ANNA FELIKSON

Curriculum Vitae

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EDUCATION

1989–1993: Specialized mathematical high school 1543, Moscow.

1992–1997: Undergraduate study at the Independent University of Moscow.
M.S., 1997: Mathematics.

1993–1998: Undergraduate study at the Moscow State University;
M.S., 1998: Mathematics and applied mathematics.

1997–2002: Ph.D. study at the Moscow State University and at the Independent University of Moscow.
Ph.D., 2002: Mathematics. Title: Coxeter decompositions of polytopes.
Advisers: E. B. Vinberg, O. V. Shwarzman.

RESEARCH INTERESTS

Cluster algebras, Coxeter groups, hyperbolic geometry, combinatorics of Coxeter polytopes, moduli spaces, low-dimensional topology, Kac-Moody algebras.

EMPLOYMENT

2016–present: Senior Lecturer in Pure Mathematics, Durham University.

2013–2016: Lecturer in Pure Mathematics, Durham University.

2012: DFG research associate, Jacobs University Bremen.

2010–2011: Visiting researcher, Jacobs University Bremen.

2009–2010: Researcher, Max Planck Institute for Mathematics, Bonn.

2007–2008: INTAS Postdoctoral Fellow, University of Fribourg, Switzerland.

2002–2008: Researcher, Independent University of Moscow.

1997–2002: Assistant, Independent University of Moscow.

1996–2003: Teacher of mathematics, specialized mathematical high school 1543, Moscow.

SUPERVISION

PhD Students: John Blackman (started 2016).
Jon Wilson (started 2013).
1 MSc Student in 2013.

CURRENT GRANT

10.2015–9.2017. EPSRC Standard Grant EP/N005457/1 (PI, £180K).
Research Associate: Ilke Canakci 10.2015–9.2017.

RECENT GRANTS

01.2012–12.2013. DFG research position (grant FE 1421/2) at Jacobs University Bremen, PI, EUR 151K (interrupted after 1 year because of moving to Durham).

01.2007–12.2009. RFBR research grant 07-01-00390-a (co-PI).

01.2007–12.2008. INTAS postdoctoral fellowship YSF-1000014-5916 (PI).

01.2006–12.2007. Grant NSh-5666.2006.1 of President of Russia (co-PI).

RESEARCH VISITS

August–December 2012. MSRI, Berkely.

July 2010–December 2011. Jacobs University Bremen, Germany.

January–March 2009. Institut des Hautes Études Scientifiques, Bures-sur-Yvette.

November 2004–June 2005. Max Planck Institute for Mathematics, Bonn.

September 2004. University of Fribourg, Switzerland.

May, July–September 2002. University of Fribourg, Switzerland (post-doc SNF).

April–May 1998. University of Bielefeld, Germany (the program SFB 343 "Diskrete Strukturen in der Mathematik".)

RECENT TALKS

- **December, 2017**, Conference "Transformation groups 2017" dedicated to Prof. Ernest Vinberg on the occasion of his 80th birthday, Morcow (intended).
- **September, 2017**, Summer School "Discrete Models in Geometry and Mathematical Physics", 3 lectures, TU Berlin (intended).
- **June, 2017**, Algebraic and Geometric Combinatorics of Reflection Groups, Montreal (intended).
- **March 24, 2017**, Journées de Géométrie hyperbolique, Fribourg.
- **January 18, 2017**, East Midlands Seminar in Geometry, Sheffield.
- **October 20, 2016**, Geometry and Topology Seminar, Durham.
- **July 21, 2016**, Representation theory Seminar, Bielefeld.
- **July 13, 2016**, Algebraic Combinatorics and Group Actions, Herstmonceux Castle, UK.
- **May 6, 2016**, Quivers and Bipartite Graphs: Physics and Mathematics, University of Notre Dame, London.
- **March 11, 2016**, Workshop on Cluster Algebras and Geometry, Münster.
- **November 27, 2015**, Integrable Day at Loughborough.
- **November 20, 2015**, Departamental Colloquium in Liverpool.
- **November 18, 2015**, Undergraduate Colloquium, Durham.
- **July 23, 2015**, Workshop on Lie Groups and Algebraic Groups, Bielefeld.
- **June 5, 2015**, Workshop on Cluster Algebras and Finite Dimensional Algebras, Leicester.

