Curriculum Vitae of Vladlen Timorin

Current Positions:

- Faculty of Mathematics, National Research University Higher School of Economics, Professor and Dean
- Laboratory of Algebraic Geometry and its Applications, Researcher

Positions previously held:

- Independent University of Moscow, Vice-president (2011–2015)
- Associate Professor, Faculty of Mathematics, National Research University Higher School of Economics (2009–2012)
- Post-Doctoral Fellow at Jacobs University Bremen, Germany (2007–2009)
- Lecturer (Post-Doctoral Fellow) at the Institute for Mathematical Sciences, State University of New York at Stony Brook (2004–2007)
- Visitor, Max-Planck-Institut für Mathematik, Bonn (Spring 2010)

Research Interests:

- Complex dynamics, dynamics of rational functions.
- Quadratic forms.
- Projective differential geometry of curves.
- Geometry and combinatorics of convex polytopes.

Habilitation thesis: "Dynamics and geometry of quadratic rational maps", defended on January 17, 2012, RAS Institute for Information Transmission Problems (Moscow)

Membership in Editorial Boards:

- Arnold Mathematical Journal (IMS at Stony Brook, Springer), Managing Editor
- Journal of Dynamical and Control Systems (Springer), Associate Editor

Education:

2004, PhD: University of Toronto, Department of Mathematics,
"Rectifiable families of conics", Advisor: Askold Khovanskii

2003, PhD: Steklov Mathematical Institute, Moscow,
"Combinatorial Analogues of the Cohomology Algebras for Convex Polytopes"

2000, Diploma: Moscow State University, Department of Mechanics and Mathematics,
"An analog of the Hard Lefschetz theorem for polytopes simple in edges"

2000, Diploma: Independent University of Moscow,
"Small resolutions of polytopes and the generalized h-vector"

Mathematical Honors and Awards:

- Dynasty Foundation Contest Winner 2013, `http://www.mccme.ru/dfc/`
- P. Deligne's Contest Winner 2010, `http://www.mccme.ru/pdc/`
- Möbius Prize, `http://www.moebiuscontest.ru`
- Ontario Graduate Scholarship
- Connaught Graduate Scholarship, University of Toronto

Scientific grants.

- 2014 RSCF grant 14-21-00053 "Algebraic Geometry of Symplectic Manifolds" within AG Laboratory NRU-HSE (participant)
- 2013 Russian Foundation for Basic Research grant 13-01-12449 "Slow dynamical chaos" (participant)

- 2012 Russian Foundation for Basic Research grant 12-01-33020 "Methods of Complex Analysis in Dynamical Systems" (grant holder)
- 2011 Ministry of Education and Science grant MK-2790.2011.1, "Topological and symbolic models for one-dimensional and two-dimensional dynamical systems" (grant holder)
- 2011 Russian Foundation for Basic Research grant 11-01-00654-a "One-dimensional dynamical systems and Teichmüller spaces" (grant holder)
- 2010 Russian Foundation for Basic Research grant 10-01-00540-a, "Cohomology of spherical varieties and Newton polytopes" (participant)

Research papers:

