

EDUCATION

Columbia University Ph.D. in Mathematics, Advisor: Andrei Okounkov – Thesis: “Quantum difference equations for Nakajima varieties”	New York 2016
Moscow Institute of Physics and Technology M.S. in Applied Mathematics	Dolgoprudny 2009
Moscow Institute of Physics and Technology B.S. in Applied Mathematics	Dolgoprudny 2007

PROFESSIONAL EXPERIENCE

University of North Carolina Assistant Professor	Chapel Hill 2018–Present
UC Berkeley Morrey Visiting Assistant Professor	Berkeley 2016–2018

AWARDS AND GRANTS

- NSF grant: DMS - 2054527 2021–2024
- Simons Foundation Collaboration Grants for Mathematicians 2021 (withdrawn due to conflict with NSF)
- AMS travel grant 2017–2022

PENDING GRANT APPLICATIONS

- 2022 NSF grant: *3D mirror symmetry in enumerative geometry and representation theory*
- 2022 Sloan Fellowship Application

PREVIOUS APPLICATIONS (DECLINED)

- 2021 Sloan Fellowship
- 2020 NSF grant: *Dualities in enumerative geometry and representation theory*
- 2020 NSF CAREER: *3D-mirror symmetry and geometric representation theory*
- 2020 Sloan Fellowship
- 2020 NSF grant: *Symmetric functions in geometric representation theory*
- 2019 Simons Foundation Collaboration Grant for Mathematicians
- 2019 NSF grant: *Hypergeometric functions and q -difference equations associated with quiver varieties*

1. A. Okounkov, A. Smirnov, “Quantum difference equation for Nakajima varieties”, *Inventiones mathematicae*, 131, (2022), *arXiv:1602.09007*
2. H. Dinkins, A. Smirnov, “Euler characteristic of stable envelopes”, *Selecta Mathematica*, (2022) *arXiv:2108.07202*
3. Y. Kononov, A. Smirnov, “Pursuing quantum difference equations II: 3D-mirror symmetry”, *Int. Res. Math. Not.* (2022) *arXiv:2008.06309*
4. Y. Kononov, A. Smirnov, “Pursuing quantum difference equations I: stable envelopes of subvarieties”, *Lett. Math. Phys.*, 112:69, (2022) *arXiv:2004.07862*
5. H. Dinkins, A. Smirnov, “Capped vertex with descendants for zero dimensional A_∞ quiver varieties”, *Adv. in Math.*, 401, (2022), *arXiv:2005.12980*
6. A. Smirnov, Z. Zhou, “3d Mirror Symmetry and Quantum K-theory of Hypertoric Varieties”, *Adv. in Math.*, 395, (2022), *arXiv:2006.00118*
7. H. Dinkins, A. Smirnov, “Quasimaps to zero-dimensional A_∞ -quiver varieties”, *Int. Math. Res. Not.*, 2, 1123–1153, (2020), *arXiv:1912.04834*
8. H. Dinkins, A. Smirnov, “Characters of tangent spaces at torus fixed points and 3d-mirror symmetry”, *Lett. Math. Phys.*, 110, 2337–2352, (2020), *arXiv:1908.01199*
9. R. Rimányi, A. Smirnov, A. Varchenko, Z. Zhou, “Three-Dimensional Mirror Self-Symmetry of the Cotangent Bundle of the Full Flag Variety”, *SIGMA* 15 (2019), 093, 22 pages, *arXiv:1906.00134*
10. R. Rimányi, A. Smirnov, A. Varchenko, Z. Zhou, “3d Mirror Symmetry and Elliptic Stable Envelopes”, *Int. Math. Res. Not.*, 13, 10016–10094, (2022) *arXiv:1902.03677*
11. P. Koroteev, P. Pushkar, A. Smirnov, A. Zeitlin, “Quantum K-theory of Quiver Varieties and Many-Body Systems”, *Selecta Mathematica*, 27: 81, (2021), *arXiv:1705.10419*
12. P. Pushkar, A. Smirnov, A. Zeitlin, “Baxter Q-operator from quantum K-theory”, *Adv. in Math.*, 360, (2020), *arXiv:1612.08723*
13. A. Smirnov, “Elliptic stable envelope for Hilbert scheme of points in the plane”, *Selecta Mathematica*, 26: 3, (2020), *arXiv:1804.08779*
14. A. Smirnov, “On the Instanton R-matrix”, *Commun. in Math. Phys.*, 345, 703-740, (2016) *arXiv: 1302.0799*
15. G. Aminov, S. Arthamonov, A. Smirnov, A. Zotov, “Rational Top and its Classical R-matrix”, *J. of Phys. A: Math. and Theor.*, 47 (2014), 1-19, *arXiv:1402.3189*
16. A. Morozov, A. Smirnov, “Towards the proof of AGT relations with the help of the generalized Jack polynomials”, *Lett. Math. Phys.*, 104, 585-612, (2014), *arXiv:1307.2576*
17. A. Mironov, A. Morozov, A. Sleptsov, A. Smirnov, “On genus expansion of superpolynomials”, *Nucl. Phys. B*, 889, 757-777, (2014), *arXiv:1310.7622*
18. A. Zotov, A. Smirnov, “Modifications of bundles, elliptic integrable systems, and related topics”, *Theor. and Math. Phys.*, 177, 1281 - 1338, (2013)
19. P. Dunin-Barkowski, A. Mironov, A. Morozov, A. Sleptsov, A. Smirnov, “Superpolynomials for toric knots from evolution induced by cut-and-join operators”, *JHEP* 03, 021, 1-85, (2013) *arXiv:1106.4305*
20. A. Levin, M. Olshanetsky, A. Smirnov, A. Zotov, “Characteristic Classes of $SL(N)$ -Bundles and Quantum Dynamical Elliptic R-Matrices”, *J. of Phys. A: Math. and Theor.*, 46, 1-25, (2013) *arXiv:1208.5750*
21. A. Levin, M. Olshanetsky, A. Smirnov, A. Zotov, “Hecke Transformations of Conformal Blocks in WZW Theory. I. KZB Equations for Non-Trivial Bundles”, *SIGMA*, 8 095, 1-37, (2012), *arXiv:1207.4386*

