

Dubi Kelmer

PERSONAL INFORMATION:

Born: November 1976 in Israel.
Citizenship: Israeli.
Work address: Department of Mathematics,
526 Maloney Hall , Boston College,
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EDUCATION AND EMPLOYMENT:

2002 B.Sc. (Magna Cum Laude) in Physics and Mathematics,
The Hebrew University of Jerusalem, Israel.
2007 PhD in Mathematics, Tel Aviv University, Israel.
Thesis title: *Arithmetic quantum unique ergodicity for
symplectic linear maps of the multidimensional torus.*
Advisor: Zeev Rudnick.
2007-2008 Member of the Institute for Advanced Study, Princeton, NJ.
2008-2011 L. E. Dickson Instructor at the University of Chicago, IL.
2011-2017 Assistant Professor at Boston College, Chestnut Hill, MA.
2017-... Associate Professor at Boston College, Chestnut Hill, MA.

RESEARCH INTERESTS:

Analytic Number Theory and Homogenous Dynamics with applications to Spectral theory of automorphic forms.

HONORS AND AWARDS:

2017-2022 NSF CAREER grant DMS-1651563.
2014-2017 NSF grant DMS-1401747.
2012-2014 NSF grant DMS-1237412.
2010-2012 NSF grant DMS-1001640.
2007 Rothschild Fellowship (declined).
2006 The Wolf Foundation Research Prize for PhD students.
2004 Prize for Outstanding PhD Students, Tel Aviv University.
2000/01 Annual Dean's List, The Hebrew University of Jerusalem.

PUBLICATIONS:

- D. Kelmer *Shrinking targets for discrete time flows on hyperbolic manifolds*. Geom. Funct. Anal. (to appear). Preprint [arXiv:/1702.01025](https://arxiv.org/abs/1702.01025).
- D. Kelmer *Approximation of points in the plane by generic lattice orbits*. J. Mod. Dyn. 11 (2017), 143–153
- A. Ghosh, D. Kelmer *A Quantitative Oppenheim Theorem for generic ternary quadratic forms*. Preprint [arXiv:/1606.02388](https://arxiv.org/abs/1606.02388).
- A. Ghosh, D. Kelmer *Shrinking Targets for Semisimple Groups*. Bull. Lond. Math. Soc. 49 (2017), no. 2, 235–245.
- D. Kelmer and A. Kontorovich *Effective equidistribution of shears and applications*. Math. Ann. (to appear) Preprint [arXiv:/1506.05534](https://arxiv.org/abs/1506.05534).
- D. Kelmer *On the mean square of the remainder for the Euclidean lattice point counting problem*. Israel J. of Math. (to appear). Preprint [arXiv:/1512.06012](https://arxiv.org/abs/1512.06012).
- D. Kelmer *Lattice points in a circle for generic unimodular shears*. Int. J. Number Theory 13 (2017), no. 2, 291–300.
- D. Kelmer *On distribution of poles of Eisenstein series and the length spectrum of hyperbolic manifolds*. Int. Math. Res. Not. Vol. 2015 **23** 12319–12344 (2015)
- D. Kelmer and A. Kontorovich *On the Pair Correlation Density for Hyperbolic Angles*. Duke Math. J. **164** 473–509 (2015).
- D. Kelmer *A refinement of strong multiplicity one for spectra of hyperbolic manifolds*. Tran. Amer. Soc. **366**, 5925–5961 (2014).
- D. Kelmer and L. Silberman, *A uniform spectral gap for congruence covers of a hyperbolic manifold*. Amer. J. Math. **135**, 1067–1085 (2013).
- D. Kelmer, *Hybrid trace formula for a non-uniform irreducible lattice in $\mathrm{PSL}_2(\mathbb{R})^n$* . J. Number Theory **133** (2013), 2277–2306.
- D. Kelmer, *Quadratic irrationals and linking numbers of modular knots*. J. Mod. Dyn. **6** (2012), 539–561.
- D. Kelmer and A. Mohammadi, *Logarithm laws for one parameter unipotent flows*. Geom. Funct. Anal. **22** (2012), 756–784.
- D. Kelmer, *Distribution of holonomy about closed geodesics in a product of hyperbolic planes*. Amer. J. Math. **134**, No. 6, (2012), 1613–1653.
- D. Kelmer, *Scarring for quantum maps with simple spectrum*. Compos. Math. **147** (2011), 1608–1612. doi: 10.1112/S0010437X10005270

- D. Kelmer, *A uniform strong spectral gap for congruence covers of a compact quotient of $\mathrm{PSL}(2, \mathbb{R})^d$* . Int. Math. Res. Not. (2011), 1135–1164. doi:10.1093/imrn/rnq107.
- D. Kelmer, *Distribution of twisted Kloosterman sums modulo prime powers*. Int. J. Num. Theory **6** (2010), 271–280. MR2646758
- D. Kelmer, *Arithmetic quantum unique ergodicity for symplectic linear maps of the multidimensional torus*. Ann. of Math. (2) **171** (2010), 815–879. MR2630057
- L. Bary-Soroker and D. Kelmer, *On PAC extensions and scaled trace forms*. Israel J. Math. **175** (2010), 113–125. MR2607539
- D. Kelmer and P. Sarnak, *Strong spectral gaps for compact quotients of products of $\mathrm{PSL}(2, \mathbb{R})$* . J. Eur. Math. Soc. (JEMS) **11** (2009), 283–313. MR2486935
- D. Kelmer, *On matrix elements for the quantized cat map modulo prime powers*. Ann. Henri Poincaré **9** (2008), 1479–1501. MR2465732
- D. Kelmer, *Quantum ergodicity for products of hyperbolic planes*. J. Mod. Dyn. **2** (2008), 287–313. MR2383269
- D. Kelmer, *Scarring on invariant manifolds for perturbed quantized hyperbolic toral automorphisms*. Comm. Math. Phys. **276** (2007), 381–395. MR2346394
- D. Kelmer, *On the quantum variance of matrix elements for the cat map on the 4-dimensional torus*. Int. Math. Res. Not. **2005** (2005), 2223–2236. MR2181455