(1) *On the theory of coconvex bodies* (joint with A. Khovanskii)// Discrete and Computational Geometry. 2014. Vol. 52. Issue 4. P 806–823.
(2) *The main cubioid* (joint with A. Blokh, L. Oversteegen, R. Ptacek) // Nonlinearity. 2014. Vol. 27. No. 8. P. 1879–1897.
(3) *Counting vertices in Gelfand-Zetlin polytopes* (joint with V. Kiritchenko, P. Gusev) // Journal of Combinatorial Theory, Series A. 2013. Vol. 120. P. 960–969.
(4) *Dynamical cores of topological polynomials* (joint with A. Blokh, L. Oversteegen, and R.Ptacek) // Proceedings of the International Conference "Frontiers in Complex Dynamics" celebrating J. Milnor's 80th Birthday, Princeton University Press 2013
(5) *Osculating curves: around the Tait-Kneser Theorem* (joint with E. Ghys, S. Tabachnikov) // Mathematical Intelligencer, 2013. Vol. 35. No. 1. pp. 61–66.
(6) *Schubert Calculus and Gelfand–Zetlin polytopes* (joint with V. Kirichenko and E. Smirnov) // Russian Mathematical Surveys, 2012. Vol. 67. No. 4. pp. 89–128
(7) *Captures, matings and regluings* (joint with I. Mashanova) // Annales de la Faculté des Sciences de Toulouse. 2012. Vol. 21. No. 5. pp. 877–906.
(8) *Planarizations and maps taking lines to linear webs of conics* // Mathematical Research Letters. 2012. Vol. 19. No. 4. pp. 899–907.
(9) *Powerful facets* (joint with D. McDuff and S. Tolman) // an Appendix to *Polytopes with mass linear functions, part I*, by D. McDuff and S. Tolman, Int. Math. Res. Notes **8** (2010), pp. 1506–1574
(10) *Topological regluing of rational functions*, V.A. Timorin // Inventiones mathematicae, **179** (2010) Vol. 3. pp. 461–506
(11) *The external boundary of M_2*, Fields Institute Communications Vol. **53**: "Holomorphic Dynamics and Renormalization, A Volume in Honour of John Milnor's 75th Birthday", 225–267
(12) *Rectifiable pencils of conics*, Moscow Mathematical Journal **7** (2007), no. 3, 561–570
(13) *On binary quadratic forms with semigroup property*, (joint with Francesca Aicardi), Proceedings of Steklov Institute **258** (2007), the volume dedicated to the 70th birthday of V. Arnold
(14) *Maps That Take Lines To Circles, in Dimension 4*, Functional Analysis and its Applications **40** (2006), no. 2, 108–116,
(15) *Circles and quadratic maps between spheres*, Geometriae Dedicata **115** (2005), pp. 19–32,
(16) *Circles and Clifford algebras*, Functional Analysis and its Applications, **38** (2004), No. 1, 45–51,
(17) *Kähler metrics whose geodesics are circles*, Proceedings of the Conference "Fundamental Mathematics Today", Ed. S.K. Lando and O.K. Sheinman, pp. 284–293
(18) *Rectification of circles and quaternions*, Michigan Mathematical Journal, **51** (2003), 153–167
(19) *On polytopes that are simple at the edges*, Functional Analysis and its Applications, **35**, No. 3 (2001), 189–198

(20) *An analogue of the Hodge-Riemann relations for simple polytopes*, Russian Mathematical Surveys, **54**, No.2 (1999), 381–426
(21) *Mixed Hodge-Riemann relations in linear context*, Functional Analysis and its Applications, **32**, No. 4 (1999), 268–272

Preprints:

(1) *The parameter space of cubic laminations with a fixed critical leaf* (joint with Blokh A., Oversteegen L., Ptacek R.M.) // Series math "arxiv.org". 2015. No. 1501.05568.
(2) *Complementary components to the cubic Principal Hyperbolic Domain* (joint with Blokh A., Oversteegen L., Ptacek R. M.) // Series math "arxiv.org". 2014. No. 1411.2535.
(3) *On maps taking lines to plane curves* (joint with V. Petruschenko) // Series math "arxiv.org". 2014. No. 1409.3403.
(4) *Combinatorial models for spaces of cubic polynomials* (joint with Blokh A., Oversteegen L., Ptacek R. M.) Series math "arxiv.org". 2014. No. 1405.4287.
(5) *Smart criticality* (joint with Blokh A., Oversteegen L., Ptacek R. M.) Series math "arxiv.org". 2014. No. 1401.5123.
(6) *Aleksandrov-Fenchel inequality for coconvex bodies* (joint with A. Khovanskii) // Series math "arxiv.org". 2013. No. 1305.4484.
(7) *Disquisitiones 235* // Series math "arxiv.org". 2013. No. 1309.4879.
(8) *Laminations from the Main Cubioid* (joint with Blokh A., Oversteegen L., Ptacek R. M.) // Series math "arxiv.org". 2013. No. 1305.5788.
(9) *Quadratic-like dynamics of cubic polynomials* // (joint with Blokh A., Oversteegen L., Ptacek R. M.) Series math "arxiv.org". 2013. No. 1305.5799.
(10) *Partial holomorphic semiconjugacies between rational functions*, // Preprint, Max-Planck-Institut für Mathematik, 08/2010
(11) *Moore's theorem* // Series math "arxiv.org". 2010. No. 1001.5140.
(12) *Variations on the Tait-Kneser theorem* (joint with Sergei Tabachnikov) // Preprint Stony Brook IMS # 2007/1, "arxiv.org" No. 0702150.

