

Yury Ustinovskiy

CONTACT INFORMATION

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RESEARCH INTERESTS

geometric analysis, complex geometry, geometry & topology of toric symmetries;
applications of machine learning

EDUCATION

Princeton University (2014–2018)

Ph.D., Mathematics

- Advisor: Gang Tian
- Thesis: Hermitian curvature flow and curvature positivity conditions

Independent University of Moscow (2006–2012)

Masters in Mathematics cum laude

- Adviser: Taras Panov
- Thesis: Geometrical structures on moment-angle-manifolds

Moscow State University (2006–2011)

Masters in Mathematics cum laude

- Adviser: Taras Panov
- Thesis: Geometrical structures on moment-angle-manifolds

PROFESSIONAL EXPERIENCE

Visiting Assitant Professor Lehigh University,	2021–present
Instructor New York math circle “College Bridge” program	2019–present
Assistant Professor Courant Institute , New York University	2018–2021
Teaching Assistant Moscow Institute of Physics and Technology	2011–2014
Researcher-developer Yandex, Moscow	2009–2014
Mathematics teacher High School no.57 Moscow	2006–2014

PUBLICATIONS

- Y. Ustinovskiy. “On geometry of steady toric Kähler-Ricci solitons”. *Preprint* (2022). eprint: [2206.01196](#)
- V. Apostolov, J. Streets, and Y. Ustinovskiy. “Variational structure and uniqueness of generalized Kähler-Ricci solitons”. *Peking Math. J.* (2022). eprint: [2109.10295](#)
- V. Apostolov, J. Streets, and Y. Ustinovskiy. “Generalized Kähler-Ricci flow on toric Fano varieties”. *Trans. Amer. Math. Soc.* (2022). eprint: [2104.03268](#) (Transactions of AMS, *accepted*)
- J. Streets and Y. Ustinovskiy. “The Gibbons-Hawking ansatz in generalized Kähler geometry”. *Commun., Math., Phys.* 391 (2022), pp. 707–778. eprint: [2009.00778](#) (Comm. in Math. Physics *accepted*)

- J. Streets and Y. Ustinovskiy. “Classification of generalized Kähler-Ricci solitons on complex surfaces”. *Comm. Pure Appl. Math.* 74.9 (2021), pp. 1896–1914. eprint: [1907.03819](#)
- Y. Ustinovskiy. “On the structure of Hermitian manifolds with semipositive Griffiths curvature”. *Trans. Amer. Math. Soc.* 373.8 (2020), pp. 5333–5350. eprint: [1904.06810](#)
- Y. Ustinovskiy. “Lie-algebraic curvature conditions preserved by the Hermitian curvature flow”. *Math. Ann.* 379.3-4 (2021), pp. 1713–1745. eprint: [1710.06035](#)
- Y. Ustinovskiy. “Hermitian curvature flow on manifolds with non-negative Griffiths curvature”. *Amer. J. Math.* 141.6 (2019), pp. 1751–1775. eprint: [1604.04813](#)
- Y. Ustinovskiy. “On face numbers of flag simplicial complexes”. *Discrete Comput. Geom.* 60.3 (2018), pp. 688–697. eprint: [1610.03888](#)
- Y. Ustinovskiy. “Hermitian curvature flow on complex homogeneous manifolds”. *Ann. Sc. Norm. Super. Pisa Cl. Sci. (5)* 21.V (2020), pp. 1553–1572. eprint: [1706.07023](#)
- T. Panov, Y. Ustinovskiy, and M. Verbitsky. “Complex geometry of moment-angle manifolds”. *Math. Z.* 284.1-2 (2016), pp. 309–333. eprint: [1308.2818](#)
- Y. Ustinovskiy. “Geometry of compact complex manifolds with maximal torus action”. *Proc. Steklov Inst. Math.* 286.1 (2014), pp. 198–208. eprint: [1602.02556](#)
- Y. Ustinovskiy. “On models of cohomology rings of spaces with a torus action”. *Uspekhi Mat. Nauk* 69.4(418) (2014), pp. 187–188
- T. Panov and Y. Ustinovskiy. “Complex-analytic structures on moment-angle manifolds”. *Mosc. Math. J.* 12.1 (2012), pp. 149–172, 216. eprint: [1008.4764](#)
- Y. Ustinovskiy. “On almost free torus actions and the Horrocks conjecture”. *Dalnevost. Mat. Zh.* 12.1 (2012), pp. 98–107. eprint: [1203.3685](#)
- Y. Ustinovskiy. “The toral rank conjecture for moment-angle complexes”. *Mat. Zametki* 90.2 (2011), pp. 300–305. eprint: [0909.1053](#)
- Y. Ustinovskiy. “Doubling operation for polytopes and torus actions”. *Uspekhi Mat. Nauk* 64.5(389) (2009), pp. 181–182. eprint: [0909.1050](#)

