Evgeny Smirnov

Contact details

Postal address
>
> Department of Mathematics
> Higher School of Economics
> Usacheva st., 6
> 119048 Moscow
> Russia

Phone

> +7 495 772 95 90 * 12742

Email

> esmirnov@hse.ru

URL

> http://www.mccme.ru/-smirnoff
> http://www.hse.ru/staff/esmirnov

Current positions

2009–present
> Associate professor, Department of Mathematics, Higher School of Economics, Moscow, Russia

2010–present
> Research fellow, Laboratory of algebraic geometry and its applications, Higher School of Economics, Moscow, Russia

2015–present
> Vice-president, Independent University of 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, Èrnest Vinberg
> Official referees: Bernard Leclerc, Andrei Zelevinsky

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

2010–2015

Instructor, Independent University of Moscow, Russia

2007–2009

Postdoctoral research fellow, Hausdorff Center for Mathematics, Universität Bonn, Germany. Postdoctoral mentors: Jan Schröer, Nicolas Perrin.

Publications and preprints

2022

(with Anna Tutubalina) *Pipe dreams for Schubert polynomials of the classical groups*, 42 pages, to appear in European Journal of Combinatorics.

2021

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

2020

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

2018

Multiple flag varieties, Journal of Mathematical Sciences **248**:3, 338–373 (2020)

2017

Singularities of divisors on flag varieties via Hwang's product theorem, Bulletin of the Korean Mathematical Society, **54**:5, 1773–1778 (2017).

2016

(with Grigory Merzon) *Determinantal identities for flagged Schur and Schubert polynomials*, European Journal of Mathematics, **2**:1, 227–245 (2016)

(with Victor Kleptsyn) *Ribbon graphs and bialgebra of Lagrangian subspaces*, Journal of Knot Theory and its 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*, Bulletin de la Société Mathématique de France, **140**:3, 309–333 (2012).

2008

Desingularizations of Schubert varieties in double Grassmannians, Functional Analysis and its Applications, **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

Bruhat 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.

Selected seminar and conference presentations

2004–present

Seminar talks in Moscow, St. Petersburg, Yaroslavl, Samara, Irkutsk (Russia), Paris, Grenoble, Lyon, Montpellier, Dijon, Rennes, Marseille (France), Bonn, Cologne, Bielefeld (Germany), Basel (Switzerland), Warwick, Edinburgh, Birmingham (UK), Zagreb (Croatia), Haifa (Israel), Cornell, Minneapolis (USA)

2022

Midsummer Day's Dream conference, Weizmann Institute of Science, Rehovot, Israel

Algebraic Groups White Nights Season II, St. Petersburg, Russia

2021

IMPANGA 20 Conference on Schubert Varieties, Bedlewo, Poland (via Zoom).

School and conference "Lie algebras, invariant theory and representation theory", Samara, Russia

Topology of torus actions, Sirius, Sochi, Russia

2020

Representation theory and dynamical systems, St Petersburg, Russia (via Zoom)

Geometry and Combinatorics, St Petersburg, Russia (via Zoom)

Eighth school and conference in Lie algebras and invariant theory, Moscow, Russia

2019

Minicourse "Schubert polynomials", summer school "Representation theory of Lie groups, mathematical physics, and combinatorics", Reims, France

Minicourse "Geometry of flag varieties", LUMS, Lahore, Pakistan

2018

Seventh school and conference in Lie algebras and invariant theory, Samara, Russia

2017

    Colloquium talk, Institute of Mathematical Sciences, Chennai, India

    Minicourse "Singularities of Schubert varieties", NCM Workshop on Schubert Varieties, IMSc, Chennai, India

    Sixth school and conference in Lie algebras and invariant theory, Moscow, Russia

    Colloquium talk, Steklov Mathematical Institute, Moscow, Russia

2015

    Magadan Algebraic Geometry International Conference (MAGIC), Magadan, Russia

    Geometry and Quantization — GeoQuant 2015, Madrid, Spain

    Fifth summer school in Lie algebras and invariant theory, Samara, Russia

    Torus Actions in Geometry, Topology, and Applications, Skolkovo, Russia

2014

    Colloquium talk, Nizhny Novgorod Mathematical Society, Nizhny Novgorod, Russia

    Singularity Day, University of Warwick, UK

    Colloquium talk, Durham University, UK

    Topology of torus actions and its applications to geometry and combinatorics (ICM 2014 satellite), KAIST, Daejeon, Republic of Korea

    Convex bodies and representation theory, BIRS, Banff, Canada

    Fourth school and conference on Lie algebras and representation theory, Moscow, Russia;

2013

    Minicourse "Grassmannians and flag varieties", University of Edinburgh, Scotland

    Maurice Auslander Distinguished Lectures and International Conference, Woods Hole, MA, USA

2012

    Mini-course "Flag varieties", Third summer school in Lie algebras and invariant theory, Togliatti, Russia

    "Algebra and Geometry": conference in honour of A. Khovanskii's 65-th birthday, Moscow, Russia

    Third Workshop on Moduli Spaces, Cluster Algebras, Knots, and Topological Recursion, Moscow, Russia

    Workshop "Cluster Algebras and Combinatorics", Graz, Austria

2011

    Mini-course "Reflection groups", Summer school in algebra and algebraic geometry, Ekaterinburg, Russia

    Second school and conference on Lie algebras and representation theory, Moscow, Russia;

2010

    Colloquium talk, Université de Bourgogne, Dijon, France

    International Algebraic Conference in honour of A. V. Yakovlev's 70th birthday, St. Petersburg, Russia

2009

    Summer school in Lie algebras and invariant theory, Samara, Russia

    Mini-course "Geometry of Grassmannians", Jacobs University, Bremen, Germany

    Russian–Japanese School in Representation Theory, University of Kyoto, Japan

    Winter solstice master class on enveloping algebras, Weizmann Institute of Science, Israel

Organization of conferences

2022

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

2017–2022

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

2009–present

    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*.

2016–2019

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

2021–2022

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

2011–present

    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

2015-2022, Higher School of Economics

    Eight 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)

    Two M.Sc. theses supervised: Forrest Thurman (2017, currently graduate student at Rutgers) and Anna Tutubalina (2022).

2009–2022

    About 100 student year papers of Bachelor and Master level supervised

Honors and fellowships

2022, 2020, 2019, 2018, 2017, 2013, 2012
Best teacher award, Higher School of Economics

2020–2023
Basis Foundation award "Junior Leader"

2012
Dynasty Foundation prize for young mathematicians holding a Ph.D. degree

2011–2021
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 (PI Gleb Koshevoy)

Russian Foundation for Basic Research grants
20-01-00091-a (2020–present, 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)

Language skills

Russian	French	Spanish
Native	Fluent	Basic knowledge
English	German	
Fluent	Fair knowledge	

Refereeing and reviewing

Referee service
Russian Mathematical Surveys, European Journal of Combinatorics, 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

Personal details

Date and place of birth
November 9, 1982, Moscow, USSR

Citizenship
Russian

Marital status
Married, two children (born in 2016, 2021)