Books and popular articles:

(1) *Geometry of Hamiltonian systems and of PDEs* [in Russian]// to appear in HSE Publishing House, 2015.
(2) *Polytopes and equations* (joint with A. Khovanskii) [in Russian] // Mat. Prosveschenie, Ser. 3, **14** (2010) pp. 30–57
(3) Book: *Quadratic arithmetic in problems* (joint with F. Aicardi), in preparation
(4) *Sylvester's line* (joint with S. Tabachnikov) [in Russian], Kvant, **5** and **6** (2009). pp. 2–6 and 6–9
(5) *Arithmetic triangles* [in Russian], Kvant, **6** (2008)
(6) *Quadratic mathematics* [in Russian], draft of a short book based on lecture notes from a Summer School in Dubna.
(7) Book: *Combinatorics of Convex Polytopes* [in Russian], MCCME Moscow, 2002

Selected lectures:

2014 International Conference "Attractors, Foliations and Limit Cycles" celebrating Yulij Ilyashenko's 70th Birthday
Workshop "Okounkov bodies and representation theory", Banff (Canada)
Workshop "Okounkov bodies and applications", Oberwolfach (Germany)
Summer School on Dynamical Systems (Dubna, Russia)
International Conference "Differential and difference equations, dynamical systems", Homburg (Saar, Germany)
International Conference "Legacy of Vladimir Arnold", Toronto (Canada)

2013 Russian-Japanese Winter School (Moscow)
ICTP-SISSA-Mosow School on Geometry and Dynamics (Trieste)
Université Aix-Marseille (Marseille)

2012 INdAM Conference New Trends in Holomorphic Dynamics (Cortona, Italy)
The eighteenth International Conference on Difference Equations and Applications (Barcelona, Spain)
XI-th International ITEP-NRU HSE-ITP School in theoretic and mathematical physics (Sebastopol, Ukraine)
International Conference "Holomophic foliations and complex dynamics" (Moscow)
The Chebyshev laboratory (St. Petersburg)
The "Dynasty" Foundation – IUM meeting (20th anniversary of the IUM) (Moscow)

2011 Ahlfors-Bers Colloquium (Houston, USA)
Colloquium, University of Alabama at Birmingham (Birmingham, USA)
International Conference "Polynomial Matings" (Toulouse, France)
Summer School "Dynamical Systems" (Dubna)
International Conference "Geometric structures on complex manifolds" (Moscow)
International Conference "Frontiers in Complex Dynamics" (Banff, Canada)
Texas Ergodic Theory Workshop (Houston, USA)

2010 Workshop "Holomorphic dynamics around Thurston's theorem" (Roskilde, Denmark)

2009 International Conference "Advances in Low-Dimensional dynamics" (Stony Brook, USA)
University of Göttingen, Marburg University, Boston University, Institut Henry Poincaré (Paris), Jacobs University Bremen

2008 Workshop "Trends and Developments in Complex Dynamics" (Oberwolfach)
Second Canada–France congress (Montreal)
Mini-conference on dynamical systems (Hamburg)