PEER-REVIEWED CONFERENCE PAPERS

- B. Sharchilev, Y. Ustinovskiy, P. Serdyukov, and M. de Rijke. “Finding Influential Training Samples for Gradient Boosted Decision Trees”. *International Conference on Machine Learning*. 2018, pp. 4584–4592
- Y. Ustinovskiy, V. Fedorova, G. Gusev, and P. Serdyukov. “Meta-Gradient Boosted Decision Tree Model for Weight and Target Learning”. *International Conference on Machine Learning*. 2016, pp. 2692–2701
- Y. Ustinovskiy, V. Fedorova, G. Gusev, and P. Serdyukov. “An Optimization Framework for Remapping and Reweighting Noisy Relevance Labels”. *SIGIR*. 2016, pp. 105–114
- Y. Ustinovskiy, G. Gusev, and P. Serdyukov. “An Optimization Framework for Weighting Implicit Relevance Labels for Personalized Web Search”. *World Wide Web*. 2015, pp. 1144–1154
- L. O. Prokhorenkova, Y. Ustinovskiy, E. Samosvat, D. Lefortier, and P. Serdyukov. “Adaptive Caching of Fresh Web Search Results”. *European Conference on IR Research*. 2015, pp. 110–122
- A. Bakhtin, Y. Ustinovsky, and P. Serdyukov. “Predicting the impact of expansion terms using semantic and user interaction features”. *Conference on Information and Knowledge Management*. 2013, pp. 1825–1828
- Y. Ustinovsky and P. Serdyukov. “Personalization of web-search using short-term browsing context”. *Conference on Information and Knowledge Management*. 2013, pp. 1979–1988

- Y. Ustinovsky, A. Mazur, and P. Serdyukov. “Intent-Based Browse Activity Segmentation”. *European Conference on IR*. 2013, pp. 242–253
- A. Kustarev, Y. Ustinovsky, A. Mazur, and P. Serdyukov. “Session-based query performance prediction”. *Conference on Information and Knowledge Management*. 2012, pp. 2563–2566
- A. Kustarev, Y. Ustinovsky, and P. Serdyukov. “Measuring usefulness of context for context-aware ranking”. *World Wide Web Conference*. 2012, pp. 551–552
- A. Kustarev, Y. Ustinovsky, Y. Logachev, E. Grechnikov, I. Segalovich, and P. Serdyukov. “Smoothing NDCG metrics using tied scores”. *Conference on Information and Knowledge Management*. 2011, pp. 2053–2056

