Andrey Smirnov   *Curriculum Vitae*

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Education and Research Experience

2016–Present   Morrey visiting assistant professor at UC Berkeley

2011–2016   PhD candidate at mathematics department of Columbia University, New York, USA

(advisor Prof. Andrei Okounkov)

2009 – 2011   Research assistant, laboratory for mathematical physics, Institute for Theoretical and Experimental Physics (ITEP), Moscow, Russia.

2007 – 2009   Moscow Institute of Physics and Technology (MIPT), Moscow, Russia
M.S. in Physics, June 2009

2005 – 2007   Moscow Institute of Physics and Technology (MIPT), Moscow, Russia
B.S. in Physics, June 2007

Fields of Interest

Algebraic geometry, geometric representation theory, mathematical physics, integrable systems, enumerative geometry, quantum field theory, invariants of 3-dimensional manifolds and knots, particle physics and theory of fundamental interactions

Invited Talks

Quantum difference equation for Nakajima varieties, Geometry, Physics and Symmetry Seminar, (November 12, 2015, Yale, New Haven)

Difference equations, quantum K-theory, and geometric representation theory, UC Berkeley, Representation theory seminar, (September 25, 2015, Berkeley)

Quantum geometry of quiver varieties, MIT Infinite Dimensional Algebra Seminar, (September 18, Boston, 2015)

Quantum difference equations for Nakajima quiver varieties, The 25th Annual PCMI Summer Session, Geometry of moduli spaces and representation theory, (July 15, Park City, 2015)

Quantum K-theory and difference equations, Geometry, Physics, and Representation Theory seminar, Northeastern University (April 8, Boston, 2015)

Givental's J-functions and quantum toroidal algebras , workshop "Group Theory and Knots", International Institute of Physics, Federal University of Rio Grande do Norte (November 20, Natal, 2014)

Difference equations and Nakajima varieties, UC Berkeley RTGC seminar, (November 13, Berkeley, 2014)

Quantum K-theory and Vertex , Informal Mathematical Physics seminar at Columbia University, (November 3, New York, 2014)

The R-matrix for the instanton moduli space, Berkeley representation theory seminar, (November 2, Berkeley, USA, 2012)

Quantization of Chern-Simons theory in the temporal gauge, International Conference "Synthesis of integrabilities in the context of gauge/string duality" (Moscow, Russia, 2010)

The Chern-Simons theory,3-dimensional manifold and knots, All-ITEP seminar (Moscow, Russia, 2010)

The Chern-Simons theory in the temporal gauge and combinatorial knot invariants,3rd Workshop on Geometric Methods in Theoretical Physics (Trieste, Italy, 2010)

Vacuum expectation values of Wilson loops in the topological Chern-Simons theory in the temporal gauge, 47th International School of Subnuclear Physics (Erice, Italy, 2009)

Characteristic classes of bundles over elliptic curves and integrable systems, International Conference "Conformal Field theory, Integrable Models and Liouville gravity" (Chernogolovka, Russia, 2009)

Construction of holomorphic bundles over elliptic curves and classification of integrable systems, 2nd Workshop on Geometric Methods in Theoretical Physics (Trieste, Italy, 2009)

Interrelation between Arnold tops and Calogero systems, International Conference "Classical and Quantum Integrable Systems" (Protvino, Russia, 2008)

Honors and Awards

Dynasty Foundation Fellowship for young scientists in 2010

Dynasty Foundation Fellowship for young scientists in 2009

"New Talent Award" for the best paper on mathematical physics at 47th International School of Subnuclear Physics, Erice, Italy.

"Eugene P. Wigner Diploma" at the 47th International School of Subnuclear Physics, Erice, Italy.

Winner of ITEP competition of young scientists in 2009, 2010, 2011 years.

