

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.

List of publications

1. 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>
2. 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
3. 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
4. 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>

Research talks

- 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” at Joint Mathematics Meeting 2024; Jan 3 – 6 2024, San Francisco CA.
- Conference “Algebraic and combinatorial methods in representation theory”; Nov 13 – 24 2023, Bangalore.
- 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.

Honors, awards and fellowships

- MIT Presidential Fellowship, 2021-2022.
- Simons Fellowship in Mathematics 2020.
- Möbius Contest 2018, the first price in nomination “Undergraduates” for the work “Homogeneous coordinate ring for Veronese curve of degree 2”.
- 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.

Scientific activities

Journals

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

Events

- Workshop “Enveloping Algebras and Geometric Representation Theory”, 18 – 23 May 2025; Oberwolfach.
- Conference “Vertex algebras, geometric representation theory and quantum groups”, Luminy, June 10 – 14, 2024.
- Summer School and Workshop on Relative Langlands Duality, Minneapolis, June 3 – 8, 2024.
- Workshop on Algebra and Representation Theory, Held on Oregonian Grounds “Categorified Coulomb Branches”, Eugene, 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, 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.