

Curriculum Vitae *

Kateryna Tatarko

PERSONAL INFORMATION

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RESEARCH INTERESTS

Geometric Functional Analysis, Convex Geometry and Probability, Random Matrix Theory, Geometry of Submanifolds.

EDUCATION

- September 2015 - June 2020: **PhD in Pure Mathematics**,
University of Alberta, Edmonton, Canada.
Supervisors: Prof. A. Litvak and Prof. N. Tomczak-Jaegermann.
- September 2014 - July 2015: **MSc in Mathematics** (*Diploma with honors*),
V.N. Karazin Kharkiv National University, Kharkiv, Ukraine.
Supervisor: Prof. A. L. Yampolsky.
- September 2010 - July 2014: **BSc in Mathematics** (*Diploma with honors*),
V.N. Karazin Kharkiv National University, Kharkiv, Ukraine.
Supervisor: Prof. A. A. Borisenko.

ACADEMIC APPOINTMENTS

- July 2021 - to date: Assistant Professor,
University of Waterloo, Waterloo, ON, Canada.
- September 2020 - June 2021: Postdoctoral Fellow,
University of Alberta, Edmonton, AB, Canada.

* updated March 14, 2024

- September 2020 - June 2021 (canceled due to pandemic):
Visiting Assistant Professorship,
Texas A&M University, College Station, TX, USA.

SCHOLARSHIPS\AWARDS

2022-2027	NSERC Discovery Grant.
September 2020	Anton Alexander Cseuz Gold Medal in Mathematics, University of Alberta.
June 2020	Doctoral Dissertation Award, University of Alberta.
March 2020	Dr. Josephine M. Mitchell Research Prize, University of Alberta.
January 2020	Alberta Graduate Excellence Scholarship, University of Alberta.
October 2019	University of Alberta Graduate Fellowship, University of Alberta.
March 2019	Graduate Student Teaching Award (Lab Instructor), University of Alberta.
November 2018	Josephine Mitchell Scholarship, University of Alberta.
April 2018	Student's Choice Teaching Award (Primary Instructor), University of Alberta.
October 2017	MSS Travel Award, University of Alberta.
May 2016	Eoin L Whitney Scholarship, University of Alberta.
September 2015	University of Alberta Doctoral Recruitment Scholarship, University of Alberta.

PUBLICATIONS

- K. Drach and K. Tatarko: Reverse isoperimetric problems under curvature constraints, submitted, arXiv:2303.02294.
- S. Myroshnychenko, K. Tatarko and V. Yaskin: How far apart can the projection of the centroid of a convex body and the centroid of its projection be?, to appear in Math. Ann., doi.org/10.1007/s00208-023-02783-8.
- K. Tatarko and E. Werner: L_p -Steiner quermassintegrals, Adv. Math. **430** (2023), 109205.
- K. Tatarko and E. Werner: Curvature functionals on convex bodies, Can. Math. Bull. **66**(3) (2023), pp. 761–779.
- S. Myroshnychenko, K. Tatarko and V. Yaskin: Unique determination of ellipsoids by their dual volumes, IMRN, 2022, no. 17, pp. 13569–13589.
- K. Tatarko and E. Werner: A Steiner formula in the L_p Brunn Minkowski theory, Adv. Math. **355** (2019), 106772.
- O. Guédon, A. E. Litvak and K. Tatarko: Random polytopes obtained by matrices with heavy tailed entries, Commun. Contemp. Math. **22** (4) (2020).

- R. Chernov, K. Drach and K. Tatarko: A sausage body is a unique solution for a reverse isoperimetric problem, *Adv. Math.* **353** (2019), pp. 431–445.
- K. Tatarko: An upper bound on the smallest singular value of a square random matrix, *J. Complexity* **48** (2018), pp. 119–128.

TEACHING EXPERIENCE

University of Waterloo, Canada.

- Winter 2024: PMATH 833 (Harmonic Analysis).
- Fall 2023: MATH 147 (Advanced Calculus I).
MATH 115 (Linear Algebra for Engineering).
- Spring 2023: PMATH 321 (Non-Euclidean Geometry).
- Winter 2023: MATH 146 (Advanced Linear Algebra I).
- Winter 2022: MATH 146 (Advanced Linear Algebra I).
- Fall 2021: MATH 116 (Calculus 1 for Engineering).

University of Alberta, Canada.

