

# Mikhail Kornev

Steklov Mathematical Institute of RAS

Nationality: Russian

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## RESEARCH AREAS

Homotopy Theory, Higher Geometry, Higher Algebra, Motivic Homotopy Theory,  $K$ -theory, Group Theory

## 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

## GRANTS AND AWARDS

### Prizes, fellowships and grants

2021 – *The Russian Science Foundation Grant No. 23-11-00143*

2019 *Winner of the olympiad on Partial Differential Equations*  
Lomonosov Moscow State University

2018 *Winner of the olympiad on Ordinary Differential Equations*  
Lomonosov Moscow State University

## PAPERS

Jan. 2024  *$n$ -valued Coset Groups and Dynamics*, arXiv: 2401.12718  
To appear in the journal "Mathematical Notes"

Sep. 2023 *An Overview On Homology Spheres*  
To appear in the Journal of Moscow Mathematical Society (52 pages)

## INVITED CONFERENCE TALKS

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

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

## INVITED SCIENTIFIC SCHOOL TALKS

- Oct. 2022 *Inconcreteness of homotopy categories*  
International School "Toric topology, combinatorics and data analysis", Euler  
International Mathematical Institute, Saint Petersburg
- Nov. 2021 *Acyclic groups and Kan-Thurston theorem*, International School "Toric Topology and  
Combinatoric", Sirius Mathematics Center, Sochi

## INVITED SEMINAR TALKS

- April 2023 *Acyclic groups and Kan-Thurston theorem*  
Seminar by I. G. Lysenok and A. L. Talambutsa "Seminar on geometric group theory",  
Steklov Mathematical Institute of RAS
- Dec. 2022 *Fundamental groups of homology spheres*  
Seminar "Geometry, Topology and their applications" at Sobolev Institute of  
Mathematics

## STUDY SEMINAR TALKS

### Seminar On Homotopy Theory And Applications At Independent University Of Moscow

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

### Study And Scientific Seminar "Geometry And Topology"

- Sep. 2020 *Andreev's theorem on hyperbolic polyhedra*
- Nov. 2019 *The intersection form of 4-manifolds*
- May 2019 *Nilmanifolds and Massey product in bigraded cohomology rings*

## CONFERENCES, WORKSHOPS AND SCHOOLS

- Jul. 2023 *Summer School "Algebra and Geometry"*  
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, Differential Geometry, Linear Algebra, Probability Theory, Discrete Mathematics, Calculus, etc.) on Profi</i> <a href="https://profi.ru/profile/KornevMI3/">https://profi.ru/profile/KornevMI3/</a>
Sep. 2016 – 2022	<i>Little Mech-Math courses</i> An olympiad Math class at Lomonosov Moscow State University <a href="http://mmmf.msu.ru/about/person.html">http://mmmf.msu.ru/about/person.html</a>

## 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)