22. D. Galakhov, A. Mironov, A. Morozov, A. Smirnov, “On 3d extensions of AGT relation”, *Theor. and Math. Phys.*, 172, 939-962, (2012) *arXiv:1104.2589*
23. A. Mironov, A. Morozov, Sh. Shakirov, A. Smirnov, “Proving AGT conjecture as HS duality: extension to five dimensions”, *Nucl. Phys. B*, 855, 128-151, (2011), *arXiv:1105.0948*
24. P. Dunin-Barkowski, A. Sleptsov, A. Smirnov, “Explicit computation of Drinfeld associator in the case of the fundamental representation of \mathfrak{gl}_N ”, *J. of Phy. A: Math. and Theor.*, 45, 1-15, (2012), *arXiv:1201.0025*
25. P. Dunin-Barkowski, A. Sleptsov, A. Smirnov, *Kontsevich integral for knots and Vassiliev invariants*, *Int. J. of Mod. Phys. A*, 28, 1-38, (2013), *arXiv:1112.5406*
26. A. Levin, M. Olshanetsky, A. Smirnov, A. Zotov, “Characteristic Classes and Integrable Systems for Simple Lie Groups”, *J. of Geom. and Phys.*, 62, 1810–1850, (2010), *arXiv:1007.4127*
27. A. Levin, M. Olshanetsky, A. Smirnov, A. Zotov, “Characteristic Classes and Integrable Systems. General Construction”, *Commun. in Math. Phys.*, 316, 1–44, (2012), *arXiv:1006.0702*
28. A. Morozov, A. Smirnov, “Chern-Simons Theory in the Temporal Gauge and Knot Invariants through the Universal Quantum R-Matrix”, *Nuclear Physics B*, 835, 284-313, (2010), *arXiv:1001.2003*
29. A. Smirnov, “Notes on Chern-Simons Theory in the Temporal Gauge”, *Proceedings of 47th International School of Subnuclear Physics*, Erice, Italy, pages 489-499, (2009), *arXiv:0910.5011*
30. A. Smirnov, “Degenerate Sklyanin Algebras”, *Cent. Eur. J. of Phys.*, 8, 542-554, (2009), *arXiv:0903.1466*
31. A. Smirnov, “Correspondence between Calogero-Moser systems and integrable $SL(N, \mathbb{C})$ Euler-Arnold tops”, *Theor. and Math. Phys.*, 158, 300-312, (2008), *arXiv:0809.2187*
32. A. Smirnov, “Two body systems from $\mathfrak{sl}(2, \mathbb{C})$ -tops”, *Theor. and Math. Phys.*, 157, 8-21, (2007), *arXiv:0711.2432*

PREPRINTS

1. A. Smirnov, “Quantum differential and difference equations for $\text{Hilb}^n(\mathbb{C}^2)$ ”, *arXiv:2102.10726*
2. A. Smirnov “Rationality of capped descendent vertex in K-theory”, *arXiv:1612.01048*
3. A. Smirnov, “Polynomials associated with fixed points on the instanton moduli space”, *arXiv:1404.5304*

GRADUATE STUDENTS

- **Hunter Dinkins**, University of North Carolina Graduated: May 2022
Thesis: “Exotic quantum difference equations and integral solutions”
- **Jeffrey Ayers**, University of North Carolina Graduation: Spring 2025

TEACHING EXPERIENCE

- **Math. 548, Combinatorics**, University of North Carolina Fall 2022
- **Math. 676, Abstract algebra 1**, University of North Carolina Fall 2022
- **Math. 677, Abstract algebra 2**, University of North Carolina Spring 2022
- **Math. 521, Advanced Analysis**, University of North Carolina Spring 2022

- **Math. 548, Combinatorics**, University of North Carolina Fall 2021
- **Math. 383 Differential equations**, University of North Carolina Summer 2021
- **Math. 521 Advanced Analysis**, University of North Carolina Spring 2021
- **Math. 548, Combinatorics**, University of North Carolina Spring 2021
- **Math 231, Calculus I**, University of North Carolina Fall 2019
- **Math. 233 Multivariable calculus**, University of North Carolina Spring 2019
- **Math. 774 Lie algebras**, University of North Carolina Fall 2018
- **Math. 185 Complex analysis**, UC Berkeley Spring 2018
- **Math 113 Abstract algebra**, UC Berkeley Fall 2017
- **Math 113 Abstract algebra**, UC Berkeley Spring 2017
- **Math. 141 Differential Topology**, UC Berkeley Fall 2016
- **Math. 185 Complex analysis**, UC Berkeley Fall 2016

EXTRACURRICULAR ACTIVITIES

- Referee for Math. Journals:
JAMS, Adv. in Math., Selecta Math., Letter in Math. Phys., PRISM, Annales de l'Institut Fourier, Comm. Math. Phys., Math. Res. Lett.
- Conferences and workshops co-organized:
Mini-Workshop: Three Facets of R-Matrices, Oberwolfach, Germany, 17 October - 23 October 2021, (coorganized with Sachin Gautam (Columbus) Curtis Wendlandt, (Columbus) Masahito Yamazaki, (Kashiwa)
- Coorganizer of mathematics Colloquium and at UNC