

# Yury Ustinovskiy

## Curriculum Vitae

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### Education

- 2014–2018 **Princeton University**, *PhD in mathematics*, Department of Mathematics.  
◦ Adviser: Gang Tian  
◦ Thesis: Hermitian curvature flow and curvature positivity conditions
- 2006–2012 **Independent University of Moscow**, *Master's degree in mathematics cum laude*.  
◦ Adviser: Taras Panov  
◦ Thesis: Geometrical structures on moment-angle-manifolds
- 2006–2011 **Moscow State University**, *Master's degree in mathematics cum laude*, Department of Geometry and Topology.  
◦ Adviser: Taras Panov  
◦ Thesis: Geometrical structures on moment-angle-manifolds

### Research Interests

Differential geometry, geometric flows, complex geometry, topology of toric symmetries, applications of machine learning

### Professional Experience

- 2018–present **Assitant Professor**, *Courant Institute, New York University*.
- 2019–present **Instructor**, *New York math circle*, “College Bridge” program.
- 2015–2018 **Assistant in teaching / Assistant in research**, *Princeton Univsersity*.
- 2011–2014 **Teaching assistant**, *Moscow Institute of Physics and Technology*, Moscow, Seminars on differential geometry and topology for undergraduate students.
- 2009–2014 **Researcher-developer**, *Yandex*, Moscow, Department of theoretical and applied research.  
◦ Duties: develop machine learning algorithms in information retrieval; analyze the existing machine learning algorithms and tailor them for the production needs; supervise interns
- 2006–2014 **Mathematics teacher**, *High School no.57*, Moscow, Mathematics for gifted students.  
◦ Duties: mentored a group of 3–4 high school students in advanced college-level mathematics, run extracurricular olympiad-style mathematical circle, organized olympiads and summer camps for high school students

### Publications & Preprints

- 2020 **The Gibbons-Hawking ansatz in generalized Kähler geometry**, *J. Streets*, Y. Ustinovskiy, preprint.  
[arXiv:2009.00778](https://arxiv.org/abs/2009.00778)
- 2020 **Classification of generalized Kähler-Ricci solitons on complex surfaces**, *J. Streets*, Y. Ustinovskiy, CPAM (accepted).  
[arXiv:1907.03819](https://arxiv.org/abs/1907.03819)
- 2020 **On the structure of Hermitian manifolds with semipositive Griffiths curvature**, Y. Ustinovskiy, *Transactions of AMS*, 373(8), pp. 5333–5350.  
[arXiv:1904.06810](https://arxiv.org/abs/1904.06810)
- 2020 **Lie-Algebraic Curvature Conditions preserved by the Hermitian curvature flow**, Y. Ustinovskiy, *Mathematische Annalen*.  
[arXiv:1710.06035](https://arxiv.org/abs/1710.06035)

- 2019 **Hermitian curvature flow on complex homogeneous manifolds**, *Y. Ustinovskiy*, Ann. Scuola Norm. Sup. Pisa Cl. Sci. (accepted).  
arXiv:1706.07023
- 2019 **The Hermitian curvature flow on manifolds with non-negative Griffiths curvature**, *Y. Ustinovskiy*, American Journal of Mathematics, 141(6), pp. 1751–1775.  
arXiv:1604.04813
- 2018 **Hermitian Curvature Flow and Curvature Positivity Conditions**, *Y. Ustinovskiy*, thesis.  
arks.princeton.edu/ark:/88435/dsp01td96k5219
- 2018 **On face numbers of flag simplicial complexes**, *Y. Ustinovskiy*, Discrete Comput. Geom, 60:688, pp. 688–697.  
arXiv:1610.03888
- 2016 **Projective toric polynomial generators in the unitary cobordism ring**, *G. Solomadin, Y. Ustinovskiy*, Mat. Sbornik, 207:11, pp. 127–152.  
arXiv:1602.02448
- 2016 **Complex geometry of moment-angle manifolds**, *T. Panov, Y. Ustinovsky, M. Verbitsky*, Mathematische Zeitschrift, 2016, 1-2:284, pp. 309–333.  
arXiv:1308.2818
- 2014 **Geometry of compact complex manifolds with maximal torus action**, *Y. Ustinovsky*, Tr. Mat. Inst. Steklova, 2014: 286, pp. 219–230.  
arXiv:1308.2818
- 2012 **On torus actions and Horrocks conjecture**, *Yu. M. Ustinovskii*, Far Eastern mathematical journal, 2012, 12:1, pp. 98–107.  
arXiv:1203.3685
- 2012 **Complex-analytic structures on moment-angle-manifolds**, *T. Panov, Y. Ustinovsky*, Moscow Mathematical Journal, 2012, 12:1.  
arXiv:1008.4764
- 2011 **Toral Rank Conjecture for Moment-Angle Complexes**, *Yu. M. Ustinovskii*, Math. Notes, 2011, 90:2, pp. 279–283.  
arXiv:0909.1053
- 2009 **Doubling operation for polytopes and torus actions**, *Yu. M. Ustinovskii*, Russian Mathematical Surveys, 2009, 64:5, pp. 952–954.  
arXiv:0909.1050

