

Curriculum vitae
Evgeny Gorskiy

University of California at Davis
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Personal Data

Date of Birth: December 12, 1984; Moscow, Russia.
Languages: English, Russian.

Employment

2014–present: Assistant Professor, Department of Mathematics.
UC Davis, USA (On leave for 2014–2015 academic year).

2013–2015: Ritt Assistant Professor, Department of Mathematics.
Columbia University, USA.

2010–2013: James H. Simons Instructor, Department of Mathematics.
Stony Brook University, USA.

2014–Present: Researcher, International Laboratory for Representation Theory and
Mathematical Physics, National Research University – Higher School of Economics.
Moscow, Russia.

Research interests

Theory of singularities, algebraic geometry, motivic integration, low-dimensional topology,
knot homology, representation theory, double affine Hecke algebras.

Education

2006–2009: PhD in Mathematics – Department of Higher Geometry and Topology,
Faculty of Mathematics and Mechanics, Moscow State University
Thesis title: "Motivic integration and invariants of algebraic knots".
Thesis advisor: Professor Sabir M. Gusein-Zade.

2001–2006: M. Sc. in Mathematics – Department of Higher Geometry and Topology,
Faculty of Mathematics and Mechanics, Moscow State University
Diploma title: "Motivic integrals and functional equations".

2001–2006: M. Sc. in Mathematics – Independent University of Moscow
Grade per average: 5.0 (out of 5) at both universities.

Fellowships and awards

2016: Hellman fellowship
2013: Prize of the Moscow Mathematical Society
2009: Dynasty Foundation contest fellowship
2008: Honor diploma of the Euler contest in the "PhD students" nomination
2008: Fellowship of the Government of the Russian Federation
2007: 2nd prize of the Moebius contest in the "PhD students" nomination
2006: 1st prize of the Moebius contest in the "Students" nomination .
2006: Summa Cum Laude – Moscow State University
2005: I. G. Petrovskii fellowship – Moscow State University
1999-2001: participated in Russian National Mathematical Olympiads

Grants

NSF grants DMS-1559338 (2015-2017), DMS-1403560 (2014-2015), sole PI.

RFBR-04-01-00762, RFBR-007-00593, RFBR-08-01-00110-a, RFBR-10-01-00678,
RFBR-13-01-00755, NSH-709.2008.1, NSH-8462.2010.1, NSH-4719.2006.1, INTAS-05-7805.

Teaching

At UC Davis:

Spring 2017: MAT 21A (Calculus), MAT 150C (Modern Algebra)

Fall 2016: MAT 21B (Calculus)

Winter 2016: MAT 148 (Discrete Mathematics)

Fall 2015: MAT 21A (Calculus), MAT 150A (Modern Algebra)

At Columbia University:

Spring 2015: MATH 2030 (Ordinary Differential Equations)

Fall 2014: MATH 1101 (Calculus 1)

Spring 2014: MATH 1101 (Calculus 1)

Fall 2013: MATH 1101 (Calculus 1)

At Stony Brook University:

Spring 2013: MAT 127 (Calculus C),

MAT 621 (Topics in Algebraic Topology : Khovanov Homology)

Fall 2012: MAT 127 (Calculus C)

Summer 2012: MAT 127 (Calculus C)

Spring 2012: MAT 127 (Calculus C), MAT 211 (Introduction to Linear Algebra)

Fall 2011: MAT 127 (Calculus C)

Summer 2011: MAT 312/AMS 351 (Applied Algebra)

Spring 2011: MAT 127 (Calculus C), MAT 312/AMS 351 (Applied Algebra)

Fall 2010: MAT 127 (Calculus C)

Service

At UC Davis:

