

Alex Eskin

Curriculum Vitae

Contact Department of Mathematics,
University of Chicago
Chicago, IL. 60637
e-mail: eskin@math.uchicago.edu

Personal

Date of Birth: May 19, 1965, Moscow USSR.

Citizenship: U.S.

Higher Education

6/86: B.S. in mathematics, summa cum laude, from UCLA.

9/86-6/89: Graduate student in physics, MIT.

9/89-6/91: Graduate student in mathematics, Stanford University.

6/93: Ph.D in mathematics, Princeton University.
Advisor: Peter Sarnak.
Title: "Counting Lattice Points on Homogeneous Varieties".

9/93-6/94: Member, Institute of Advanced Study, Princeton.

9/94-6/96: Dickson Instructor, University of Chicago.

9/97-9/98: Associate Professor, University of Chicago.

9/99-present: Professor, University of Chicago.

Awards Recieved

1991-1992: DOE Scholarship.

1992-1993: Sloan Fellowship.

1994-1996: NSF Postdoctoral Research Fellowship.

1997-2002: Packard Fellowship.

1998: Invited Speaker, International Congress of Mathematicians, Berlin

2007: Clay Research Award.

2010: Invited Speaker, International Congress of Mathematicians, Hyderabad

Research Interests

Dynamics and geometry of Teichmüller space, billiards in rational polygons.

Geometric group theory.

Lie Groups, discrete groups, ergodic theory, applications to number theory.

Bibliography

- Alex Eskin. Unipotent flows and applications. In *Homogeneous flows, moduli spaces and arithmetic*, volume 10 of *Clay Math. Proc.*, pages 71–129. Amer. Math. Soc., Providence, RI, 2010.
- Alex Eskin, Andrei Okounkov, and Rahul Pandharipande. The theta characteristic of a branched covering. *Adv. Math.*, 217(3):873–888, 2008.
- Alex Eskin, David Fisher, and Kevin Whyte. Quasi-isometries and rigidity of solvable groups. *Pure Appl. Math. Q.*, 3(4, part 1):927–947, 2007.
- Yitwah Cheung and Alex Eskin. Unique ergodicity of translation flows. In *Partially hyperbolic dynamics, laminations, and Teichmüller flow*, volume 51 of *Fields Inst. Commun.*, pages 213–221. Amer. Math. Soc., Providence, RI, 2007.
- Alex Eskin and Hee Oh. Representations of integers by an invariant polynomial and unipotent flows. *Duke Math. J.*, 135(3):481–506, 2006.
- Alex Eskin and Andrei Okounkov. Pillowcases and quasimodular forms. In *Algebraic geometry and number theory*, volume 253 of *Progr. Math.*, pages 1–25. Birkhäuser Boston, Boston, MA, 2006.
- Alex Eskin and Hee Oh. Ergodic theoretic proof of equidistribution of Hecke points. *Ergodic Theory Dynam. Systems*, 26(1):163–167, 2006.
- Alex Eskin, Jens Marklof, and Dave Witte Morris. Unipotent flows on the space of branched covers of Veech surfaces. *Ergodic Theory Dynam. Systems*, 26(1):129–162, 2006.
- Alex Eskin. Counting problems in moduli space. In *Handbook of dynamical systems. Vol. 1B*, pages 581–595. Elsevier B. V., Amsterdam, 2006.
- Alex Eskin, Gregory Margulis, and Shahar Mozes. Quadratic forms of signature $(2, 2)$ and eigenvalue spacings on rectangular 2-tori. *Ann. of Math. (2)*, 161(2):679–725, 2005.
- Alex Eskin, Shahar Mozes, and Hee Oh. On uniform exponential growth for linear groups. *Invent. Math.*, 160(1):1–30, 2005.
- Alex Eskin and Gregory Margulis. Recurrence properties of random walks on finite volume homogeneous manifolds. In *Random walks and geometry*, pages 431–444. Walter de Gruyter GmbH & Co. KG, Berlin, 2004.
- Alex Eskin, Howard Masur, and Anton Zorich. Moduli spaces of abelian differentials: the principal boundary, counting problems, and the Siegel-Veech constants. *Publ. Math. Inst. Hautes Études Sci.*, (97):61–179, 2003.
- Alex Eskin, Howard Masur, and Martin Schmoll. Billiards in rectangles with barriers. *Duke Math. J.*, 118(3):427–463, 2003.
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- Alex Eskin and Howard Masur. Asymptotic formulas on flat surfaces. *Ergodic Theory Dynam. Systems*, 21(2):443–478, 2001.
- Alex Eskin and Benson Farb. Quasi-flats in $H^2 \times H^2$. In *Lie groups and ergodic theory (Mumbai, 1996)*, volume 14 of *Tata Inst. Fund. Res. Stud. Math.*, pages 75–103. Tata Inst. Fund. Res., Bombay, 1998.
- Alex Eskin. Counting problems and semisimple groups. In *Proceedings of the International Congress of Mathematicians, Vol. II (Berlin, 1998)*, number Extra Vol. II, pages 539–552 (electronic), 1998.

