Curriculum Vitae Barak Weiss

PERSONAL DETAILS

Date and place of birth: Date of immigration: Regular military service: Address and telephone numbers: work: Sackler School of Mathematics Tel Aviv University



EDUCATION

1988–1991	Interdisciplinary program for fostering excellence B.Sc. in Mathematics, Tel Aviv University, Israel
1991–1993	M.Sc. in Mathematics, UC Berkeley, Berkeley, CA
1994– 1998	Ph.D. in Mathematics, Hebrew University, Jerusalem Advisor: Prof. Hillel Furstenberg Thesis title: Rational orbits in actions on arithmetic homoge- neous spaces

EMPLOYMENT HISTORY (a) Employment

1.4.2013 - present	Full Professor, Dept. of Mathematics, Tel Aviv University
1.10.2008 - 2013	Associate professor, Dept. of Mathematics, Ben Gurion University
2004 - 2008	Senior lecturer, Dept. of Mathematics, Ben Gurion University
2000 - 2004	Lecturer, Dept. of Mathematics, Ben Gurion University
1998 - 2000	Postdoctoral research associate, SUNY Stony Brook

(b) Positions in academic administration (selected):		
2017-2021	Appointments committee, School of Math. Sci., TAU	
2017-2019	Chair of Dept. of pure mathematics, TAU	
2009-2012	Appointments committee, BGU math. dept.	
2007-2009	Secretary of Israel Math Union.	
2005	Head of joint math and computer science B.Sc. program, BGU	
2000-2003	Colloquium organizer	
2006 - present	Organizing committee of international scientific meetings: Sde Boker 2013, Orsay 2011, Eilat 2011, Ein Gedi 2011, Luminy 2010, Be'er Sheva 2007, Sde Boker 2007, Banff 2006.	

DISTINCTIONS AND AWARDS

2022 Invited speaker, ICM

2001 E. D. Bergmann award.

SCIENTIFIC PUBLICATIONS

- (a) Books:
- (b) Chapters in collective volumes:
- (1) Barak Weiss, *Dynamics on parameter spaces: submanifold and fractal subset questions*, in "Rigidity in Dynamics and Geometry", M. Burger and A. Iozzi, eds, 425–440. Springer (2002).
- (2) John Smillie and Barak Weiss, Finiteness results for flat surfaces: a survey and problem list, (2006) to appear in Partially hyperbolic dynamics, laminations, and Teichmüller flow (Proceedings of a conference, Fields Institute, Toronto Jan 2006), G. Forni (ed.)

(c) Refereed articles in scientific journals: Published

- (1) Alexander Barabasch, Aviezri Fraenkel, Barak Weiss, *Iterated Beatty sequences*, Random and Computational Dynamics **6** (1993).
- (2) Barak Weiss, Finite dimensional representations and subgroup actions on homogeneous spaces, Israel Journal of Mathematics, **106** (1998), 189–207.
- (3) Shahar Mozes and Barak Weiss, *Minimality and unique ergodicity for subgroup actions*, Annales de l'Institut Fourier **48**, 5 (1998) 1533–1541.
- (4) Nimish A. Shah and Barak Weiss, On actions of epimorphic subgroups on homogeneous spaces, Ergodic Theory and Dynamical Systems **20**, 2 (2000) 567–592.

