

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

Aug. 2025 On the Classification of n -Valued Monoids and Groups of Order 3
arXiv:2508.04454

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

Aug. 2025 *n -Valued Groups, Kronecker Sums, and Wendt Matrices*
Joint work with Victor Buchstaber
5th Conference of Mathematical Centers of Russia

Jun. 2025 *n -valued groups and Fermat's Last Theorem*
Joint work with Victor Buchstaber
International conference “Number-theoretic aspects of linear algebraic groups and algebraic varieties: results and prospects” dedicated to 85-th anniversary of academician V.P. Platonov

- 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
- Apr. 2023 *Dynamics and multivalued groups*
Conference “SIMC Youth Race”, Steklov Mathematical Institute of RAS, Moscow, Russia
- Oct. 2022 *Inconcreteness 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

- 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 *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, Moscow, Russia
- Dec. 2022 *Fundamental groups of homology spheres*
Seminar “Geometry, Topology and their applications” at Sobolev Institute of Mathematics

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

STUDY SEMINAR TALKS

Texas Tech Quantum Homotopy Seminar

- Dec. 2024 *An Introduction to Cartan Geometries*
Mar. 2024 *Euler-Lagrange dynamics via the ∞ -jet bundle* (2 talks)

Seminar On Homotopy Theory And Applications At Independent University Of Moscow

- Dec. 2023 *Principal ∞ -bundles*
Apr. – May 2023 *A mini-course on the ∞ -category of motivic coarse spaces* (4 talks)
Apr. 2023 *Elements of unstable motivic homotopy theory*
Feb. – Apr. 2023 *A mini-course on ∞ -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*
Apr. 2022 *A series of 4 talks on sheaves of sets*
Apr. 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” At Lomonosov Moscow State University

- 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

- May 2024 *Conference “From Analysis to Homotopy Theory”*
University of Greifswald, Greifswald, Germany
Jul. 2023 *Summer School “Algebra and Geometry”*
HSE University, Steklov Mathematical Institute of RAS, Suzdal, Russia
Jul. 2023 *Summer school on non-commutative and derived geometry of matrix factorisations*
Centre of Pure Mathematics, Moscow Institute of Physics and Technology,
Dolgoprudny, Russia
Jun. 2023 *Conference on algebra, algebraic geometry, and number theory on the occasion of
academician Igor Rostislavovich Shafarevich 100th birthday*
Steklov Mathematical Institute of RAS, Moscow, Russia
Apr. 2023 *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*
Steklov Mathematical Institute of RAS, Moscow, Russia
Mar. 2023 *Conference “SIMC Youth Race”*
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 –	<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> https://profi.ru/profile/KornevMI3/
Sep. 2016 – 2022	<i>Little Mech-Math courses</i> An olympiad Math class at Lomonosov Moscow State University http://mmmf.msu.ru/about/person.html

SERVICE

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

Victor Buchstaber, Steklov Mathematical Institute of RAS
buchstab@mi-ras.ru

LANGUAGES

Russian (native)

English (fluent)

French (intermediate)

Latin (basic)