

Mikhail Kornev

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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 Specialist degree Diploma with honors in Mathematics (equivalent to M.S.)
Lomonosov Moscow State University

PAPERS

May 2025 Joint work with Victor Buchstaber
n-Valued Groups, Kronecker Sums, and Wendt's (x, y, z) -Matrices
arXiv: 2505.04296

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 2025 *Number-Theoretic Problems in Algebraic Topology*
Joint work with Victor Buchstaber
XXIV International Conference “Algebra, Number Theory, Discrete Geometry and Multiscale Modeling. Modern Problems, Applications and Problems of History”
dedicated to the 110th anniversary of the birth of academician Yu. V. Linnik and the 110th anniversary of the birth of professor A. B. Shidlovsky and the 80th anniversary of the birth of professor G. I. Arkhipov, Tula, Russia

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

April 2023	<i>Dynamics and multivalued groups</i> Conference “SIMC Youth Race”, Steklov Mathematical Institute of RAS, Moscow, Russia
Oct. 2022	<i>Inconcretness of homotopy categories</i> International School “Toric topology, combinatorics and data analysis”, Euler International Mathematical Institute, Saint Petersburg, Russia
April 2022	<i>Acyclic groups and spaces</i> 29th International Scientific Conference for Undergraduate and Graduate Students and Young Scientists “Lomonosov”, Moscow, Russia
Nov. 2021	<i>Acyclic groups and Kan-Thurston theorem</i> , International School “Toric Topology and Combinatoric”, Sirius Mathematics Center, Sochi, Russia

SEMINAR TALKS

May 2025	<i>n-Valued Groups, Kronecker Sums, and Wendt Matrices</i> 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
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, 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> Lomonosov Moscow State University
2018	<i>Winner of the olympiad on Ordinary Differential Equations</i> Lomonosov 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 ∞-jet bundle</i> (2 talks)

Seminar On Homotopy Theory And Applications At Independent University Of Moscow

Dec. 2023	<i>Principal ∞-bundles</i>
Apr. – May 2023	<i>A mini-course on the ∞-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 ∞-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>
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 $s\mathbf{Set}$</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> 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 *Geometry, Topology And Mathematical Physics*
Landau Institute for Theoretical Physics, Lomonosov Moscow State University,
Chernogolovka, Russia
- Nov. 2018 *Geometry, Topology And Mathematical Physics*
Landau Institute for Theoretical Physics, Lomonosov Moscow State University,
Chernogolovka, Russia
- Jul. 2018 *Summer school "Modern Mathematics"*
HSE University, Lomonosov Moscow State University, Independent University of
Moscow, Dubna, Russia
- Jul. 2017 *Summer school "Modern Mathematics"*
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 – *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

LANGUAGES

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