2007 Conference of the Moebius prize winners (Moscow)
Workshop on symbolic dynamics (Soeminestationen, Denmark)
University of Liverpool
Workshop on complex dynamics (Zacatecas, Mexico)

2006 Pennsylvania State University
International Conference "Differential equations, dynamical systems and singularity theory" (Suzdal)
International Conference "Low-dimensional mathematics" (St. Petersburg)
Dynamical systems seminar, Moscow
University of Chicago
University of Toronto and Fields Institute, Toronto

2005 University of Massachusetts at Amherst
The Abdus Salam International Centre for Theoretical Physics, Trieste
Gauss-Dirichlet conference, Göttingen
Pennsylvania State University

2003 Conference "Hilbert 16", IUM (Moscow)
St. Petersburg Mathematical Society
Seminar on Low-Dimensional Mathematics (St. Petersburg)
Workshop "Theory of Webs and Differential Equations" (Luminy, Marseille)

2002 Winter meeting of the Canadian Mathematical Society (Ottawa)

2001 International Conference "Fundamental Mathematics Today", IUM (Moscow)
Winter meeting of the Canadian Mathematical Society (Toronto)

2000 Conference of young mathematicians (Moscow)
Moscow Mathematical Society

Teaching:

2014/2015: Geometry and dynamics seminar, Complex Analysis, Mathematical Methods of Science, History of Mathematics

2013/2014: Holomorphic dynamics Mathematical Methods of Science, History of Mathematics

2012/2013: Geometry I (IUM), Basic Representation Theory, Ordinary Differential Equations

2011/2012: Hamiltonian Systems, Partial Differential Equations

2010/2011: Calculus I (IUM), Hamiltonian Systems, Partial Differential Equations, Convex Polytopes, Mathematical Experiments with Computers (Mathematica computer algebra system)

2009/2010: Mathematical Experiments with Computers (Mathematica computer algebra system)

2008/2009: Multivariable calculus and ODE (Jacobs University Bremen)

2007/2008: Linear algebra and stochastic processes; Perspectives in mathematics, General mathematics and Computational Science (Jacobs University Bremen)

2006/2007: Problem Solving in Mathematics, Graduate Problem Seminar, Undergraduate research project, Putnam training sessions (SUNY at Stony Brook)

2005/2006: Calculus III: Vector Calculus, Geometric Structures (geometry for prospective high school teachers), Putnam training sessions (SUNY at Stony Brook); Quadratic Mathematics (Dubna summer school)

2004/2005: Graduate Topology, Graduate Topology and Differential Geometry (SUNY at Stony Brook)

2001: Convex Polytopes (Dubna summer school)

1999/2000: Convex bodies and convex polytopes (IUM)

Service:

2014: Organizer: International Conference "Geometric and topological methods in low-dimensional dynamical systems", Moscow

2013: Organizer: the ICTP-SISSA-Moscow school on Geometry and Dynamics

2012: Organizer: International Conference "Algebra and Geometry" celebrating A.G. Khovanskii's 65th Birthday (Moscow)

2011/2012: Organizer: Geometry and Dynamics seminar (NRU HSE, MIRAS)

2009: Organizer: Geometry and Dynamics seminar, Jacobs University Bremen

2007–2008: mini-courses on dynamics, Math Battles, Jacobs University Bremen

2006–2007: Dynamical Systems Seminar, Putnam training, SUNY at Stony Brook

2004–2006: IMS preprint series, SUNY at Stony Brook

2005–2007: Problem of the Month, SUNY at Stony Brook

2000–2001 and 2003: Geometry Seminar, University of Toronto

1997: Team supervisor, International Conference for high-school students, Izmir, Turkey

1996: Team supervisor, International Olympiad for high-school students, Ankara, Turkey

1995–1999: Member of the Organization Committee, International Conference for gifted high-school students, Chernogolovka, Russia

Personal Information:

- Date of birth: June 21, 1978

- Place of birth: Moscow, Russia
- Family status: married, 2 children
- Citizenship: Russia