

# Roman M. Fedorov

Curriculum Vitae  
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Max Planck Institute for Mathematics  
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## Education

1999–2005 *The University of Chicago*  
Ph.D. in Mathematics received March 2005  
M.S. in Mathematics received June 2000

1993–1999 *Independent University of Moscow*, Diploma with honors  
1993–1998 *Moscow State University*, Diploma with honors

## Employment

09/2005–08/2008 *University of Massachusetts, Amherst*, Visiting Assistant Professor  
09/2008–08/2010 *Boston University*, Geometry Postdoc  
10/2010–04/2011 *Max Planck Institute for Mathematics*, member

## Publications and Preprints

2010 An example of Langlands correspondence for irregular rank two connections on  $\mathbb{P}^1$ . (Joint with D. Arinkin.) arXiv:1003.6112, submitted.

2010 Irregular Wakimoto modules and the Casimir connection, *Selecta Mathematica N.S.*, **16**, no. 2, 241–266, DOI 10.1007/s00029-010-0019-x. A preprint is available at arXiv:0812.4472.

2007 Frobenius manifold structures on the spaces of abelian integrals, arXiv:math/0701581, accepted for publication in *Journal of Geometry and Physics*.

2006 Algebraic and hamiltonian approaches to isostokes deformations, *Transformation Groups*, **11**, no. 2, 137–160. A preprint is available at arXiv:math/0412121.

2006 Upper bounds of the number of orbital topological types of planar polynomial vector fields “modulo limit cycles”, *Proceedings of the Steklov Institute of Mathematics*, **254**, pp. 238–254. A preprint is available at arXiv:math/0402214.

- 2006 Moscow Mathematical Olympiads 1993–2005, Moscow, MCCME, 455p (in Russian). Co-authored with A. Ya. Kanel-Belov, A. K. Kovaldzhi, I. V. Yaschenko. (The English translation is expected to be published by AMS in the series “MSRI Mathematical Circles Library” in 2011.)
- 2004 Upper bounds of the number of orbital topological types of polynomial vector fields on the plane “modulo limit cycles”, *Russian Mathematical Surveys*, **59**, no. 3, pp. 569–570.
- 2001 Lower Bounds for the Number of Orbital Topological Types of Planar Polynomial Vector Fields “Modulo Limit Cycles”, *Moscow Mathematical Journal*, **1**, no. 4, pp. 539–550.

**Scientific Advisor:** *Professor Victor Ginzburg*

### Research Interests

I am working in the fields of Algebraic geometry and Representation theory. My current research deals with Langlands Duality, connections with irregular singularities, moduli spaces of curves and bundles and Gromov–Witten theory.

I am also interested in mirror symmetry, quantum groups, and Quantum Field Theory.

### Teaching

- 2008–2010 Instructor, *Boston University*:  
 Differential Geometry II (a graduate course)  
 Calculus I and II  
 Differential Topology II (a graduate course)
- 2005–2008 Lecturer in Mathematics, *University of Massachusetts, Amherst*:  
 Mathematics 100: Basic Math Skills for the Modern World  
 Mathematics 131: Calculus I  
 Mathematics 132H: Calculus II, Honors section  
 Mathematics 425: Advanced multivariate calculus  
 Mathematics 300: Fundamental concepts of mathematics.
- 2001–2005 Instructor in Mathematics, *University of Chicago*:  
 Mathematics 15100–15300: Calculus
- 2000–2001 College Fellow in Mathematics, *University of Chicago*:  
 Mathematics 203–205: Analysis in  $\mathbb{R}^n$ . Mentor: Professor Sally Jr, Paul J
- 1994–1999 Teacher, *Moscow State 57th School*, analysis for high school students
- 1992–1994 Instructor, *Evening Mathematical School*, Moscow, Russia

### Grants, Fellowships, Scholarships

June 2006	Max Planck Institute, Bonn: Monthly Scholarship
1999–2001	McCormick Fellowship
1997–1998	INTAS
1997	RFFI
1996–1997	Scholarship of Moscow Mayor
1993–1998	“Soros’s student” Fellowship

### Awards

July 1993	<i>International Mathematical Olympiad</i> (Turkey, Istanbul): Gold Medal
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### Talks and Mini-courses

July 2010	Dubna, Russia, Summer school “Modern Mathematics”, <i>mini-course “Invariant theory”</i> .
March 2009	MIT, Noncommutative Algebra Seminar, <i>Non-highest weight representations of affine Kac-Moody algebras, DMT connection, and irregular Wakimoto modules</i> .
March 2009	Boston University, Geometry seminar, <i>Irregular Wakimoto modules and DMT connection</i> .
February 2009	University of North Carolina at Chapel Hill, Physically Inspired Mathematics seminar, <i>Non-highest weight representations of Kac-Moody algebras and D-modules on Cartan subalgebras</i> .
January 2008	Boston University, Geometry Seminar, <i>Langlands Transform and Painleve Equations</i> .
November 2007	The University of Pennsylvania, Math-Physics Joint Seminar, <i>Deformations of algebro-geometric solutions of Kadomtsev-Petviashvili equations and Frobenius manifolds</i> .
April 2007	Northeastern University, Geometry–Algebra–Singularities–Combinatorics Seminar, <i>Isomonodromic deformations and affine Lie groups</i> .
February 2007	Massachusetts Institute of Technology, Infinite-Dimensional Algebra Seminar, <i>Frobenius manifold structures on the spaces of abelian integrals</i> .
February 2007	University of Massachusetts, Amherst, Valley Geometry Seminar, <i>Frobenius manifold structures on the spaces of abelian integrals</i> .
May 2006	California University of Technology, Algebraic Geometry seminar, <i>Moduli spaces, Frobenius manifolds, and Whitham equations</i> .
February 2006	University of Massachusetts, Quantum Field Theory seminar, <i>Series of talks on Renormalization</i> .
December 2004	Northwestern University, Algebra seminar, <i>Algebraic and hamiltonian approaches to isostokes deformations</i> .

- July 2004 Dubna, Russia, Summer school “Modern Mathematics”, *mini-course* “ $\zeta$ -functions”.
- July 2003 Dubna, Russia, Summer school “Modern Mathematics”, *mini-course* “Knots”.
- June 2003 The University of Sheffield, United Kingdom, departmental colloquium, *Loop groups and integrable systems*.
- May 2003 Independent University of Moscow, Riemannian Surfaces, Lie algebras, and Mathematical Physics seminar, *Littlewood–Richardson coefficients, Horn’s conjecture, and toric bundles on  $\mathbb{C}P^2$* .
- March 2003 Moscow State University, Dynamical Systems seminar, *Upper bounds for the number of orbital topological types of planar polynomial vector fields ‘modulo’ limit cycles*.
- March 2003 Independent University of Moscow, Riemannian Surfaces, Lie algebras and Mathematical Physics seminar, *Introduction to schemes and stacks*.
- November 2002 Cornell University, Dynamical Systems Seminar, *Lower bounds for the number of orbital topological types of planar polynomial vector fields ‘modulo’ limit cycles*.
- July 2002 Summer school “Modern Mathematics”, Dubna, Russia, *mini-course* “Algebraic number theory”.
- July 2001 Summer school “Modern Mathematics”, Dubna, Russia, *mini-course* “Galois theory”.

### Service

- 2010 Served as a referee for “Transformation groups”
- 2010 Served on thesis committee of Eleanor Farrington
- 2009 Served as a referee for “Letters in Mathematical Physics”
- 2003 Vice chairman of Problem Committee of Moscow Mathematical Olympiad
- 1996 Vice chairman of Organizing Committee of Moscow Mathematical Olympiad