- **May 7, 2015**, Geometry Seminar, Manchester.
- **December 15, 2014**, Conference in Cluster Algebras in Combinatorics and Topology, KIAS, Seoul.
- **October 29, 2014**, Pure Maths Seminar, Lancaster.
- **October 17, 2014**, LMS workshop on Cluster Algebras and Preprojective Algebras at the School of Mathematics, Cardiff.
- **May 29, 2014**, 4th Workshop on Combinatorics of Moduli Spaces, Cluster Algebras, and Symplectic Invariants, Moscow.
- **February 7, 2014**, Pure Maths Seminar, Southampton.
- **October 1, 2013**, Pure Maths Seminar, Leicester.
- **May 16, 2013**, Algebra and Geometry Seminar, Newcastle.
- **March 20, 2013**, Workshop on Triangulations and Mutations, Newcastle.
- **February 11 , 2013**, Pure Maths Colloquium, Durham.
- **February 7, 2013**, Geometry and Topology Seminar, Durham.
- **December 28, 2012**, Seminar on Lie Algebras, Riemann Surfaces and Mathematical Physics, Independent University of Moscow.
- **October 31, 2012**, Workshop on Cluster Algebras in Combinatorics, Algebra, and Geometry, MSRI, Berkeley.
- **June 23, 2012**, Workshop on Geometry, Representation Theory and Clusters, Leicester.
- **March 8, 2012**, Geometry Seminar, Durham.
- **March 5, 2012**, Algebra, Geometry, and Intergable Systems Colloquium, Leeds.
- **July 21, 2011**, Workshop on Lie Groups and Algebraic Groups, Bielefeld.
- **December 24, 2010**, Seminar on Lie Algebras, Riemann Surfaces and Mathematical Physics, Independent University of Moscow.
- **December 15, 2010**, Seminar on Lie Groups and Invariant Theory, Moscow State University.
- **October 5, 2010**, Dynamics Seminar, Jacobs University Bremen.
- **July 2, 2010**, Teichmüller Theory and its Interactions in Mathematics and Physics, Centre de Recerca Matematica, Barcelona, Spain.
- **June 16, 2010**, Seminar on Groups and Geometry, Bielefeld.
- **June 3, 2010**, Computational Algebra and Number Theory seminar, Dusseldorf.
- **May 27, 2010**, 2nd Workshop on Combinatorics of Moduli Spaces, Cluster Algebras, and Symplectic Invariants, Moscow.
- **April 20, 2010**, Oberseminar on Algebra and Algebraic Combinatorics, Hannover.
- **March 26, 2010** The second W.Killing and K.Weierstrass Colloquium, Braniewo, Poland.
- **February 1, 2010**, Topics in Topology seminar, MPI, Bonn.

OTHER PROFESSIONAL ACTIVITIES

- **Referee for:** Algebraic and Geometric Topology, Annals of Combinatorics, Bulletin of the LMS, Canadian Mathematical Bulletin, Discrete and Computational Geometry, l'Enseignement Mathematique, Experimental Mathematics, Geometriae Dedicata, Journal of Algebra, Journal of Combinatorial Theory, Series A, Journal of Geometry and Physics, Journal of Modern Dynamics, Journal of Pure and Applied Algebra, International Mathematical Research Notices, Mathematische Nachrichten, Proceedings of the Japan Academy, Series A, Proceedings of the LMS, Publications mathématiques de l'IHES.

- **External Referee for**
  - peer review of grant applications to NSA Mathematical Sciences Grant Program;
  - peer review of grant applications to French National Research Agency ANR.

- **Mathematics Discipline Reviewer** for Research Quality Review, University College Cork, Ireland.

