

# Curriculum Vitae

## Igor Makhlin

---

**Personal Data**      Name: Igor Yurievich Makhlin

Born: 1990, Moscow, USSR

Email: imakhlin@mail.ru, iymakhlin@gmail.com

Languages: Russian, English, German.

**Education**              Undergraduate student at the Department of Mechanics and Mathematics at Moscow State University, 2007–2012. Graduation thesis: “Combinatorics of Young tableaux and representations of the algebra  $\mathfrak{gl}_n$ ” (under Prof. Boris Feigin).

Graduate student at the Faculty of Mathematics at National Research University Higher School of Economics, 2012–2015. Doctoral advisor: Prof. Boris Feigin.

Thesis title: “Quasiclassical formulas for the characters of representations of affine algebras”, defended September 2016.

Visiting student at the Mathematics Department at Massachusetts Institute of Technology, autumn 2014.

**Employment**

- Since October 2017: Research Scientist at the Center for Advanced Studies, Skolkovo Institute of Science and Technology.
- October 2016 - September 2017: Postdoctoral Fellow at the Max Planck Institute for Mathematics.
- Since 2014: part-time Research Fellow (formerly Research Assistant) at the International Laboratory of Representation Theory and Mathematical Physics, National Research University Higher School of Economics.

**Teaching Experience**

- Teaching assistant for the courses: “Lie Groups and Algebras” (2013), “Algebra-1” (2013), “Discrete Mathematics” (2015).
- 5 years of tutoring mathematics to high school and undergraduate students.

**Awards and Grants**

- 2018 Young Russian Mathematics award winner.
- Russian Science Foundation grant RSF 19-11-00056, 2019 - .
- Russian Science Foundation/German Research Foundation grant RSF-DFG 16-41-01013, 2016 - 2018.
- 19th All-Russian Möbius Contest (2015), 3rd prize.

- 2015 Simons Stipends Contest for Students and Graduate Students of Mathematics winner.

### Conference Talks

- “Non-abelian PBW degenerations”, Degeneration Techniques in Representation Theory, Oberwolfach, October 2019
- “Gelfand-Tsetlin degenerations”, ABCD Seminar Workshop, Aachen, February 2019.
- “FFLV degenerations and Gelfand–Tsetlin degenerations”, The 4th KTGU Mathematics Workshop for Young Researchers, Kyoto, September 2018.
- “Weighted PBW degenerations”, Seventh School-Conference on Lie Algebras, Algebraic Groups and Invariant Theory, Samara, August 2018. *(In Russian.)*
- “Degenerate representations and maximal cones in tropical flag varieties”, Spring School: Tropical Geometry meets Representation Theory, Cologne, March 2018.
- “Recent results on FFLV bases and FFLV polytopes”, Workshop on Quiver Grassmannians and their Applications, Wuppertal, March 2017.
- “FFLV polytopes and their vertices”, The Japanese Conference on Combinatorics and its Applications, Kyoto, May 2016.
- “A combinatorial formula for affine Hall-Littlewood functions via a weighted Brion theorem”, 25th British Combinatorial Conference, University of Warwick, July 2015.
- “Character formulas and Brion’s theorem”, Fifth School-Conference on Lie Algebras, Algebraic Groups and Invariant Theory, Samara, June 2015. *(In Russian.)*

### Publications

1. I. Makhlin, *PBW degenerate Schubert varieties: Cartan components and counterexamples*, Algebras and Representation Theory (2019), <https://doi.org/10.1007/s10468-019-09943-y>
2. I. Makhlin, *Gelfand–Tsetlin degenerations of representations and flag varieties*, <http://arxiv.org/abs/1809.02258>
3. X. Fang, E. Feigin, G. Fourier, I. Makhlin, *Weighted PBW degenerations and tropical flag varieties*, Communications in Contemporary Mathematics, 21:01 (2019), 1850016
4. I. Makhlin, *FFLV-type monomial bases for type B*, Algebraic Combinatorics, 2:2 (2019), 305–322
5. E. Feigin, I. Makhlin, *Vertices of FFLV polytopes*, Journal of Algebraic Combinatorics, 45:4 (2017), 1083–1110
6. B. Feigin, I. Makhlin, *A combinatorial formula for affine Hall–Littlewood functions via a weighted Brion theorem*, Selecta Mathematica, 22:3 (2016), 1703–1747
7. I. Makhlin, *Brion’s Theorem for Gelfand–Tsetlin Polytopes*, Functional Analysis and Its Applications, 50:2 (2016), 98–106
8. I. Makhlin, *Characters of Feigin–Stoyanovsky Subspaces and Brion’s Theorem*, Functional Analysis and Its Applications, 49:1 (2015), 15–24