

Evgeny Smirnov

Contact details

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Current positions

- 2023–present
Visiting associate professor, Guangdong Technion – Israel Institute of Technology, Shantou, China
- 2009–present
Associate professor, Department of Mathematics, HSE University, Moscow, Russia

Areas of specialization

Equivariant algebraic geometry, algebraic groups, algebraic combinatorics

Education

- 2004–2007
PhD in Mathematics, Université Joseph Fourier (Grenoble I), France
Thèse en cotutelle (joint graduate program) with the Independent University of Moscow and Lomonossov Moscow State University;
Thesis: *Orbits of a Borel subgroup on the product of two Grassmannians*
Supervisors: Michel Brion, Ernest Vinberg
- 1999–2004
Specialist (roughly MSc equivalent) in Mathematics
Independent University of Moscow, Russia
- 1999–2004
Specialist (roughly MSc equivalent) with distinction in Mathematics
Department of Mechanics and Mathematics, Lomonossov Moscow State University, Russia

Positions held previously

- 2015–2024
Vice-president, Independent University of Moscow, Russia
- 2010–2023
Research fellow, Laboratory of algebraic geometry and its applications, HSE University, Moscow, Russia
- 2007–2022
Research fellow, Laboratoire J.-V. Poncelet (UMI 2615 du CNRS), Moscow, Russia
- 2010–2015
Instructor, Independent University of Moscow, Russia
- 2007–2009
Postdoctoral research fellow, Hausdorff Center for Mathematics, Universität Bonn, Germany.

Publications and preprints

2024+

Partial order on involutive permutations and double Schubert cells, J. Algebra Appl., 12 pages, to appear.
Preprint arXiv:2405.08646

2024

(with Ekaterina Presnova) *Lascoux polynomials and subdivisions of Gelfand–Zetlin polytopes*, Int. Math. Res. Not. IMRN, **2024**:19 (2024), 12954–12977.

(with Anna Tutubalina) *Symmetric Functions: A Beginner’s Course*, xiii+156 pages. *Moscow Lectures* book series, Springer. ISBN 978-3-031-50340-5 (hardcover), 978-3-031-50343-6 (softcover).

2023

(with Leonid Monin) *Polyhedral Models for K -Theory of Toric and Flag Varieties*, Sémin. Lothar. Combin., **89B**.76 (2023), 12 pp.

(with Anna Tutubalina) *Pipe dreams for Schubert polynomials of the classical groups*, European J. Combin. **107** (2023), 103613.

2021

(with Anna Tutubalina) *Slide polynomials and subword complexes*, Sb. Math. **212**:10 (2021), 1471–1490.

2020

(with Anna Tutubalina) *Slide complexes and subword complexes*, Russian Math. Surveys, **75**:6, 1162–1164 (2020).

2018

Multiple flag varieties, J. Math. Sci. (N.Y.) **248**:3, 338–373 (2020)

2017

Singularities of divisors on flag varieties via Hwang’s product theorem, Bull. Korean Math. Soc., **54**:5, 1773–1778 (2017).

2016

(with Grigory Merzon) *Determinantal identities for flagged Schur and Schubert polynomials*, Eur. J. Math., **2**:1, 227–245 (2016)

(with Victor Kleptsyn) *Ribbon graphs and bialgebra of Lagrangian subspaces*, J. Knot Theory Ramifications, **26** (2016), 1642006 (26 pages)

Grassmannians, flag varieties and Gelfand–Zetlin polytopes, in: Recent Developments in Representation Theory. Proceedings of Maurice Auslander Distinguished Lectures and International Conference, Contemporary Mathematics series, vol. 673, 179–226. American Mathematical Society, 2016.

2012

(with Valentina Kiritchenko and Vladlen Timorin) *Schubert calculus and Gelfand–Zetlin polytopes*, Russian Math. Surveys **64**:4, 685–719 (2012).

(with Nicolas Perrin) *Springer fiber components in the two columns case for types A and D are normal*, Bull. Soc. Math. France, **140**:3, 309–333 (2012).

2008

Desingularizations of Schubert varieties in double Grassmannians, Funct. Anal. Appl., **42** (2008), no. 2, 126–134.

2007

Orbites d’un sous-groupe de Borel dans le produit de deux grassmanniennes, 70 pages, thèse de doctorat, Université de Grenoble I

Brubart order for two subspaces and a flag, 30 pages, preprint arXiv:0704.3061.

2005

On generating sets of ideals defining S -varieties, Moscow Univ. Math. Bull. 60 (2005), no. 3, 1–4 (2006).

Expository publications

2022

Friezes and continued fractions, 64 p., MCCME, Moscow, 2022 (in Russian). ISBN 978-5-4439-1701-6

2020

Number friezes, Kvant, 5 (2020), 15–24 (in Russian).

2019

On quadratic residues, Kvant, 10 (2019), 2–11 (in Russian).

2018

Reflection groups and regular polyhedra, 2nd edition, 56 p., MCCME, Moscow, 2018 (in Russian). ISBN 978-5-4439-1268-4. 1st edition published in 2009.

2015

(with Valentina Kiritchenko and Vladlen Timorin) *Ideas of Newton–Okounkov bodies*, Snapshots of Modern Mathematics from Oberwolfach, 12 pages. <http://www.mfo.de/math-in-public/snapshots>

Three glances on the Aztec diamond, 48 p., MCCME, Moscow, 2015 (in Russian). ISBN 978-5-4439-0279-1.