- **PhD examiner:**
  - external: Rafael Guglielmetti (2017, Fribourg).
  - external: Hannah Vogel (2016, Graz).
  - external: Heather Riley (2015, Liverpool).
  - internal: John Mcleod (2013, Durham);

- **Organiser** of North British Geometric Group Theory Seminar meetings in Durham (12th March 2014, 4th March 2015, 22nd February 2016).

- **Organiser** of Durham Pure Maths Colloquium (since 09.2013).

- **Translation** into Russian of W. P. Thurston's book "Three-Dimensional Geometry and Topology" (parts 1, 2).

- **Administrative duties:**
  - **Secretary** of Board of Examiners for MSc in Math Sciences (since 06.2014)
  - **Secretary** of Management Board of MSc in Mathematical Sciences (since 10.2014)
  - **Member** of Research Committee.

TEACHING AT DURHAM

Current:
- Course: Geometry III/IV;
- Tutorials for Algebra I;
- Project: "Billiards" (2 students in Year III);
- Project: "Markov Numbers" (2 students in Year IV).

Previous:
- Courses: Geometry III/IV, Riemannian Geometry IV.
- Tutorials for Complex Analysis II, Analysis I.
- Projects: "Curves on Surfaces" (1 student in Year IV, 2016).
  "Frieze patterns" (4 students in Year III, 2015).
  "Catalan numbers" (4 students in Year III, 2014).

PAST TEACHING

2007-2008. Math club for 12-16 years old students, Michigan State University.

2006 "Math in Moscow" program for American students at the Independent University of Moscow:

- Non–Euclidean Geometry, Topology.

1997–2007 Independent University of Moscow:

- Algebra, Geometry, Hyperbolic Geometry, Topology, Möebius Geometry, Complex Analysis;
- Advanced algebra, Riemannian Geometry, Differential Geometry.

1996–2003 Teacher of mathematics at the specialized mathematical high school 1543, Moscow:

- various courses including set theory, combinatorics, basic number theory, algebra, calculus;
- **1999–2000.** "Vector fields, manifolds and non-Euclidean geometry" for last year students.
- **1998-1999.** A course "Amusing Math" for 10-years old students.

PERSONAL INFORMATION

Born: June 11, 1976, Moscow, USSR.

Citizenship: citizen of Russia.

Marital status: married, three children (born 2000, 2003 and 2011).

Languages: Russian (native), German (basic), French (basic), English.

PUBLICATIONS

RECENT PREPRINTS

[1] (with P. Tumarkin) *Geometry of mutation classes of rank* 3 *quivers*, arXiv:1609.08828, submitted.

[2] (with P. Tumarkin) *Bases for cluster algebras from orbifolds*, arXiv:1511.08023, submitted.

PUBLISHED PAPERS

[3] (with S. Natanzon) *Double pants decompositions revisited.* arXiv:1509.08066, accepted to Moscow Math. J.

[4] (with P. Tumarkin) *Coxeter groups, quiver mutations and geometric manifolds*, J. London Math. Soc., 94 (2016), 38–60.

[5] (with P. Tumarkin) *Coxeter groups and their quotients arising from cluster algebras*, Int. Math. Res. Notices (2016), 5135–5186.

[6] (with J. Fintzen and P. Tumarkin) (2014). *Reflection subgroups of odd-angled Coxeter groups.* Journal of Combinatorial Theory, Series A 126 (2014), 92–127.

[7] (with M. Shapiro, H. Thomas and P. Tumarkin) *Growth rate of cluster algebras.* Proc. London Math. Soc. 109 (2014), 653–675.

[8] (with P. Tumarkin) *Essential hyperbolic Coxeter polytopes.* Israel Journal of Mathematics 199 (2014), 113–161.

[9] (with M. Shapiro and P. Tumarkin) *Cluster algebras and triangulated orbifolds.* Advances in Mathematics 231 (2012), 2953–3002.

[10] (with S. Natanzon) *Moduli via double pants decompositions.* Differential Geometry and its Applications 30 (2012), 490–508.