## Applied research publications

- 2018 **Finding Influential Training Samples for Gradient Boosted Decision Trees**, *B. Sharchilev, Y. Ustinovskiy, P. Serdyukov, M. de Rijke*, ICML, 2018, 4584–4592.
- 2016 **Meta-Gradient Boosted Decision Tree Model for Weight and Target Learning**, *Y. Ustinovskiy, V. Fedorova, G. Gusev, P. Serdyukov*, ICML, 2016, 2692–2701.
- 2016 **An Optimization Framework for Remapping and Reweighting Noisy Relevance Labels**, *Y. Ustinovskiy, V. Fedorova, G. Gusev, P. Serdyukov*, SIGIR, 2016, 105–114.
- 2015 **Adaptive Caching of Fresh Web Search Results**, *L. Ostroumova Prokhorenkova, Y. Ustinovskiy, E. Samosvat, D. Lefortier, P. Serdyukov*, ECIR, 2015, 110–122.
- 2015 **An Optimization Framework for Weighting Implicit Relevance Labels for Personalized Web Search**, *Y. Ustinovskiy, G. Gusev, P. Serdyukov*, WWW, 2015, 1144–1154.
- 2013 **Personalization of web-search using short-term browsing context**, *Y. Ustinovsky, P. Serdyukov*, CIKM, 2013, 1979–1988.
- 2013 **Predicting the impact of expansion terms using semantic and user interaction features**, *A. Bakhtin, Y. Ustinovsky, P. Serdyukov*, CIKM, 2013, 1825–1828.
- 2013 **Intent-Based Browse Activity Segmentation**, *Y. Ustinovsky, A. Mazur, P. Serdyukov*, ECIR, 2013, 242–253.

- 2012 **Session-based query performance prediction**, A. Kustarev, Y. Ustinovsky, A. Mazur, P. Serdyukov, CIKM, 2012, 2563–2566.
- 2012 **Measuring usefulness of context for context-aware ranking**, A. Kustarev, Y. Ustinovsky, P. Serdyukov, WWW, 2012, 551–552.
- 2011 **Smoothing NDCG metrics using tied scores**, A. Kustarev, Y. Ustinovsky, Y. Logachev, E. Grechnikov, I. Segalovich, P. Serdyukov, CIKM, 2011, 2053–2056.

## Teaching & Mentoring

### 2018–2020 New York University

- Abstract Algebra (Fall '20, Spring '20)
- Complex Variables (Fall '19)
- Mathematics for Economics II (Spring '19)
- Calculus 1 (Fall '18)
- supervising undergraduate independent research

2018–2020 Instructor at **New York Math Circle** program 'College Bridge'

### 2015–2018 Princeton University (TA)

- 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 (Single Variable), Fall '15

#### Professional development

- Effective Mathematical Communication
- McGraw Center for Teaching and Learning. Orientation to teaching.

### 2012–2014 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

### 2009–2014 Yandex

- mentoring undergraduate interns
- supervising implementation of state of the art machine learning algorithms in production
- directing research projects

## Professional Service

**Reviewer:** Advances in 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

## Patent Grants & Applications

- 2017 **Method for training a ranker module using a training set having noisy labels**, *patent application*, US20170293859A1.
- 2017 **System and method for ranking search engine results**, *patent*, US20170185602A1.
- 2016 **Search result ranker**, *patent*, US9501575B2.
- 2015 **Systems and methods for classification and segmentation of browsing logs based on user's search goals**, *patent*, US8938408B1.

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## Recent Conference Talks

- 11.2020 *International Conference Topology and Geometry of Group Actions*  
Moscow, National Research University Higher School of Economy
- 06.2019 *Lehigh Geometry/Topology conference*  
Lehigh University
- 06.2018 *Viktor Buchstaber's birthday conference*  
Moscow, Steklov Institute
- 06.2017 *Encounter in Topology 'n Algebra*  
Catania, Scuola Superiore di Catania
- 05.2017 *AMS Sectional Meeting*  
New York, Hunter College
- 02.2017 *RTG day*  
Princeton University

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## Recent Seminar Talks

- 11.2020 Gibbons-Hwaking ansatz in Generalized Kahler geometry  
*Mathematical Physics seminar*, Mathematical Institute of Russian Academy of Sciences
- 10.2020 Gibbons-Hwaking ansatz in Generalized Kahler geometry  
*Almost complex geometry seminar*, CUNY
- 06.2020 Generalized Kahler-Ricci solitons on complex surfaces  
*Zoomerfest*, Higher School of Economy, Moscow
- 11.2019 Hermitian Curvature Flow and uniformization problems in complex geometry  
*Almost complex geometry seminar*, CUNY
- 09.2019 Hermitian Curvature Flow and Geometry of Torsion-Twisted Connection  
*Complex geometry and PDE seminar*, Columbia University
- 04.2019 On the Structure of Hermitian Manifolds with Semipositive Griffiths Curvature  
*Algebra Seminar*, NYU
- 10.2018 Geometric Flows in Hermitian Geometry & Uniformization Problems  
*Courant Instructor Day*, NYU
- 08.2018 Hermitian Curvature Flow on complex homogeneous manifolds  
*Geometry seminar*, Università degli Studi di Firenze
- 10.2017 Lie algebraic curvature conditions preserved by Hermitian curvature flow  
*Complex analysis and geometry seminar*, Rutgers University
- 02.2017 Metric flows on Hermitian manifolds  
*Seminar of the laboratory of algebraic geometry and its applications*, Higher School of Economy, Moscow
- 02.2017 Maximum principle for tensors and Ricci flow invariant curvature conditions  
*Graduate student seminar*, Princeton
- 01.2017 Hermitian curvature flow and positivity  
*Differential geometry seminar*, UC Irvine