- Currently advising a graduate student Oscar Kivinen, mentoring graduate research projects of Beibei Liu and Kirill Paramonov.
- Mentored undergraduate research projects of Christian Smith (now graduate student in NCSU) and Yu Wang (accepted for Master program in NYU).
- Co-organizing (with Anne Schilling and Monica Vazirani) an informal graduate student seminar on combinatorics and representation theory.
- Member of the qualifying exam committee for Gicheol Shin, Graham Hawkes, Oscar Kivinen, Beibei Liu, Subhadip Dey, Yue Zhao (all graduate students in Mathematics) and Mohamed Mahmoud (graduate student in Electrical Engineering).
- Member of thesis committee for Gicheol Shin, Oscar Kivinen, Beibei Liu and Subhadip Dey.
- Co-organized (with Michel Raibaut) a mini-conference “Singularities and motivic integration” at UC Davis.

At Columbia University:

- Co-organized (with Jennifer Hom, Ailsa Keating and Luis Diogo) in 2014-2015 Columbia Symplectic Geometry, Gauge Theory and Categorification Seminar.
- Co-organized (with Sergei Gukov, Mikhail Khovanov, Vivek Shende and Piotr Sułkowski) the workshop “Physics and Mathematics of Knot Homologies” at Simons Center for Geometry and Physics

- Participated in thesis defense committees of K. Putyra (advisor: M. Khovanov) and A. Neguț (advisor: Andrei Okounkov)

Refereeing

Duke Mathematical Journal, Selecta Mathematica, Journal of Combinatorial Theory A, Journal of London Mathematical Society, Algebraic and Geometric Topology, Quantum Topology, Compositio Math., Journal of Pure and Applied Algebra, Journal für die reine und angewandte Mathematik (Crelle), International Mathematics Research Notices, Communications in Mathematical Physics, Moscow Mathematical Journal, Annals of Combinatorics.

Publications

1. (with A. Neguț) Infinitesimal change of stable basis.
Selecta Mathematica, New Series. DOI: 10.1007/s00029-017-0327-5
2. (with J. Hom) Cable links and L-space surgeries.
To appear in Quantum Topology.
3. (with M. Mazin) Rational Parking Functions and LLT Polynomials.
Journal of Combinatorial Theory, Series A, **140** (2016), 123–140.
4. (with M. Mazin and M. Vazirani) Affine permutations and rational slope parking functions.
Trans. Amer. Math. Soc. **368** (2016), 8403–8445.
5. (with A. Némethi) Links of plane curve singularities are L-space links.
Algebraic and Geometric Topology **16** (2016) 1905–1912.
6. (with A. Némethi) Lattice and Heegaard–Floer homologies of algebraic links.
Int. Math. Res. Not. IMRN 2015, no. 23, 12737–12780.
7. (with P. Etingof and I. Losev) Representations of Rational Cherednik algebras with minimal support and torus knots. Advances in Mathematics **277** (2015), 124–180.
8. (with A. Neguț) Refined knot invariants and Hilbert schemes.
Journal de Mathématiques Pures and Appliquées **104** (2015), 403–435.
9. (with L. Lewark) On stable sl_3 -homology of torus knots.
Experimental Mathematics **24** (2015), 162–174.
10. (with A. Oblomkov, J. Rasmussen and V. Shende) Torus knots and the rational DAHA.
Duke Math. J. **163** (2014), no. 14, 2709–2794.
11. The equivariant Euler characteristic of moduli spaces of curves.
Advances in Mathematics **250** (2014), 588–595.
12. (with M. Mazin) Compactified Jacobians and q, t -Catalan numbers, II.
Journal of Algebraic Combinatorics, **39** (2014), no. 1, 153–186.
13. (with A. Oblomkov and J. Rasmussen) On stable Khovanov homology of torus knots.
Experimental Mathematics, **22** (2013), 265–281.
14. Arc spaces and DAHA representations.
Selecta Mathematica, New Series, **19** (2013), no. 1, 125–140.
15. (with M. Mazin) Compactified Jacobians and q, t -Catalan Numbers, I.
Journal of Combinatorial Theory, Series A, **120** (2013) 49–63.
16. q, t -Catalan numbers and knot homology. Zeta Functions in Algebra and Geometry, 213–232.
Contemp. Math. **566**, Amer. Math. Soc., Providence, RI, 2012.
17. Combinatorial computation of the motivic Poincare series.
Journal of Singularities, **3** (2011), 48–82
18. Adams Operations and Power Structures.
Moscow Mathematical Journal, **9** (2009), no. 2, 305–323.
19. On the S_n -equivariant Euler characteristic of moduli spaces of hyperelliptic curves.
Mathematical Research Letters, **16** (2009), no. 4, pp. 591–603.
20. Symmetries of some motivic integrals.
Russian Mathematical Surveys, **63** (2008), no. 4 (382), 179–180.