[11] (with M. Shapiro and P. Tumarkin) *Cluster algebras of finite mutation type via unfoldings.* Int. Math. Res. Notices 8 (2012), 1768–1804.

[12] (with M. Shapiro and P. Tumarkin) *Skew-symmetric cluster algebras of finite mutation type.* J. Eur. Math. Soc. 14 (2012), 1135–1180.

[13] (with P. Tumarkin) *Hyperbolic subalgebras of hyperbolic Kac-Moody algebras.* Transform. Groups 17 (2012), 87–122.

[14] (with S. Natanzon) *Labeled double pants decompositions.* Moscow Math. J. 11 (2011), 505–519.

[15] (with S. Natanzon) *Double pants decompositions of 2-surfaces.* Moscow Math. J. 11 (2011), 231–258.

[16] (with M. D. Sikiric and P. Tumarkin) *Automorphism group of root systems matroids.* Europ. J. Combin 32 (2011), 383–389.

[17] (with P. Tumarkin) *Reflection subgroups of Coxeter groups.* Trans. Amer. Math. Soc. 362 (2010), 847–858.

[18] (with P. Tumarkin) *On Coxeter polytopes with a unique pair of disjoint facets.* J. Combin. Theory A 116 (2009), 875–902.

[19] (with A. Retakh and P. Tumarkin) *Regular subalgebras of affine Kac-Moody algebras.* J. Phys. A: Math. Theor. 41 (2008) 365204 (16pp).

[20] (with P. Tumarkin) *On Coxeter polytopes with mutually intersecting facets.* J. Combin. Theory A 115 (2008), 121–146.

[21] (with P. Tumarkin) *On compact hyperbolic d-polytopes with $d+4$ facets.* Trans. Moscow Math. Soc. 69 (2008), 105-151.

[22] (with P. Tumarkin) *On simple ideal Coxeter hyperbolic polytopes.* Izv. Math. 72 (2008), 113–126.

[23] (with P. Tumarkin) *Euclidean simplices generating discrete reflection groups.* Europ. J. Combin. 28 (2007), 1056–1067.

[24] (with P. Tumarkin and T.Zehrt) *On hyperbolic Coxeter n-polytopes with $n+2$ facets.* Adv. Geom. 7 (2007), 177–189.

[25] (with P. Tumarkin) *Reflection subgroups of Euclidean reflection groups.* Sb. Math. 196 (2005), 1349–1369.

[26] *Coxeter decompositions of hyperbolic tetrahedra.* J. Math. Sci. 128 (2005), 3504–3514.

[27] *Coxeter decompositions of hyperbolic pyramids and triangular prisms.* Math. Notes 75 (2004), 583–593.

[28] *Lambert cube generating a discrete reflection group.* Math. Notes 75 (2004), 250–258.

[29] *Spherical simplices generating discrete reflection groups.* Sb. Math. 195 (2004), 585–598.

[30] (with P. Tumarkin) *Reflection subgroups of reflection groups.* Funct. Anal. Appl. 38 (2004), 313–314.

[31] *Coxeter decompositions of spherical simplices with fundamental dihedral angles.* Russian Math. Surveys 57 (2002), 420–421.

[32] *Coxeter decompositions of hyperbolic simplices.* Sb. Math. 193 (2002), 1867–1888.

[33] *Coxeter decompositions of hyperbolic polygons.* Europ. J. Combin. 19 (1998), 801–817.

[34] *On Thurston signatures.* Russian Math. Surveys 52 (1997), 826–827.

OTHER PREPRINTS

[35] (with P. Tumarkin) *A series of word-hyperbolic Coxeter groups.* arxiv:math.GR/0507389.

[36] (with P. Tumarkin) *Three symmetries groups.* Bielefeld, no. 98-104.

PAPERS IN PREPARATION

[37] (with I. Canakci) *Infinite rank surface cluster algebras.*

[38] (with P. Tumarkin) *Acyclic cluster algebras via reflection groups.*