- Alex Eskin, Gregory Margulis, and Shahar Mozes. Upper bounds and asymptotics in a quantitative version of the Oppenheim conjecture. *Ann. of Math. (2)*, 147(1):93–141, 1998.
- Alex Eskin. Quasi-isometric rigidity of nonuniform lattices in higher rank symmetric spaces. *J. Amer. Math. Soc.*, 11(2):321–361, 1998.
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- Alex Eskin, Shahar Mozes, and Nimish Shah. Unipotent flows and counting lattice points on homogeneous varieties. *Ann. of Math. (2)*, 143(2):253–299, 1996.
- Alex Eskin, Gregory Margulis, and Shahar Mozes. On a quantitative version of the Oppenheim conjecture. *Electron. Res. Announc. Amer. Math. Soc.*, 1(3):124–130 (electronic), 1995.
- Alex Eskin and Yonatan R. Katznelson. Singular symmetric matrices. *Duke Math. J.*, 79(2):515–547, 1995.
- Alex Eskin. *Counting lattice points on homogeneous spaces*. ProQuest LLC, Ann Arbor, MI, 1993. Thesis (Ph.D.)–Princeton University.
- Alex Eskin and Curt McMullen. Mixing, counting, and equidistribution in Lie groups. *Duke Math. J.*, 71(1):181–209, 1993.
- Alex Eskin, Zeév Rudnick, and Peter Sarnak. A proof of Siegel’s weight formula. *Internat. Math. Res. Notices*, (5):65–69, 1991.
- Alex Eskin and Chang-Yuan Ye. Parafermion correlation functions on Riemann surfaces. *Nuclear Phys. B*, 325(1):197–210, 1989.
- Alex Eskin. Conformal transformations and string field redefinitions. *Phys. Lett. B*, 206(4):612–618, 1988.

Preprints

- Mladen Bestvina, Alex Eskin, and Kevin Wortman. Filling boundaries of coarse manifolds in semisimple and solvable arithmetic groups, 2011.
- Alex Eskin, Maxim Kontsevich, and Anton Zorich. Lyapunov spectrum of square-tiled cyclic covers, 2010.
- Alex Eskin and Maryam Mirzakhani. Counting closed geodesics in moduli space, 2008.
- Yitwah Cheung and Alex Eskin. Slow divergence and unique ergodicity, 2007.
- Alex Eskin, David Fisher, and Kevin Whyte. Coarse differentiation of quasi-isometries II: Rigidity for Sol and Lamplighter groups, 2007.
- Jayadev Athreya, Alexander Bufetov, Alex Eskin, and Maryam Mirzakhani. Lattice Point Asymptotics and Volume Growth on Teichmüller space, 2006.
- Alex Eskin, David Fisher, and Kevin Whyte. Coarse differentiation of quasi-isometries I: Spaces not quasi-isometric to Cayley graphs, 2006.

June 9, 2011