21. On the motivic measure on the space of functions.
Revista Matematica Complutense, **20** (2007), no. 2, 507–521.
22. Motivic integration and functional equations. Algebra and Analysis
(Journal of the St. Petersburg Mathematical Society), **19** (2007), no. 4, 92–112.
23. On divisorial filtrations on sheaves.
Mathematical notes, **79** (2006), no. 6, 825–837.
24. (with V. Gurovits, I. Mezhirov and E. Osmova). The Richman game.
Matematicheskoe prosveshchenie, **3** (2001), no. 5, 78–191.

Preprints

1. (with S. M. Gusein-Zade) Homological indices of collections of 1-forms.
arXiv:1704.08641
2. (with M. Mazin and M. Vazirani) Rational Dyck Paths in the Non Relatively Prime Case.
arXiv:1703.02668
3. (with A. Neguț and J. Rasmussen) Flag Hilbert schemes, colored projectors and
Khovanov–Rozansky homology. arXiv:1608.07308
4. (with M. Borodzik) Immersed concordances of links and Heegaard Floer homology.
arXiv:1601.07507
5. (with A. Némethi) On the set of L-space surgeries for links. arXiv:1509.01170
6. (with S. Gukov and M. Stošić) Quadruply-graded colored homology of knots.
arXiv: 1304.3481
7. Combinatorics of HOMFLY homology. Appendix to “The Hilbert scheme of
a plane curve singularity and the HOMFLY homology of its link” by
A. Oblomkov, J. Rasmussen and V. Shende. arXiv: 1201.2115
8. (with M. Gorsky) Distinguished bases for A_n root systems and parking functions.
arXiv: 1112.0381
9. Seifert cohomology of trees. arXiv: 0901.1298
10. On the S_n -equivariant Euler characteristic of $\mathcal{M}_{2,n}$. arXiv: 0707.2662

Recent seminar talks

- Khovanov-Rozansky homology and Hilbert schemes, April 2017.
Algebraic Geometry Seminar, Ohio State University.
- On the set of L-space surgeries for links, March 2017.
*“Homology theories in low dimensional topology” program seminar,
Isaac Newton Institute, Cambridge, UK.*
- Knot invariants, Hilbert schemes and Macdonald polynomials, March 2017.
Colloquium, University of Southern California.
- Stable bases and q -Fock space, March 2017.
CAGE seminar, University of Pennsylvania.
- Knot invariants, Hilbert schemes and Macdonald polynomials, March 2017.
Colloquium, University of Pennsylvania.
- Khovanov-Rozansky homology and Hilbert schemes, February 2017.
String-Math Seminar, UC Berkeley.
- Khovanov-Rozansky homology and Hilbert schemes, January 2017.
Geometry and Topology Seminar, Renyi Mathematical Institute, Budapest, Hungary.
- Splitting numbers for links and Heegaard Floer homology, November 2016.
Geometry and Topology seminar, UC Davis.