Service and teaching

In Fall 2013 I was the organizer of graduate students representation theory seminar at Columbia University

Summer 2014, Calculus IV

Spring 2015, The Columbia undergraduate seminar on mathematical-physics

Publications and preprints

A.Okounkov, A. Smirnov, *Quantum difference equation for Nakajima varieties*, arXiv:1602.09007

A. Smirnov, *Polynomials associated with fixed points on the instanton moduli space*, arXiv:1404.5304

G. Aminov, S. Arthamonov, A. Smirnov, A. Zotov, *Rational Top and its Classical R-matrix*, Journal of Physics A: Mathematical and Theoretical, (2014) ,47, 305207, arXiv:1402.3189

A.Morozov, A.Smirnov, *Towards the proof of AGT relations with the help of the generalized Jack polynomials*, Letters in Mathematical Physics,(2014), Volume 104, Issue 5, p. 585-612, arXiv:1307.2576

A.Mironov, A.Morozov, A.Sleptsov, A.Smirnov, *On genus expansion of superpolynomials*, (2014), Nuclear Physics; Section B 889, p. 757-777, arXiv:1310.7622

A. Zotov, A. Smirnov, *Modifications of bundles, elliptic integrable systems, and related topics*, Theoretical and Mathematical Physics, (2013), 177, 1: p. 12811338

A. Smirnov, *On the Instanton R-matrix*, Communications in Mathematical Physics, 345(3), 703-740, arXiv:1302.0799

P. Dunin-Barkowski, A. Mironov, A. Morozov, A. Sleptsov, A. Smirnov, *Superpolynomials for toric knots from evolution induced by cut-and-join operators*, (2013), JHEP 03, 021, arXiv:1106.4305

A. Levin, M. Olshanetsky, A. Smirnov, A. Zotov, *Characteristic Classes of SL(N)-Bundles and Quantum Dynamical Elliptic R-Matrices*, Journal of Physics A: Mathematical and Theoretical,(2013), 46 (3), 035201, arXiv:1208.5750

A. Levin, M. Olshanetsky, A. Smirnov, A. Zotov, *Hecke Transformations of Conformal Blocks in WZW Theory. I. KZB Equations for Non-Trivial Bundles*, SIGMA,(2012) 8 , 095, arXiv:1207.4386;

D.Galakhov, A.Mironov, A.Morozov, A.Smirnov, *On 3d extensions of AGT relation*, Theoretical and Mathematical Physics,(2012), 172 p. 939-962

A.Mironov, A.Morozov, Sh.Shakirov, A.Smirnov, *Proving AGT conjecture as HS duality: extension to five dimensions*, Nuclear Physics, (2012), Section B 855, p. 128-151, arXiv: 1105.0948;

P. Dunin-Barkowski, A. Sleptsov, A. Smirnov, *Explicit computation of Drinfeld associator in the case of the fundamental representation of gl(N)*, Journal of Physics A: Mathematical and Theoretical, (2012), 45 385204 arXiv:1201.0025;

P. Dunin-Barkowski, A. Sleptsov, A. Smirnov, *Kontsevich integral for knots and Vassiliev invariants*, International Journal of Modern Physics A, (2013), 28, 1330025 1 arXiv:1112.5406;

A.Levin, M.Olshanetsky, A.Smirnov, A.Zotov, *Characteristic Classes and Integrable Systems for Simple Lie Groups*, Journal of Geometry and Physics, (2012), 62 18101850, arXiv:1007.4127;

A.Levin, M.Olshanetsky, A.Smirnov, A.Zotov, *Characteristic Classes and Integrable Systems. General Construction* , Communications in Mathematical Physics, (2012), 316, 144, arXiv:1006.0702;

A.Morozov, A.Smirnov, *Chern-Simons Theory in the Temporal Gauge and Knot Invariants through the Universal Quantum R-Matrix* , Nuclear Physics, Section B, (2010), 835:3, 21,284-313 arXiv:1001.2003

A.Smirnov, *Notes on Chern-Simons Theory in the Temporal Gauge* , Proceedings of 47th International School of Subnuclear Physics in Erice, Italy, (2009) arXiv:0910.5011

A.Smirnov, *Degenerate Sklyanin Algebras*, Central European Journal of Physics, 8:4, 542-554, arXiv:0903.1466

A.Smirnov, *Correspondence between Calogero-Moser systems and integrable SL(N,ℂ) Euler-Arnold tops.* Theoretical and Mathematical Physics, (2008) , 158:3, 300-312, arXiv:0809.2187

A.Smirnov, *Two body systems from sl(2,C)-tops.* Theoretical and Mathematical Physics, (2007), 157:1, 8-21, arXiv:0711.2432