

# Mikhail Kornev

Steklov Mathematical Institute of RAS

Nationality: Russian

E-mail: 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 – Research assistant at HSE University  
Laboratory of Algebraic Topology and Applications

## EDUCATION

Sep. 2016 – May 2022 M. S. degree Diploma with honours in Mathematics,  
Lomonosov Moscow State University

## PAPERS

Jan. 2024 *n-valued Coset Groups and Dynamics*, arXiv: 2401.12718  
Math. Notes, 116:1 (2024), 66–76., 2024

Sep. 2023 *Homology Spheres*  
Proceedings of Moscow Mathematical Society, 84:2 (2023), 243–296

## CONFERENCE TALKS

May 2024 *Homology Spheres, Acyclic Groups and Kan-Thurston Theorem*  
Conference 'From Analysis to Homotopy Theory', Greifswald, Germany

April 2023 *Dynamics and multivalued groups*  
Conference 'SIMC Youth Race', Steklov Mathematical Institute of RAS

Oct. 2022 *Inconcretness of homotopy categories*  
International School 'Toric topology, combinatorics and data analysis', Euler  
International Mathematical Institute, Saint Petersburg

April 2022 *Acyclic groups and spaces*  
29th International Scientific Conference for Undergraduate and Graduate Students  
and Young Scientists 'Lomonosov'

Nov. 2021 *Acyclic groups and Kan-Thurston theorem*, International School 'Toric Topology and  
Combinatoric', Sirius Mathematics Center, Sochi

## 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> Lomonosov Moscow State University
2018	<i>Winner of the olympiad on Ordinary Differential Equations</i> Lomonosov Moscow State University

## SEMINAR TALKS

April 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
Dec. 2022	<i>Fundamental groups of homology spheres</i> Seminar 'Geometry, Topology and their applications' at Sobolev Institute of Mathematics

## 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</i> (2 talks)

### 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</i> (4 talks)
April 2023	<i>Elements of unstable motivic homotopy theory</i>
Feb. – Apr. 2023	<i>A mini-course on <math>\infty</math>-cosmoi</i> (4 talks)
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>
April 2022	<i>A series of 4 talks on sheaves of sets</i>
April 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 Lomonosov 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> Greifswald, Germany
Jul. 2023	<i>Summer School 'Algebra and Geometry'</i> HSE University, Steklov Mathematical Institute of RAS, Susdal
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
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
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
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
Jul. 2022	<i>Summer School 'Algebra and Geometry'</i> HSE University, Steklov Mathematical Institute of RAS
Apr. 2022	<i>29th International Scientific Conference for Undergraduate and Graduate Students and Young Scientists 'Lomonosov'</i> Lomonosov Moscow State University
Nov. 2021	<i>International School 'Toric Topology and Combinatorics'</i> HSE University, Sirius Mathematics Center, Sochi
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
Nov. 2019	<i>Geometry, Topology And Mathematical Physics</i> Landau Institute for Theoretical Physics, Lomonosov Moscow State University, Chernogolovka
Nov. 2018	<i>Geometry, Topology And Mathematical Physics</i> Landau Institute for Theoretical Physics, Lomonosov Moscow State University, Chernogolovka
Jul. 2018	<i>Summer school 'Modern Mathematics'</i> HSE University, Lomonosov Moscow State University, Independent University of Moscow, Dubna
Jul. 2017	<i>Summer school 'Modern Mathematics'</i> HSE University, Lomonosov Moscow State University, Independent University of Moscow, Dubna

## TEACHING

May 2022 –	<i>Teaching various courses (e. g., Algebraic Geometry, Algebraic Topology, Abstract Algebra,</i>
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*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 –

*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)