- Khovanov-Rozansky homology and the flag Hilbert scheme, September 2016.
Symplectic Geometry, Gauge Theory, and Categorification Seminar, Columbia University.
- Khovanov-Rozansky homology and the flag Hilbert scheme, September 2016.
Geometric Representation Theory, MIT
- Khovanov-Rozansky homology and Hilbert schemes of points, September 2016.
Six invited lectures at Northeastern University.
- Standard tableaux, Tesler matrices and q, t -identities, April 2016.
Combinatorics Seminar, UCLA.
- Khovanov-Rozansky homology and the flag Hilbert scheme, April 2016.
Topology Seminar, Cambridge University, UK.
- Stable bases and q -Fock space, March 2016.
RTGC Seminar, UC Berkeley.
- Heegaard Floer homology of some L-space links, February 2016.
Joint Los Angeles Topology Seminar, UCLA.
- Refined Chern-Simons theory and invariants of torus knots, January 2016.
String Theory Seminar, UC Davis.
- Elliptic Hall algebra and knots, January 2016.
Fourth UC Berkeley/Davis Combinatorics Gathering, UC Berkeley
- On the set of L-space surgeries for links, January 2016.
Geometry and Topology Seminar, CalTech
- Heegaard Floer homology of L-space links, October 2015.
Geometry and Topology Seminar, UC Davis
- Torus knots and Cherednik algebras, October 2015.
Algebra and Discrete Mathematics Seminar, UC Davis
- Torus knots and Cherednik algebras, September 2015.
Geometry and Topology Seminar, Duke University
- Torus knots and Cherednik algebras, March 2015.
Symplectic Geometry, Gauge Theory and Categorification Seminar, Columbia University
- Torus knots and rational Cherednik algebras, December 2014.
Representation Theory Seminar, CUNY
- Torus knots and Cherednik algebras, November 2014.
Representation Theory Seminar, Université Paris-7, Paris, France
- Refined knot invariants and Hilbert schemes, November 2014.
Infinite-Dimensional Algebra Seminar, MIT
- Heegaard-Floer homology of algebraic links, November 2014.
Topology Seminar, Boston College
- Heegaard-Floer homology of algebraic links, October 2014.
Topology Seminar, Renyi Mathematical Institute, Budapest, Hungary
- Heegaard-Floer homology of algebraic links, October 2014.
Topology Seminar, Princeton University
- Heegaard-Floer homology of algebraic links, September 2014.
Topology Seminar, Michigan State University

- Heegaard-Floer homology of algebraic links, September 2014.
Topology Seminar, Stony Brook University
- Floer homology of algebraic links, April 2014.
Informal Mathematical Physics Seminar, Columbia University
- Sommers region and parking functions, March 2014.
New York Combinatorics Seminar, CUNY.
- Torus knots and Cherednik algebras, March 2014.
Special Colloquium, UC Davis.
- Hilbert schemes of singular curves and Catalan numbers, March 2014.
Algebraic Geometry Seminar, Ohio State University.
- Series of lectures on Hilbert schemes and Cherednik algebras, Spring 2014.
Graduate Student Representation Theory Seminar, Columbia University
- Refined knot invariants and Hilbert schemes, October 2013.
Quiver Varieties Program Seminar, Simons Center for Geometry and Physics.
- Khovanov homology and torus knots, October 2013.
Colloquium, Temple University.
- Koszul homology and knot invariants, September 2013.
Algebraic Geometry Seminar, NYU.
- Poincaré series of algebraic links and lattice homology, February 2013.
Topology Seminar, Stony Brook University.
- Semigroups, compactified Jacobians and q, t -Catalan numbers, February 2013.
Algebraic Geometry Seminar, Columbia University.
- Torus knots and Cherednik algebras, February 2013.
London Topology and Geometry Seminar, Imperial College, London.
- Compactified Jacobians, Cherednik algebras and knot homology, January 2013.
Colloquium, University of Pittsburgh.
- Cherednik algebras, q, t -Schröder numbers and Khovanov-Rozansky homology, December 2012.
Combinatorics and Algebraic Geometry Seminar, UPenn, Philadelphia.
- Compactified Jacobians and q, t -Catalan numbers, November 2012.
Algebraic Geometry Seminar, NYU.
- Cherednik algebras and Khovanov-Rozansky homology, November 2012.
Algebra and Lie Groups Seminar, Yale University.
- Cherednik algebras and Khovanov-Rozansky homology, November 2012.
Valley Geometry Seminar, UMass Amherst.
- Cherednik algebras and Khovanov-Rozansky homology, November 2012
Lie Groups Quantum Mathematics Seminar, Rutgers University.
- Compactified Jacobians and DAHA representations, September 2012.
Geometry Seminar, EPF Lausanne
- Compactified Jacobians and q, t -Catalan numbers, March 2012.
Geometry-Algebra-Singularities-Combinatorics Seminar, Northeastern University, Boston
- DAHA representations and plane curve singularities, March 2012.
Infinite-Dimensional Algebra Seminar, MIT, Cambridge