- Fall 2020: Primary Instructor for MATH 144 (Calculus for the Physical Sciences I),
- Spring 2018: Primary Instructor for MATH 215 (Intermediate Calculus II).
- Winter 2020, Fall 2019, Winter 2019, Fall 2018, Winter 2018, Winter 2017: Lab TA for MATH 201 (Differential Equations).
- Spring 2017: Primary Instructor for MATH 115 (Elementary Calculus II).
- Fall 2016: Lab TA for MATH 100 (Calculus I),
- September 2015 - May 2020: TA at the Decima Robinson Support Centre,

SUPERVISION

- Aaron He (MURA, Winter 2024)
- Grant Kaduck (NSERC USRA, Spring 2023)
- Viktoriia Voloshyna (postdoc, Perimeter Institute, 2022–2023)

- Michael Yang (undergraduate, Fall 2022)

FUTURE CONFERENCES (where I was invited and plan to come)

- July 2025 Special Session: Convexity, High-Dimensional Probability and Applications,
Mathematical Congress of the Americas 2025, Miami, USA.
- December 2024 Workshop: Convex Geometry and its Applications,
Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany.
- December 2024 Workshop: Harmonic Analysis and Convexity,
ICERM, Providence, USA.

TALKS AT CONFERENCES AND OTHER PRESENTATIONS

- January 2024 Winter School on Geometry and Probability,
HIM, Bonn, Germany. (*3 hours mini-course: "Isoperimetric problem: from classical
to reverse"*)
- October 2023 Colloquium talk,
Case Western Reserve University, Cleveland, USA.
- August 2023 Invited talk at the Analysis Seminar,
University of Missouri, Columbia, USA.
- June 2023 Convex geometry - Analytic aspects,
INdAM, Cortona, Italy.
- June 2023 Geometric Inequalities, Convexity and Probability,
BIRS-IMAG, Granada, Spain.
- April 2023 Colloquium talk,
North Dakota State University, Fargo, USA.
- March 2023 Invited talk at the Probability Seminar,
University of Waterloo, Waterloo, Canada.
- March 2023 High-dimensional Convexity and Probability,
AMS sectional meeting, Atlanta, USA.
- March 2023 Invited talk at the Geometry and Topology Seminar,
Georgia Institute of Technology, Atlanta, USA.

September 2022 Harmonic Analysis Methods in Geometric Tomography,
ICERM, Providence, USA.

June 2022 High Dimensional Phenomena,
Institut Henri Poincaré, Paris, France.

June 2022 Convex geometry and partial differential equations,
CMS meeting, (online), Canada.

May 2022 Stochastic Aspects in Convexity,
Ruhr University Bochum, Bochum, Germany.

February 2022 Invited talk at the Geometry and Topology seminar,
University of Waterloo, Waterloo, Canada.

December 2021 Geometric Tomography and Microlocal Analysis,
CMS meeting, (online), Canada.

August 2021 Probability and Analysis Webinar (PAW),
(online).

June 2021 New Perspectives on the Brunn-Minkowski Theory,
CMS summer meeting, (online), Canada.

March 2021 High dimensional measures: geometric and probabilistic aspects,
HIM, (online), Germany.

March 2021 Measure Theory Seminar,
Kent State University, (online), USA.

October 2020 Convexity and Probability in High Dimensions,
AMS sectional meeting, (online), USA.

September 2020 Asymptotic Geometric Analysis Seminar,
(online).

December 2019 Workshop in Convexity and geometric aspects of Harmonic Analysis,
Georgia Institute of Technology, Atlanta, USA.

November 2019 Colloquium talk,
University of Waterloo, Waterloo, Canada.

July 2019 Asymptotic Geometric Analysis IV,
Euler International Mathematical Institute, Saint-Petersburg, Russia.

- June 2019 Geometry, Differential Equations and Analysis in memory of A. V. Pogorelov,
V. N. Karazin Kharkiv National University, Kharkiv, Ukraine.
- June 2019 Probabilistic Methods in Geometric Functional Analysis and Convexity,
CMS Summer Meeting, Regina, Canada.
- May 2019 Workshop: Symmetry and convexity in geometric inequalities,
American Institute of Mathematics, San Jose, USA.
- March 2019 Analytic and Probabilistic Methods in Convex Geometry,
AMS sectional meeting, Honolulu, USA.
- December 2018 Workshop: Convex Geometry and its Applications,
Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany.
- May 2018 Recent Advances in Convex Geometry and Geometric Functional Analysis,
TSIMF, Sanya, China.
- April 2018 Invited talk at the Analysis seminar,
Georgia Institute of Technology, Atlanta, USA.
- March 2018 Workshop: Emerging Trends in Geometric Functional Analysis,
BIRS, Banff, Canada.
- March 2018 Probability in Convexity and Convexity in Probability,
AMS sectional meeting, Columbus, USA.
- February 2018 Invited talk at the Analysis and Probability seminar,
Case Western Reserve University, Cleveland, USA.
- June 2016 Scientific Session on Convex and Discrete Geometry and Geometric Analysis,
CMS Summer Meeting, Edmonton, Canada.
- May 2016 Conference on Geometric Functional Analysis in honour of N. Tomczak-Jaegermann,
University of Alberta, Edmonton, Canada. (*poster session*)
- April 2015 X International Conference of Young Scientists,
V. N. Karazin Kharkiv National University, Kharkiv, Ukraine.
- August 2014 Mini-conference: Fields Undergraduate Summer Research Program,
Fields Institute, Toronto, Canada.
- April 2014 IX International Conference of Young Scientists,
V. N. Karazin Kharkiv National University, Kharkiv, Ukraine.

