Ilya Gekhtman

Address:

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Citizenship:

U.S.A., Israel

Employment:

Assistant Professor, Technion, October 2020-

Postdoctoral Fellow, University of Toronto, Jan 2019-June 2020.
Mentors: Profs. Giulio Tiozzo and Kasra Rafi.

Member, Fields Institute Thematic Program on Geometry and Dynamics of Teichmueller space, July 2018-December 2018

The U.S. National Science Foundation Postdoctoral Research Fellow and Gibbs Assistant Professor, Yale University, August 2014-June 2018. Mentor: Prof. Gregory Margulis

Postdoctoral Fellow at the Mathematics Institute of Bonn University, June 2015-August 2016.
Mentor: Prof. Ursula Hamenstaedt

Education:

University of Chicago   Chicago, IL

Ph.D. in Mathematics. 2014. Advisor: Alex Eskin

University of Chicago   Chicago, IL

M.S. in Mathematics. 2010.

California Institute of Technology   Pasadena, CA

B.S. in Mathematics. GPA 5.0 (out of 5.0). 2008.

Research Interests:

Ergodic theory and dynamical systems, random walks on groups, geometric group theory, geometry and dynamics in negative and nonpositive curvature, geometry and dynamics in moduli and Teichmueller space.

Teaching:

- Instructor for Math 136, Calculus 1, University of Toronto, Winter 2020
- Instructor for Math 334, Complex Variables, University of Toronto, Winter 2019 and Fall 2019
- Instructor for Math 760, Random Walks and Boundaries of Groups, Yale University, Spring 2017
- Instructor for Math 420/620, Ergodic Theory, Yale University, Spring 2017
- Instructor for Math 320/520, Measure Theory and Integration, Yale University, Fall 2016
- Instructor for Math 196, Linear Algebra, University of Chicago, Spring 2014
- Instructor for Math 152, Calculus 2, University of Chicago, Fall 2013
- Instructor for Math 196, Linear Algebra, University of Chicago, Winter 2013
- Instructor for Math 195, Multivariable Calculus, University of Chicago, Fall 2012
- Instructor for Math 196, Linear Algebra, University of Chicago, Spring 2012
- Instructor for Math 153, Calculus 3, University of Chicago, Fall 2011
- Instructor for Math 153, Calculus 3, University of Chicago, Spring 2011
- Instructor for Math 152, Calculus 2, University of Chicago, Winter 2011
- Instructor for Math 151, Calculus 1, University of Chicago, Fall 2010

  Teaching assistant and grader for Math 203-204-205, Analysis in R^n, University of Chicago. Instructors: Alex Eskin, Pierre Py, Fall 2009-Spring 2010

  Mentor, University of Chicago Research Experience for Undergraduates, Summers 2009, 2011, 2012

Awards and Fellowships:

· NSF Mathematical Sciences Postdoctoral Research Fellowship, 2014-2018

· Herbert J. Ryser Scholarship for Excellence in Mathematics, Caltech, 2007

· Caltech upper class merit scholarship, 2006, 2007

· Valedictorian, Penn High School, Mishawaka, Indiana 2004

· National Merit Scholar 2004

Publications:

I. Gekhtman, V. Gerasimov, L. Potyagailo, and W. Yang, "Martin boundary covers Floyd boundary," to appear, **Inventiones Mathematicae,** arXiv:1708.02133

M. Dussaule and I. Gekhtman, "Stability phenomena for Martin boundaries of relatively hyperbolic groups," to appear, **Probability Theory and Related Fields,** arXiv:1909.0157

M. Dussaule, I. Gekhtman, V. Gerasimov, and L. Potyagailo, "Martin boundary of relatively hyperbolic groups with virtually abelian parabolic subgroups," to appear, **L'Enseignement mathématique ,** arXiv:1711.11307

I. Gekhtman and G. Tiozzo, "Entropy and drift for Gibbs measures on geometrically finite manifolds," **Transactions of the American Mathematical Society 373** (2020), 2949-2980 , arXiv:1904.01187

I. Gekhtman, S. Taylor, and G. Tiozzo, "A central limit theorem for random closed geodesics: proof of the Chas-Li-Maskit conjecture," **Advances in Mathematics** 358 (2019) **,** arXiv:1808.08422

M. Dussaule and I. Gekhtman, "Entropy and drift for word metrics in relatively hyperbolic groups," to appear, **Groups, Geometry and Dynamics**, arXiv:1811.10849

I. Gekhtman, S. Taylor, and G. Tiozzo, "Counting loxodromics in graph products and relatively hyperbolic groups," **Israel Journal of Mathematics**, 237 (2020), 311-371, arXiv:1711.04177

H. Baik, I. Gekhtman, and U. Hamenstaedt, "The Smallest positive eigenvalue of fibered hyperbolic 3-manifolds," **Proceedings of the London Mathematical Society**(2019)**,** Volume 120, Issue 5, 704-741, arXiv:1608.07609