Participation in international schools and conferences

- Mathematical Congress of the Americas.
Montreal, Canada. July 2017.
- FPSAC (Formal Power Series and Algebraic Combinatorics).
Queen Mary University, London, UK, July 2017
- Equivariant Combinatorics.
Centre de Recherches Mathematiques, Montreal, Canada, June 2017.
- Georgia International Topology Conference.
University of Georgia, May 2017.
- 58th Cascade Topology Seminar.
UBC, Vancouver, Canada. May 2017.
- Gauge Theory and Categorification.
UCLA, March 2017.
- 3-manifold workshop,
Isaac Newton Institute, Cambridge, UK. February 2017.
- Mini-conference on singularities and motivic integration.
UC Davis, November 2016.
- Workshop on Hall Algebras, Enumerative Invariants and Gauge Theories.
Fields Institute, Toronto, Canada. November 2016.
- William Rowan Hamilton Geometry and Topology Workshop.
Trinity College, Dublin, Ireland. August 2016.
- Knot homologies, Hilbert schemes, and Cherednik algebras.
University of Oregon, July 2016.
- New Perspectives in Representation Theory.
Leeds, UK, July 2016.
- Quantum Topology III.
Steklov Institute, Moscow, Russia. June 2016.
- Knots in the Triangle.
North Carolina State University, April 2016.
- Victor Goryunov 60.
University of Liverpool, UK, March 2016.
- Singularities in the Midwest III.
University of Wisconsin-Madison, March 2016.
- Topological methods in singularity theory.
International Center for Mathematical Sciences, Edinburgh, UK, July 2015
- Physics and Mathematics of Knot Homologies.
Simons Center for Geometry and Physics, Stony Brook, June 2015
- Representation Theory and Geometry of Symplectic Resolutions.
Northeastern University, May 2015
- Knots in Washington, Georgetown University.
Washington DC, March 2015

- AMS Spring Eastern Sectional Meeting.
Georgetown University, Washington DC, March 2015
- Congress of Spanish Royal Mathematical Society.
Granada, Spain, February 2015
- DAHA, Hall Algebras, Torus Knots and Combinatorics.
Orsay, France, November 2014
- Workshop on Moduli Spaces, Derived Geometry, and Geometric Representation Theory.
University of North Carolina, October 2014
- AMS Fall Eastern Sectional Meeting.
Dalhousie University, Halifax, Canada, October 2014
- Instanton Counting: Moduli Spaces, Representation Theory and Integrable Systems.
Leiden, Netherlands, June 2014
- Categorification and Geometric Representation theory.
CRM, Montreal, Canada, June 2014
- Workshop "Knots and Physics".
University of Amsterdam, Netherlands, May 2014
- Algebraic Geometry Northeastern Series.
Simons Center for Geometry and Physics, Stony Brook, April 2014
- Knots in Washington XXXVII.
George Washington University, Washington DC, January 2014
- Graduate workshop on geometry of Hilbert schemes.
Simons Center for Geometry and Physics, Stony Brook, November 2013
- Conference on Algebra, Geometry and Topology of Singularities.
Miraflores de la Sierra, Madrid, Spain, September 2013
- Motivic Invariants and Singularities.
Notre Dame University, Notre Dame, June 2013
- Low Dimensional Topology.
Simons Center for Geometry and Physics, Stony Brook, May 2013
- AMS Spring Eastern Sectional Meeting.
Boston College, Boston, April 2013
- Rational Catalan combinatorics.
American Institute of Mathematics, Palo Alto, December 2012
- Knots in Washington XXXV.
George Washington University, Washington DC, December 2012
- Workshop on Singularities.
Oberwolfach Mathematical Institute (Germany), September 2012
- Simons Summer Workshop in Mathematics and Physics.
Simons Center for Geometry and Physics, Stony Brook (USA), August 2012
- Perspectives in Representation Theory.
Yale University, New Haven (USA), May 2012
- Simons Postdoctoral Fellows Meeting.
Simons Center for Geometry and Physics, Stony Brook (USA), April 2012