Young diagrams and q -combinatorics, Kvant, 1 (2015), 7–12 (in Russian).

2014

Young diagrams, plane partitions and alternating sign matrices, 64 p., MCCME, Moscow, 2014 (in Russian). ISBN 978-5-4439-0137-4.

Organization of conferences

2022

Geometric Representation Theory, satellite conference for the ICM-2022, HSE University and Skoltech, Moscow, June 27 – July 2, 2022 (canceled)

2017–2024

Alexey Zykin memorial miniconference, Independent University of Moscow, Steklov Institute and Centre J.-V. Poncelet, yearly one-day meeting in June (online in 2020 due to COVID-19 pandemic).

2018

Algebraic Groups: Geometry, Actions, and Structures, Université de Lyon, October 29 – November 2, 2018

2017

Transformation Groups 2017. Conference dedicated to Prof. Ernest Vinberg on the occasion of his 80th birthday. Independent University of Moscow and Skoltech, December 14–18, 2017

Teaching experience

2023–present

Guangdong Technion – Israel Institute of Technology.

Courses taught: 104043 *Differential and Integral Calculus 2M*, 104165 *Real Functions*, 104019 *Linear Algebra M*, 104158 *Introduction to Groups*

2009–2023

Higher School of Economics, Department of Mathematics. Compulsory courses: lectures in *Algebra*, *Discrete Mathematics*, exercise sessions in *Algebra*, *Discrete Mathematics*, *Analysis*, *Complex Analysis*. Elective courses: *Symmetric Functions*, *Representation Theory*, *Invariant Theory*.

2021–2022

New Economic School and Higher School of Economics, joint B.Sc. program in Economics. Elective course *Modern Algebra*.

2016–2019

Higher School of Economics, Department of Physics. Compulsory course in *Linear Algebra*.

2022

Sino–Russian Mathematics Center, Peking University. *Representation Theory* (taught online, 48 hours).

2011–2022

Independent University of Moscow. Courses taught: *Advanced Algebra*, *Combinatorics*, *Symmetric Functions*, *Lie Groups and Lie Algebras*, *Reflection Groups and Coxeter Groups*, *Grassmannians and Flag Varieties*, *Alternating Sign Matrices*.

2010–2012

Math in Moscow (joint program of Independent University of Moscow and HSE University for foreign students, taught in English). *Basic Representation Theory* (lectures and exercise sessions).

2008–present

Series of lectures at numerous summer schools of various levels for high school, undergraduate and graduate students, including *Contemporary Mathematics* (Dubna, Moscow region), *Combinatorics and Algorithms* (Kostroma region) and many others.

B.Sc. and M.Sc. students supervision

2015–2023, HSE University

Ten B.Sc. theses supervised. Two of them led to peer-reviewed publications: Dimitri Tyurin (J. Comb. Theory Series A), Anna Tutubalina (Russian Math. Surveys, Sbornik:Mathematics)

Three M.Sc. theses supervised: Forrest Thurman (2017, currently graduate student at Rutgers), Anna Tutubalina (2022, currently research assistant and instructor at HSE), Alexandra Leontyeva (2023, currently high school teacher and mathematics educator).

2009–2023

About 100 student year papers of Bachelor and Master level supervised

Honors and fellowships

2024

Award for the best popularization article in mathematics, HSE University

2023, 2022, 2020, 2019, 2018, 2017, 2013, 2012

Best teacher award, HSE University

2020–2023

Basis Foundation award “Junior Leader”

2012

Dynasty Foundation prize for young mathematicians holding a Ph.D. degree

2011–2022

Jim Simons Foundation – IUM fellowship

Research grants

Russian Science Foundation grants:

14-11-00414 (2015–2018, PI Victor Buchstaber), 14-21-00053 (2014–2016, PI Misha Verbitsky)

Russian Science Foundation and Department of Science and Technology, India grant:

22-41-02028 (2022–2024, PI Gleb Koshevoy)

Russian Foundation for Basic Research grants

20-01-00091-a (2020–2022, PI Alexander Panov), 12-01-33101-mol-a-ved (2012–2013), 12-01-31429-mol-a (2012–2013), 12-01-00944-a (2012–2014), 11-01-00289-a (2011–2013), 10-01-00540-a (2010–2012)

Russian Foundation for Basic Research and Centre National de Recherches Scientifiques grants

11-01-93105 (2011–2013), 10-01-93111 (2010–2012), 07-01-92214 (2007–2009)

Refereeing and reviewing

Referee service

Russian Mathematical Surveys, European Journal of Combinatorics, Bulletin de la SMF, Arnold Mathematical Journal, Transformation Groups, Journal of Algebraic Combinatorics, Journal of Lie Theory, IMRN, Advances in Applied Mathematics, Indagationes Mathematicae, Sbornik:Mathematics, Functional Analysis and its Applications

Reviewing

AMS Math Reviews, Zentralblatt MATH

Language skills

Russian	French	Spanish
Native	Fluent	Basic knowledge
English	German	Chinese (Mandarin)
Fluent	Fair knowledge	Basic knowledge

Personal details

Date and place of birth

November 9, 1982, Moscow, USSR

Citizenship

Russian

Marital status

Married, two children (born in 2016, 2021)

Last updated: October 14, 2024