

Ilya Dumanski

Contact details

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Education

2021 — 2026 PhD student at the Massachusetts Institute of Technology.
2019 — 2021 Master degree at the Department of Mathematics, Higher School of Economics (HSE).
2015 — 2019 Bachelor degree at the Department of Mathematics, Higher School of Economics (HSE).

Scientific interests

Representation theory, algebraic geometry, mathematical physics.

Publications and preprints

1. I. Dumanski, V. Krylov. *K-theoretic Hikita conjecture for quiver gauge theories*. arXiv:2509.06226
2. I. Dumanski, *A Geometric Approach to Feigin–Loktev Fusion Product and Cluster Relations in Coherent Satake Category*, International Mathematics Research Notices, 2024;, rnae223, <https://doi.org/10.1093/imrn/rnae223>
3. I. Dumanski, E. Feigin, I. Makedonskyi, I. Makhlin. “On reduced arc spaces of toric varieties”. Algebra & Number Theory 19-2 (2025), 313–363. DOI 10.2140/ant.2025.19.313
4. I. Dumanski, E. Feigin, M. Finkelberg. “Beilinson–Drinfeld Schubert varieties and global Demazure modules”. 2021, Forum of Mathematics, Sigma, 9, E42. doi:10.1017/fms.2021.36
5. I. Dumanski, E. Feigin. “Reduced arc schemes for Veronese embeddings and global Demazure modules”. Communications in Contemporary Mathematics, 2022, <https://doi.org/10.1142/S0219199722500341>

In preparation

1. I. Dumanski. Perverse coherent sheaves on symplectic singularities.
2. I. Dumanski, V. Krylov. Noncommutative resolutions of affine Schubert varieties and canonical basis for affine quantum group

Honors, awards and fellowships

- Charles W. and Jennifer C. Johnson Prize 2025. Prize for MIT graduate students, awarded for a research paper.
- MIT Presidential Fellowship, 2021 – 2022.
- Simons Fellowship in Mathematics 2020.
- Möbius Contest 2018, the first price in nomination “Undergraduates”.

- Arnold Scholarship, Sept 2018 – June 2019. A scholarship annually awarded to a single HSE senior undergraduate for research achievements.
- “Alfa-Chance” scholarship, Sept 2015 – Aug 2017. Twenty freshmen of HSE are annually awarded.

Research talks

- Workshop “Enveloping Algebras and Geometric Representation Theory”, 18 – 23 May 2025; Oberwolfach.
- UC Berkeley, Representation theory and tensor categories seminar; 13 May 2025.
- Perimeter Institute, Mathematical series; 8 May 2025.
- University of Toronto, Geometry and Physics Seminar; 6 May 2025.
- Yale University; Geometry, Symmetry, and Physics Seminar; 21 April 2025.
- Boston College, Algebraic geometry seminar; 11 April 2025.
- Conference “Recent Progress on Categorification and Quantum Groups”; 5–6 April 2025, Hartford CT.
- MIT, Infinite Dimensional Algebra seminar; 21 March, 2025.
- M-seminar, online; 27 Feb 2025.
- University of Glasgow, Algebra & Number theory seminar; 22 Jan 2025.
- University of Edinburgh, Chiral clusters and W-algebras seminar; 21 Jan 2025.
- Paris algebra seminar; 14 Oct 2024.
- Virginia Tech, Algebra seminar; 13 Sept 2024.
- Conference “Representation Theory and Related Geometry: Progress and Prospects”, University of Georgia; May 27 – 31 2024, Athens GA.
- UC Riverside, Lie Theory seminar; 30 April 2024.
- USC, Algebra seminar; 29 April 2024.
- Conference “Gone Fishing; Poisson geometry and representation theory”, Northwestern University; Apr 11 – 14 2024, Evanston IL.
- Workshop “Quantum Structures in Lie Theory”, University of Virginia; March 1 – 3 2024, Charlottesville VA.
- Conference “Integer Partitions, Arc Spaces and Vertex Operators”; 3 – 6 Jan 2024, San Francisco CA.
- Conference “Algebraic and combinatorial methods in representation theory”; Nov 13 – 24 2023, Bangalore, India.
- Purdue University, Mathematical Physics Seminar; 22 March 2023.
- MIT, Infinite Dimensional Algebra seminar; 9 Dec 2022.
- UC Berkeley, Representation theory and tensor categories seminar; 7 Nov 2022.
- Azat Miftakhov Days, online; 5 July 2022.
- HSE, Seminar of the Laboratory of Algebraic Geometry and Its Applications; 14 May 2021.
- Moscow State University, Lie Groups and Invariant Theory seminar; 28 Apr 2021.
- HSE, Lie Algebras and Applications seminar, 17 Nov 2020.
- Aachen-Bochum-Cologne-Darstellungstheorie seminar, online, 29 July 2020.
- Moscow State University, E. Vinberg’s seminar Lie Groups and Invariant Theory, 19 Feb 2020.
- HSE, Lie Algebras and Applications seminar, 28 Jan 2020.
- Workshop “Degeneration Techniques in Representation Theory”, 6 – 12 Oct 2019, Oberwolfach.
- Arnold Day 2019, Moscow, 20 June 2019.