- Algebraic Geometry Northeastern Series.
University of Massachusetts, Amherst (USA), March 2012
- International Workshop on Tropical and Quantum Geometries.
Research Institute for Mathematical Sciences, Kyoto (Japan), February 2012
- Algebraic Geometry Northeastern Series.
Simons Center for Geometry and Physics, Stony Brook (USA), October 2011
- Simons Summer Workshop in Mathematics and Physics.
Simons Center for Geometry and Physics, Stony Brook (USA), August 2011
- Faces of geometry: 3-manifolds, groups and singularities.
Columbia University, New York (USA), June 2011
- Homological Invariants in Low-Dimensional Topology Workshop.
Simons Center for Geometry and Physics, Stony Brook (USA), June 2011
- Moduli Spaces and Moduli Stacks.
Columbia University, New York (USA), May 2011
- Conference on Singularities and Geometry-Topology.
El Escorial (Spain), October 2010
- Second International Workshop on Zeta Functions in Algebra and Geometry.
Palma de Mallorca (Spain), May 2010
- Seminar on motivic integration.
Kumamoto University (Japan), December 2009.
- Dynamical systems, Singularity theory and Perverse Sheaves.
CIMPA school, Samarkand (Uzbekistan), October 2009.
- Summer School on Link Homology.
Institut de Mathématiques de Jussieu, Paris, June 2009
- Combinatorics of moduli spaces, Hurwitz numbers and cluster algebras.
Steklov Mathematical Institute, Moscow, June 2008.
- International Conference on Commutative, Combinatorial and Computational Algebra in memory of Pilar Pisón Casares.
University of Seville (Spain), February 2008.
- Arc spaces, integration and combinatorial algebra (YMIS'08).
University of Valladolid, Sedano (Spain), February 2008.
- Swiss-Russian seminar on the geometry of moduli spaces and related topics.
University of Zürich, Switzerland, December 2007
- Fundamental mathematics in young scientists' works.
Independent University of Moscow, November 2007.
- International conference "V. Arnold - 70".
Steklov Mathematical Institute, Moscow, August 2007.
- International Workshop on Zeta Functions in Algebra and Geometry.
University of Segovia (Spain), June 2007.
- Moduli spaces of Riemann surfaces and related topics.
Centre de Recherches Mathématiques, Montréal (Canada), June 2007.
- New Trends in Singularity Theory.
CIMPA school, Madrid (Spain), August 2006.

- Aleksandrov Memorial Conference.
Moscow State University, May 2006.
- Geometry and Integrability in Mathematical Physics.
Laboratoire J.-V.Poncelet (Independent University of Moscow), May 2006.
- Exchange program between the Independent University of Moscow and
École Normale Supérieure.
Paris, January-February 2006.
- String Dualities.
IHÉS school, Paris, January 2006.
- Numerical invariants in algebraic geometry and string theory.
Cetraro(Italy). C.I.M.E. school, June 2005.