September 2013-
July 2015 Scientific Geometrical Seminar,
V. N. Karazin Kharkiv National University, Kharkiv, Ukraine. (*3 talks of 50 minutes each*)

September 2015-
May 2020 Working Seminar in Asymptotic Geometric Analysis,
University of Alberta, Edmonton, Canada. (*15 talks of 60 minutes each*)

RESEARCH VISITS

September 2022-
November 2022 Harmonic Analysis and Convexity,
ICERM, Providence, USA. (*Research Fellow*)

August 2017-
November 2017 Geometric Functional Analysis and Applications program,
MSRI, Berkeley, USA. (*Program Associate*)

July 2014-
August 2014 Fields Undergraduate Summer Research Program,
Fields Institute, Toronto, Canada.

OTHER CONFERENCES AND WORKSHOPS PARTICIPATED

August 2023 Informal Analysis Seminar,
Kent State University, Kent, USA.

May 2022 Integral and metric geometry,
CMO, (online), Mexico.

December 2021 Workshop: Convex Geometry and its Applications,
Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany. (*online*)

December 2021 Workshop: Women in Operator Algebras II,
BIRS, Banff, Canada. (*online*)

October 2021 Interaction Between Partial Differential Equations and Convex Geometry,
BIRS-IAS, Hangzhou, China.

January 2021 Winter School: The Interplay between High-Dimensional Geometry and Probability,
HIM, Bonn, (online).

February 2020 Workshop: Geometric Tomography,
BIRS, Banff, Canada.

November 2019 Informal Analysis Seminar,
Kent State University, Kent, USA.

- July 2019 Asymptotic Geometric Analysis 2019 (in honor of Vitali Milman),
Tel Aviv University, Tel Aviv, Israel.
- February 2018 Informal Analysis Seminar,
Kent State University, Kent, USA.
- November 2017 Geometric functional analysis and applications workshop,
MSRI, Berkeley, USA.
- August 2017 Dyson-Schwinger equations, topological expansions, and random matrices,
Columbia University, New York, USA.
- August 2017 Introductory Workshop: phenomena in high dimensions,
MSRI, Berkeley, USA.
- July 2016 Workshop in Analysis and Probability, Concentration Week on Geometric Functional
Analysis,
Texas A&M University, College Station, USA.

ACADEMIC SERVICE

Conferences and seminars organized

- Special session “Harmonic Analysis in Geometric Tomography” at MCA 2025, University of Miami, USA, July 21 – 25, 2025 (upcoming)
(co-organized with E. Morales Amaya, D. Ryabogin, and V. Yaskin).
- Summer School ”Probability, Geometry, and Machine Learning”, ICMU, Ukrainian Catholic University, Lviv, July 14 - 21, 2024 (upcoming)
(co-organized with G. Livshyts, A. Prymak, R. Vershynin, and V. Yaskin).
- Harmonic Analysis and Convexity, BIRS, Banff, November 19 - 24, 2023
(co-organized with A. Koldobsky, D. Ryabogin, V. Yaskin, and A. Zvavitch).
- Recent Advances in Applications of Harmonic Analysis to Convex Geometry, North Dakota State University, Fargo, April 22 - 23, 2023
(co-organized with M. Alfonseca-Cubero, V. Yaskin, and A. Zvavitch).
- Probability and Analysis Webinar (PAW), Fall 2022-to date
(co-organizer).
- University of Waterloo Analysis Seminar, Fall 2021-to date
(co-organized with M. Brannan, M. Kennedy, and N. Spronk).

Committee membership (University of Waterloo)

- Pure Math representative: *Women in Mathematics Committee*, 2023-2025.
- Member: *Undergraduate Committee* of the Department of Pure Mathematics, 2021-2024;
- Member: *Qualifying Exams Committee* of the Department of Pure Mathematics, 2022-2023.