I. Gekhtman and A. Levit, "Critical exponents for invariant random subgroups in negative curvature," **GAFA** (2019) 24: 1411-1439, arXiv:1804.02995

I. Gekhtman, S. Taylor, and G. Tiozzo, "Counting loxodromics for hyperbolic actions," **J. Topol.** 11 (2018), no. 2, 379-419, arXiv:1605.02103

H. Baik, D. Bauer, I. Gekhtman, U. Hamenstädt, S. Hensel, T. Kastenholz, B. Petri, D. Valenzuela, "Exponential torsion growth for random 3-manifolds," **Int. Math. Res. Not. IMRN** 2018, no. 21, 6497-6534, arXiv:1607.00631

Preprints:

I. Gekhtman, S. Taylor, and G. Tiozzo, "Central limit theorems for counting measures in coarse negative curvature ," arxiv:2004.13084

M. Cordes. M. Dussaule, and I. Gekhtman, "An embedding of the Morse boundary in the Martin boundary," arXiv:2004.14624

I. Gekhtman and W. Yang, "Counting conjugacy classes in groups with contracting elements,"arXiv:1810.02969

I. Gekhtman, "Equidistribution of closed geodesics along random walk trajectories with respect to the harmonic invariant measure,"arXiv:1711.04985

I. Gekhtman, "Stable type of the mapping class group,"arXiv:1310.5364

I. Gekhtman, "Dynamics of convex-cocompact subgroups of mapping class groups," arxiv:1204.1741

Selected Talks:

Korean Virtual Seminar on Geometry and Topology, November 2020
Queens University Groups and and Dynamics Seminar, October 2020
Northeastern University Colloqium, Boston, Massachusetts, March 2020
Ohio State University Colloqium, Columbus, Ohio, February 2020
Technion Groups and Dynamics Seminar, Haifa, Israel, December 2019
UC San Diego Mathematics Colloquium, November 2019
Cornell Topology and Geometric Group Theory Seminar, November 2019

2019 Workshop in Dynamical Systems and Related Topics, Penn State University, September 2019

63rd Cascade Topology Seminar, Winnipeg, Manitoba, September 2019

Topology, Geometry, and Dynamics: Rokhlin – 100, St. Petersburg, Russia, August 2019

Boundaries of random walks and applications, Bowdoin College, Brunswick, Maine, June 2019

Minicourse on Teichmueller dynamics in analogy with negative curvature, Rennes University, April 2019

Geometry and Topology Seminar, Michigan State University, February 2019

Complex Geometry and Dynamics Seminar, University of Michigan, February 2019

Carolina Ergodic Theory Workshop, UNC Chapel Hill, January 2019

Jacobs University Department Colloquium, Bremen, Germany, December 2018

McGill University Geometric Group Theory Seminar, Montreal, October 2018

University of Toronto Dynamics Learning Seminar, September 2018

Conference on Geometric Group Theory, BICMR, Peking University, Beijing, China, July 2018

Nonpositively Curved Groups on the Mediterranean, Nahsholim, Israel, May 2018

AMS Spring Sectional Meeting, Vanderbilt University, Nashville, Tennessee, April 2018

Geometry and Topology Seminar, Peking University, Beijing, China, March 2018

Nantes University Geometry Seminar, Nantes, France, January 2018

University of Illinois GEAR Seminar, Urbana, Illinois, November 2017

Columbia University Geometry and Topology Seminar, October 2017

Conference on Dynamics in Number Theory and Geometry, Queens University, Kingston, Ontario, August 2017

Conference on Geometric and probabilistic properties of infinite groups, Lille, France, June 2017

Geometric Group Theory on the Gulf Coast, Pensacola, Florida, March 2017

University of Toronto Dynamics Seminar, March 2017

Spring Topology and Dynamics Conference, Hoboken, New Jersey, March 2017

CUNY Geometry and Topology Seminar, March 2017

University of Chicago Dynamics Seminar, November 2016

Yale University Dynamics and Group Actions Seminar, October 2016

Yale University Geometry and Topology Seminar, September 2016

MPIM Differential Geometry Oberseminar, Bonn, Germany, April 2016

Seoul National University Geometry Seminar, March 2016

Heidelberg University Differential Geometry Seminar, December 2015

Lille University Geometry Seminar, November 2015

Groups and Dynamics Workshop, Austin, Texas, March 2015

Yale University Dynamics and Group Actions Seminar, October 2015

Stanford University Informal Geometry and Dynamics Seminar, May 2014

University of Utah Max Dehn Topology Seminar, January 2014

UT Austin Dynamics Seminar, January 2014

CUNY Geometry and Topology Seminar, April 2013

AMS Spring Sectional Meeting, Ames, Iowa, April 2013

Midwest Dynamical Systems Seminar, Notre Dame, Indiana, October 2012

UIUC Group Theory Seminar, April 2012

References:

Alex Eskin, University of Chicago

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Alex Furman, University of Illinois at Chicago

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Sebastien Gouezel, CNRS, Nantes, France

sebastien.gouezel@unive-nantes.fr

Vadim Kaimanovich, University of Ottawa

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