- (5) Barak Weiss, Unique ergodicity on compact homogeneous spaces, Proc. AMS 129, 2 (2001) 585–592.
- (6) Elon Lindenstrauss and Barak Weiss, On sets invariant under the action of the diagonal group, Ergodic Theory Dynam. Systems 21 (2001), no. 5, 1481–1500.
- Barak Weiss, Almost no points on a Cantor set are very well approximable, Proc. R. Soc. Lond. A (2001) 457 949–952.
- (8) Yair N. Minsky and Barak Weiss, Non-divergence of horocyclic flows on moduli spaces, J. Reine Angew. Math. 552 (2002) 131–177.
- (9) George Tomanov and Barak Weiss, Closed orbits for actions of maximal tori on homogeneous spaces, Duke Math. J. **199** no. 2 (2003) 367–392.
- (10) Dmitry Kleinbock, Elon Lindenstrauss and Barak Weiss, On fractal measures and diophantine approximation, Selecta Math. 10 no. 4 (2004) 479–523.
- (11) Barak Weiss, Divergent trajectories on noncompact parameter spaces, Geom. Funct. Anal. 14 no. 1 (2004) 94–149.
- (12) Dmitry Kleinbock and Barak Weiss, Bounded geodesics in moduli space, Int. Math. Res. Not. 2004, no. 30, 1551–1560.
- (13) John Smillie and Barak Weiss, Minimal sets for flows on moduli space, Israel J. of Math. 142 (2004) 249–260.
- (14) Dmitry Kleinbock and Barak Weiss, *Badly approximable vectors on fractals*, Israel J. Math. **149** (2005) 137–170 (special volume in honor of H. Furstenberg)
- (15) Dmitry Kleinbock and Barak Weiss, Friendly measures, homogeneous flows, and singular vectors, Cont. Math. 385 (2005) 281–292, (special volume on Algebraic and Topological Dynamics).
- (16) Barak Weiss, Divergent trajectories and Q-rank, Israel J. of Math. 152 (2006) 221– 227.
- (17) Boaz Rafaely, Barak Weiss and Eitan Bachmat, Spatial aliasing in spherical microphone arrays, IEEE Transactions on Signal Processing, **55(3)**, 1003-1010.
- (18) Alex Gorodnik and Barak Weiss, Distribution of lattice orbits on homogeneous varieties, Geom. Funct. Anal. 17 (2007) 58–115.
- (19) Dmitry Kleinbock and Barak Weiss, Dirichlet's theorem on diophantine approximation and homogeneous flows, J. Mod. Dyn. 2 (2008) 43–62.
- (20) John Smillie and Barak Weiss, Veech's dichotomy and the lattice property, Erg. Th. Dyn. Sys. 28 1959–1972 (2008).
- (21) John Smillie and Barak Weiss, Finiteness results for flat surfaces: large cusps and short geodesics, Comm. Math. Helv. 85 (2010) 313–335.
- (22) John Smillie and Barak Weiss, Characterizations of lattice surfaces, Inv. Math. 180 (2010), no. 3, 535–557.
- (23) Dmitry Kleinbock and Barak Weiss, Modified Schmidt games and diophantine approximation with weights, Adv. Math. 223 1276–1298 (2010)
- (24) Patrick Hooper, Pascal Hubert and Barak Weiss, Dynamics on the infinite staircase surface, Dis. Cont. Dyn. Sys. 33 (2013) 4341–4347.
- (25) Eitan Bachmat, Maor Kleider, Boaz Rafaely, and Barak Weiss, *Golden-ratio sampling for scanning circular microphone arrays*, IEEE Transactions on Audio, Speech and Language Processing 18(8) 2091–2098 (2010).