RECENT TALKS

- Jun 2022 *Union College conference*, Section on Geometry, Differential Geometry and Geometric Analysis
- May 2022 *Geometry & TACoS*, Section on Complex Geometric Flows
- May 2022 *Differential Geometry Seminar*, UC Santa Barbara
- Apr 2022 *Differential Geometry Seminar*, Lehigh University
- Dec 2021 *Canadian Mathematical Society Meeting*, Complex Geometry and Geometric Analysis
- Nov 2021 *Geometry Seminar*, Lehigh University
- Oct 2021, *AMS Western Sectional Meeting*, Geometry and Geometric Analysis
- Oct 2021, *Workshop on Special Geometries on Riemannian Manifolds*, Université du Québec à Montréal
- Sep 2021, *Geometric Analysis Seminar*, Iowa State University
- May 2021, *Seminar in Geometric Analysis*, University of Maryland
- May 2021, *Differential Geometry Seminar*, UC San Diego
- Apr 2021, *Generalized Ricci Flow Learning Seminar*, UC Irvine
- Apr 2021, *Geometric Analysis Seminar*, Rutgers University
- Apr 2021, *Differential Geometry Seminar*, Università di Torino & Politecnico di Torino
- Mar 2021, *Mathematics Colloquium*, Syracuse University
- Mar 2021, *Geometry Seminar*, Purdue University
- Feb 2021, *Colloquium*, Oklahoma University
- Feb 2021, *Research Seminar on Differential Geometry*, Hamburg University
- Dec 2020, *Toric Topology Conference*, Higher School of Economics, Moscow
- Nov 2020, *Mathematical Physics*, Mathematical Institute of the Russian Academy of Sciences
- Oct 2020, *Almost Complex Geometry Seminar*, City University of New York
- Nov 2019, *Almost Complex Geometry Seminar*, City University of New York
- Sep 2019, *Complex Geometry & PDE seminar*, Columbia University

TEACHING & MENTORING

- **Lehigh University**

- Calculus 1 (Fall '21)
- Linear algebra & ODE (Spring '22)

- **New York University** (Courant Institute)
 - Abstract Algebra (Spring '20, Fall '20, Spring '21)
 - Complex Variables (Fall '19)
 - Mathematics for Economics II (Spring '19)
 - Calculus I (Fall '18)
 - Supervision of undergraduate Summer research
 - Instructor at **New York Math Circle**
 - College Bridge Program (Spring '19 – Spring '22)
 - High School Summer Program (Summer '21, '22)
 - **Princeton University***
 - Introduction to Graph Theory (Spring '18)
 - Applied Algebra (Fall '17)
 - Probability Theory (Spring '17)
 - Linear Algebra with Applications (Fall '16, Spring '17)
 - Advanced Linear Algebra with Applications (Spring '16)
 - Honors Analysis (Fall '15)
 - **Moscow Institute of Physics and Technology***
 - Introduction to Differential Geometry (Fall '12, Fall '13)
 - Classical Mechanics (Spring '13, Spring '14)
 - Introduction to Topology (Spring '12)
 - **Yandex** (major IT company in Russia)
 - mentoring undergraduate interns
 - supervising implementation of state of the art machine learning algorithms in production
 - directing research projects
- (* worked as a teaching assistant)

PROFESSIONAL SERVICE

Reviewer for Advances in Mathematics, Proceedings of AMS, Proc. A Royal Soc. Edinburgh, Mathematische Annalen, Communications in Contemporary Mathematics, Analysis & PDE, Mathematical Research Letters, International Mathematics Research Notices, Discrete and Computational Geometry, Moscow Mathematical Journal, Annali di Matematica Pura ed Applicata, Mexican Mathematical Bulletin, Proceedings of the Steklov Institute of Mathematics, Sbornik Mathematics, Journal of the Mathematical Society of Japan

HONORS AND AWARDS

Dobrushin stipend for talented students (2009, 2011)
 Simons' foundation stipend for students (2012)
 Pierre Deligne's stipend (2013)
 Dmitri Zimin's "Dynasty" foundation stipend for young scientist (2012–2014)
 Early-career AMS-NSF-Simons-ICM Travel Grant & Kovalevskaya award (2022)

PATENTS

- **Method for training a ranker module using a training set having noisy labels**, patent application US20170293859A1.
- **System and method for ranking search engine results**, patent US20170185602A1.
- **Search result ranker**, patent US9501575B2.
- **Systems and methods for classification and segmentation of browsing logs based on user's search goals**, patent US8938408B1.

REFERENCES

- **Gang Tian**, Professor, Peking University.
email: gtian 'at' math.pku.edu.cn
- **Jeffrey Streets** Professor, UC Irvine
email: jstreets 'at' uci.edu
- **Taras Panov**, Professor, Moscow State University
email: tpanov 'at' mech.math.msu.su