Scientific activities

Journals

Referee for the journals “Transformation groups”, “Israel Journal of Mathematics”.

Events

- Workshop “Vertex Algebras & Integrable Systems”, Cardiff University, July 7 – 11, 2025.
- Conference “Advances in Representation Theory”, Northeastern University, June 3 – 13, 2025.
- Conference “Vertex algebras, geometric representation theory and quantum groups”, Luminy, June 10–14, 2024.
- Summer School and Workshop on Relative Langlands Duality, Minneapolis MN, June 3 – 8, 2024.
- Workshop “Categorified Coulomb Branches”, Eugene OR, July 10–14, 2023.
- Conferences Gauge Theory, Moduli Spaces and Representation Theory, Kyoto and Kashiwa, Feb 20 – March 3, 2023.
- Conference “Vertex Algebras and Representation Theory”, Luminy, June 6 – 10, 2022.
- Conference “Open Problems in Algebraic Combinatorics”, Minneapolis MN, May 16 – 20, 2022.
- Summer school “Cluster Algebras and Moduli Spaces”, Sochi, Aug 1 – 7, 2021.
- Summer school “Algebra and Geometry”, Yaroslavl, July 25 – 31, 2021; July 24 – 31, 2019; July 23 – 31, 2018.
- Conference “Lie algebras, algebraic groups and invariants theory”, Moscow, Jan 27 – Feb 1, 2020; Samara, Aug 18 – 26, 2018.
- Winter school on Integrable systems and Representation Theory, Bologna, Jan 13 – 17, 2020.
- Mini-Workshop “Degeneration Techniques in Representation Theory”, Oberwolfach, Oct 6 – 12, 2019.
- Conference “Integrability, Combinatorics And Representations”, Giens, Sept 2 – 6, 2019.
- Summer School “Visions of Algebraic Groups”, Saint-Petersburg, Aug 26 – 30, 2019.
- International Summer School on Mathematical Physics, Moscow, July 1 – 12, 2019.
- International PhD Lab “Representation Theory of Lie groups and applications in Mathematical Physics”, Reims, June 24 – 30, 2019.
- Workshop “Geometric and computational aspects of representation theory of Lie algebras and quivers”, Aachen, Feb 12 – 14, 2019.
- “Heidelberg Laureate Forum”, Heidelberg, Sept 23 – 28, 2018.
- Conference “Function theory and dynamics of point processes”, Saint-Petersburg, June 1 – 3, 2017.
- Conference “Random Matrices and Determinantal Process”, Luminy, Feb 27 – March 3, 2017.
- Summer school “Contemporary mathematics”, Dubna, July 19 – 30, 2016; July 18 – 29, 2015.
- “Modern Mathematics International Summer School for Students”, Bremen, July 4 – 14, 2015; Lyon, Aug 20 – 29, 2014.
- Conference “Mal’tsev Meeting – 2015” in section “Group theory” with talk “On periodization of plane tilings” (with S. Avgustinovich), Novosibirsk, May 3 – 7, 2015.

Non-fiction publications

- I. Dumanski, V. Kiritchenko, “Representations and degenerations”, Snapshots of modern mathematics from Oberwolfach; 2022-07, DOI 10.14760/SNAP-2022-007-EN
- “Poling day”, Kvantik journal, Dec 2012 (with V. Katyakova, in Russian). It is about Condorcet's paradox and Arrow's impossibility theorem.

Personal details

Date and place of birth	June 24, 1997; Novosibirsk, Russia.
Language skills	Russian (native); English (fluent); French (basic knowledge); German (basic knowledge).
Marital status	Married.