- (26) Ryan Broderick, Yann Bugeaud, Lior Fishman, Dmitry Kleinbock and Barak Weiss, Schmidt's game, fractals, and numbers normal to no base, Math. Res. Lett. 17 (2010).
- (27) Ryan Broderick, Lior Fishman, Dmitry Kleinbock, Asaf Reich and Barak Weiss, The set of badly approximable vectors is strongly C¹-incompressible, Math. Proc. Cambridge Phil. Soc. **153** (2012) 319–339.
- (28) Francois Maucourant and Barak Weiss, Lattice actions on the plane revisited, Geometriae Dedicata, 157 (2012) 1–21.
- (29) Meital Cohen and Barak Weiss, Parking garages with optimal dynamics, Geom. Dedicata 161 (2012) 157–167.
- (30) Pat Hooper and Barak Weiss, *Generalized staircases: recurrence and symmetry*, Annales de L'Institut Fourier **62** (2012) 1581–1600.
- (31) Pascal Hubert and Barak Weiss, Ergodicity for infinite periodic translation surfaces, Compositio Math. 149 (2013) 1364–1380.
- (32) Dmitry Kleinbock and Barak Weiss, Modified Schmidt games and a conjecture of Margulis, J. Mod. Dyn. 7 (2014) 429–460.
- (33) Uri Bader, Alex Furman, Alex Gorodnik and Barak Weiss, *Rigidity of group actions* on homogeneous spaces, III Duke Math. J. 164 (2015), no. 1, **115**.
- (34) Yair Minsky and Barak Weiss, Cohomology classes represented by measured foliations, and Mahler's question for interval exchange transformations, Annales scientifiques de l'ENS 2 (2014) 245–284..
- (35) Jinpeng An and Barak Weiss, Remarks on minimal sets and conjectures Cassels, Swinnerton-Dyer and Margulis, Moscow J. of Comb. and Number Th. 3 (2013) 24-43.
- (36) Alan Haynes, Mike Kelly and Barak Weiss, Equivalence relations on separated nets arising from linear toral flows, Proc. Lond. Math. Soc. (3) 109 (2014), no. 5, 1203–1228.
- (37) Uri Shapira and Barak Weiss, On the Mordell-Gruber spectrum, Int. Math. Res. Not. IMRN 14 5518–5559 (2015).
- (38) Samuel Leliévre and Barak Weiss, Translation surfaces with no convex presentation, GAFA 25 1902–1936 (2015).
- (39) Erez Nesharim and Barak Weiss, Bad(i,j) is absolutely winning on C, appendix to the paper Badly approximable vectors on a vertical Cantor set by Erez Nesharim, Moscow J. of Comb. and Number Th. 3 (2013) 88–116.
- (40) Uri Shapira and Barak Weiss, Stable lattices and the diagonal group, J. Eur. Math. Soc. 18 (2016) 1753–1767.
- (41) Dmitry Kleinbock and Barak Weiss, Values of binary quadratic forms at integer points and Schmidt games, in Recent trends in ergodic theory and dynamical systems, 77–92, Cont. Math. 631 (2015).
- (42) Uri Shapira and Barak Weiss, A volume estimate for the set of stable lattices, Comptes Rendus Mathematique **352** (2014) 875–879.
- (43) Uri Shapira and Barak Weiss, Closed orbits for the diagonal group and well-rounded lattices, Groups, Geometry and Dynamics 10 (2016) 1211–1225.
- (44) Yaar Solomon and Barak Weiss, Dense forests and Danzer sets, Annales Scientifique de l'ENS 49 (2016) 1049–1070.

- (45) Samuel Leliévre, Thierry Monteil and Barak Weiss, *Everything is illuminated*, Geometry and Topology. **20** (2016), 1737–1762.
- (46) Ronggang Shi and Barak Weiss, Invariant measures for solvable groups and diophantine approximation, Israel J. Math. 219 (2017) 479–505.
- (47) Dmitry Kleinbock, Ronggang Shi and Barak Weiss, *Pointwise equidistribution with* an error rate and with respect to unbounded functions, Math. Ann. (2016) 1–23.
- (48) Pat Hooper and Barak Weiss, *Rel leaves of the Arnoux-Yoccoz surfaces*, with an appendix by Lior Bary-Soroker, Mark Shusterman and Umberto Zannier, Selecta Math., (2018) 24, no. 2, 875-934
- (49) Omri Solan, Yaar Solomon and Barak Weiss, On problems of Danzer and Gowers and dynamics on the space of closed subsets of R^d, IMRN 21 (2017) 6584–6598.
- (50) Simon Kristensen, Steffen Hojris Pedersen and Barak Weiss, Some remarks on Mahler's classification in higher dimension, Moscow Journal of Combinatorics and Number Theory 6 (2016) 177–190.
- (51) Oded Regev, Uri Shapira and Barak Weiss, Counterexamples to a conjecture of Woods, Duke Math. J. 166 (2017), 2443–2446.
- (52) David Simmons and Barak Weiss, Random walks on homogeneous spaces and diophantine approximation on fractals, Inv. Math. 216 (2019) 337–394.
- (53) Amos Nevo, René Rühr and Barak Weiss, Effective counting on translation surfaces, Adv. Math. 360 (2020).
- (54) Claire Burrin, Amos Nevo, René Rühr, Effective counting for discrete lattice orbits in the plane via Eisenstein series, L'enseignement mathematiques 66 (2020), no. 3-4, 259–304.
- (55) Matt Bainbridge, John Smillie and Barak Weiss, *Horocycle dynamics: new invariants and eigenform loci in the stratum* $\mathcal{H}(\infty, \infty)$, to appear in Memoirs of the AMS (2019).
- (56) Faustin Adiceam, Yaar Solomon and Barak Weiss, Cut-and-project quasicrystals, lattices, and dense forests, J. London Math. Soc. 105 (2022) 1167–1199.
- (57) Alexander Rahm, Noam Solomon, Tara Trauthwein and Barak Weiss, The distribution of rational numbers on Cantor's middle thirds set, Unif. Distrib. Theory 15 (2020), no. 2, 73–92.
- (58) Dmitry Kleinbock, Nikolay Moshchevitin and Barak Weiss, Singular vectors on manifolds and fractals, Israel J. Math. 245 (2021), no. 2, 589–613.
- (59) Or Ordentlich, Oded Regev and Barak Weiss, New bounds on the density of lattice coverings, J. Amer. Math. Soc. 35 (2021), no. 1, 295–308.
- (60) Jon Chaika and Barak Weiss, *The horocycle flow on the moduli space of translation surfaces*, preprint (2021), to appear in Proc. ICM.

