

Kostiantyn Tolmachov

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Biographical

Born: November 5, 1991, Kyiv, Ukraine.

Citizenship: Ukraine.

Address

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Research interests

Geometric methods in representation theory.

Publications

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| 2024 | On a t-exactness property of the Harish-Chandra transform, joint with R. Gonin, A. Ionov. arXiv:2403.19734 |
| 2024 | Linear structure on a finite Hecke category in type A, arXiv:2403.19734 |
| 2023 | Equivariant derived category of a reductive group as a categorical center, joint with R. Bezrukavnikov, A. Ionov, Y. Varshavsky. arXiv:2305.02980 |
| 2022, 2024 | Exterior powers of a parabolic Springer sheaf on a Lie algebra, joint with R. Bezrukavnikov. arXiv:2209.01603 |
| 2020 | Monodromic model for Khovanov-Rozansky homology, joint with R. Bezrukavnikov. Published <i>J. Reine Angew. Math. (Crelles Journal)</i> , 2022. |
| 2018 | Towards a functor between affine and finite Hecke categories in type A, Ph.D. thesis. |
| 2011 | Variance of Linear Statistic for Plancherel Young Diagrams. arXiv:1202.1806 . |

Education

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| 2018 | Massachusetts Institute of Technology, Ph.D.. Thesis advisor: Roman Bezrukavnikov. |
| 2013 | National Research University Higher School of Economics, Department of Mathematics, B.Sc. |

Employment

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| 2024 - present | Postdoctoral Researcher, University of Hamburg. |
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2021 - 2024	Postdoctoral Research Associate, University of Edinburgh.
2018 - 2021	Coxeter Postdoctoral Fellow, Perimeter Institute and University of Toronto.

Teaching

Spring 2023	SMSTC Course Algebra and Representation Theory, Instructor.
Spring 2020	MAT344, Introduction to Combinatorics, University of Toronto, Instructor.
Spring 2019	MAT136, Calculus, University of Toronto, Instructor.
Spring 2018	18.721, Algebraic Geometry, MIT, TA.
Spring 2017	18.703, Modern Algebra, MIT, TA.
Spring 2017	18.702, Algebra II, MIT, TA.
Fall 2016	18.022, Calculus, MIT, Recitation instructor.
Spring 2016	18.100B/1002, Real Analysis, MIT, TA.
Fall 2015	18.705, Commutative Algebra, MIT, TA.
Spring 2015	18.901, Introduction to Topology, MIT, TA.
Fall 2014	18.715, Introduction to Representation Theory, MIT, TA.
Fall 2013	Course “Introduction to dynamical systems”, HSE, lecturer.

Student mentoring

Summer 2016	UROP+, student: Yuzhou Gu, project: “Nilpotent Orbits: Geometry And Combinatorics”.
Fall 2015	undergraduate project, student: Jack Gurev, project: “Representation theory of symmetric groups, after Okounkov and Vershik”.
Summer 2015	UROP+, student: Arkadiy Frasinich, project: “The Image of Weyl Group Translations in Hecke Algebras”.
Summer 2015	UROP+, student: Semon Rezhnikov, project: “Singularity theory”.

Research talks at conferences and seminars

Spring 2024	Quantum Topology Biennial Conference 2024: focus on Representation Theory workshop, Les Diableretes
Fall 2023	Hong Kong University of Science and Technology, Algebra Seminar
Spring 2023	Imperial College London
Fall 2022	University of Oxford, Algebra Seminar
Fall 2022	University of Glasgow, Algebra and Number Theory Seminar
Summer 2022	EPSRC Grant Enhancing Representation Theory, Noncommutative Algebra And Geometry Through Moduli, Stability And Deformations retreat
Fall 2021	Hodge Seminar, University of Edinburgh

Summer 2021	NSF FRG Conference: Categorical braid group actions and categorical representation theory, University of Massachusetts, Amherst.
Fall 2020	Lie Groups Seminar, MIT
Fall 2020	Geometric Representation Theory at Home seminar
Fall 2020	Mathematical Physics seminar, Perimeter Institute
Fall 2020	Representation Theory and Mathematical Physics seminar, UC Berkeley
Spring 2020	Representation Theory and Mathematical Physics seminar, UC Berkeley
Spring 2020	Algebraic Geometry seminar, UC Davis
Summer 2019	Summer school “Geometric representation theory and low-dimensional topology”, ICMS, Edinburgh
Spring 2019	Algebra seminar, University of Georgia in Athens.
Fall 2018	AIM Workshop “Categorified Hecke algebras, link homology, and Hilbert schemes”, San Jose, California
Fall 2018	Mathematical Physics seminar, Perimeter Institute
Fall 2018	Geometric Representation Theory seminar, University of Toronto
Summer 2018	Derived Categories and Matrix Problems seminar, NASU Institute of Mathematics, Kyiv, Ukraine
Summer 2018	Mathematical Advances of The Last Decade, Anniversary Conference, HSE, Moscow
Spring 2018	Group Representation Theory and Applications seminar, MSRI
Spring 2018	Algebra and Discrete Mathematics seminar, UC Davis
Spring 2018	Geometry, Physics, and Representation Theory seminar, Northeastern University
Fall 2017	Representation Theory seminar, University of Massachusetts, Amherst.
Spring 2013	Arnold’s scholarship recipient’s lecture, HSE, Moscow.
Summer 2012	ICTP-ESF School and Conference in Dynamical Systems, ICTP, Trieste.
Spring 2011	Texas Ergodic Theory Workshop, University of Houston.

Organized activities

2012-2015	Student seminar in various mathematical topics, HSE.
Fall 2015	Graduate student Geometric Representation Theory seminar, MIT.

Grants and awards

2013	Arnold’s scholarship, National Research University Higher School of Economics.
2011	1st place, 15th All-Russian Möbius Contest, nomination "Undergraduates".
2008	Second diploma, All-Ukrainian Mathematical Olympiad.

Language knowledge

Ukrainian (native), Russian (native), English (fluent), Attic/Medieval Greek (reading)