi*  
<https://profi.ru/profile/KornevMI3/>
- Sep. 2016 – 2022 *Little Mech-Math courses*  
An olympiad Math class at Lomonosov Moscow State University  
<http://mmmf.msu.ru/about/person.html>

## SERVICE

- June 2021 – 2024 *Co-organization of the study seminar “Homotopy Theory and Applications” at Independent University of Moscow*  
<https://researchseminars.org/seminar/HomotopyTheoryAndApps>

## REFERENCES

*Victor Buchstaber*, Steklov Mathematical Institute of RAS  
[buchstab@mi-ras.ru](mailto:buchstab@mi-ras.ru)

## LANGUAGES

*Russian* (native)  
*English* (fluent)  
*French* (intermediate)  
*Latin* (basic)