RESEARCH GRANTS

2001-2004	Binational Science Foundation Grant 2000247 Dynamics on Parameter Spaces Annual budget: \$26,000
2004-2007	Israel Science Foundation Annual budget: \$19,000
2005–2009	Binational Science Foundation Grant 2004149 Annual budget: \$20,000

2006-2008	Israel-France Scientific cooperation Annual budget: \$5000
2008–2012	Israel Science Foundation Annual budget: \$20,000
2009-2014	Binational Science Foundation Annual budget: \$20,000
2011-2015	ERC personal grant (starter-consolidator) Annual budget: 170,000 euro
2016-2021	Binational Science Foundation Annual budget: \$20,000
2015–present	ISF Action Now research network Annual budget: \$50,000
2021–present	ISF-NSFC Israel-China collaboration project Annual budget: \$99,000

RESEARCH STUDENTS

- (1) Yoav Naveh (M.Sc. student, BGU, graduated 2005). Currently an algorithm developer at Paradigm Ltd.
- (2) Lior Fishman (PhD student, BGU, graduated 2008). Currently an associate professor (tenured) at Univ. North Texas.
- (3) Uri Shapira (PhD student at Hebrew University, joint thesis supervision with Prof. Hillel Furstenberg, graduated 2010). Currently an associate professor (tenured) at the Technion.
- (4) Ya'ar Solomon (M.Sc student, BGU, graduated 2009; PHD student, BGU, graduated 2013). Currently a lecturer (tenure track) position at Ben Gurion University.
- (5) Meital Cohen (M.Sc. student, BGU, graduated 2010). Currently a system analyst at Israel Air Force Industries.
- (6) Erez Nesharim (PhD student, Tel Aviv University, graduated 2016). Currently a senior lecturer (tenure track) at the Technion.
- (7) Nattalie Tamam (PhD student, Tel Aviv University, graduated 2018). Currently a postdoc at the University of Michigan.
- (8) Yotam Smilansky (PhD student, Tel Aviv University, graduated 2018). Currently a postdoc at Rutgers.
- (9) Yiftach Dayan (PhD student, Tel Aviv University, graduated 2019). Currently in industry (software developer).
- (10) Ilya Gringlaz (MSc student, Tel Aviv University).
- (11) Omri Solan (PhD student, Tel Aviv University).
- (12) Amit Wolecki (MSc student, Tel Aviv University, graduated 2019).
- (13) Chen Frenkel (MSc student, Tel Aviv University).
- (14) Uriya Pumerantz (MSc student, Tel Aviv University, graduated 2020).

- (15) Itamar Cohen-Matalon (MSc student, Tel Aviv University).
- (16) Ofek Eliahu (MSc student, Tel Aviv University).
- (17) Alon Agin (MSc student, Tel Aviv University).
- (18) Sahar Bashan (MSc student, Tel Aviv University).

EDITORIAL WORK

On editorial board of:

- International Math. Research Notices
- Moscow Journal of Combinatorics and Number Theory
- Pure and Applied Math. Quarterly
- Journal d'Analyse.