TEACHING:

Boston College:

- 2017/18 MT810 (Real Analysis).
- 2016/17 MT410 (Differential Equations).
MT810 (Real Analysis).
MT202 (Multivariable calculus)
- 2015/16 MT310 (Introduction to Abstract Algebra).
MT412 (Partial Differential Equations.)
- 2014/15 MT210 (Linear Algebra).
MT821 (Introduction to modular forms).
MT412 (Partial Differential Equations).
- 2013/14 MT210 sections 1,2 (Linear algebra).
MT810 (Real analysis).
- 2012/13 MT822 (Analytic number theory).
MT320 (Introduction to analysis).
MT810 (Real analysis).
- 2011/12 MT210 (Linear algebra).
MT210 (Linear algebra).
MT821 (Introduction to modular forms).

University of Chicago:

- 2010 Math 203 (Analysis in \mathbb{R}^n , I).
 Math 204 (Analysis in \mathbb{R}^n , II).
- 2009 Math 199 (Introduction to Analysis and Linear Algebra).
 Math 204 (Analysis in \mathbb{R}^n , II).
 Math 205 (Analysis in \mathbb{R}^n , III).
- 2008 Math 199 (Introduction to Analysis and Linear Algebra).
 Math 153 (Calculus).

Tel Aviv University:

- 2007 TA, Ordinary Differential Equations.
 2006 TA, Ordinary Differential Equations.
 2005 TA, Analysis for math majors.

ADVISING:

- 2015- Shucheng Yu, Boston College, PhD student.
 2013/14 Brian Choi, Boston College, Senior Thesis.

SEMINAR TALKS:

- Number Theory seminar, Bryn Mawr College, Mar. 2017
- Dynamics seminar, TIFR Mumbai, Nov. 2015
- Number theory seminar, Rutgers, Nov. 2015
- Action Now meeting, in commemoration of Minkowski's 150th b-day, Tel Aviv University, Jun. 2014
- Ergodic Theory and Dynamical Systems seminar, Bristol University, Apr. 2014
- Number theory seminar, MIT, Nov. 2013
- Algebra seminar, Boston University, Apr. 2013
- Group actions and Dynamics seminar, Austin TX, Mar. 2013.
- Collaborative Number Theory Seminar, CUNY Graduate Center, Oct. 2012.
- Geometry and Topology seminar, Dartmouth, Apr. 2012.
- Geometric Group Theory and Topology Seminar, Tufts, Mar. 2012.
- Group Action seminar, Brown, Nov. 2011.
- Number Theory seminar, Boston College, Oct. 2011.
- Group action seminar, Yale, Sep. 2011.

- Geometry and topology seminar, The Weizmann Institute of Science, Israel, Aug. 2011.
- Number Theory Seminar, University of Illinois at Urbana-Champaign, Apr. 2011.
- Number theory seminar, UT Austin, Sep. 2010.
- Analysis and PDE Seminar, UCLA, May 2009.
- Dynamical Systems Seminar, University of Chicago, Mar. 2009.
- Number Theory Seminar, The Hebrew University of Jerusalem, Israel, Dec. 2008.
- Dynamics Seminar, The Hebrew University of Jerusalem, Israel, Jul. 2008.
- Number Theory Seminar, Tel Aviv University, Israel, Jan. 2008.
- Group Actions Seminar, Princeton University, Nov. 2007.
- Number Theory Seminar, The Hebrew University of Jerusalem, Israel, Apr. 2007.
- Automorphic Forms Seminar, Tel Aviv University, Israel, Apr. 2006.

COLLOQUIA AND CONFERENCES:

- BI-CO Mathematics Colloquium, Bryn Mawr College, Mar. 2017.
- Building Bridges: 3rd EU/US Summer School + Workshop on Automorphic Forms and Related Topics, University of Sarajevo, Jul. 2016.
- Colloquium, TATA institute of fundamental research, TIFR, Mumbai , Nov. 2015.
- Maine/Québec Number Theory Conference, University of Maine, Oct. 2015.
- First Joint International Meeting of the Israel Mathematical Union and the Mexican Mathematical Society, Oacaca, Sep. 2015.
- Sectional AMS meeting, Lansing MI, Mar. 15.
- New Horizons in additive combinatorics workshop, CRM, Montréal, Oct. 2014.
- Joint International Meeting of the IMU and the AMS, BIU, Israel, Jun. 2014.
- Colloquium, Washington state University, Nov. 2013.
- Maine-Qubec Number Theory Conference, University of Maine, Oct. 2013.
- Colloquium, University of North Texas, Sep. 2013.
- 1st EU/US conference on Automorphic Forms and Related Topics, Aachen University, Aug. 2012.
- Brandeis-Harvard-MIT-Northeastern joint mathematics colloquium, Oct. 2011.
- AMS sectional meeting, Salt lake city, Utah, Oct. 2011.

- Dynamics on Homogeneous Spaces and Number Theory conference, Columbus, Ohio, Sep. 2011.
- The Analytic Theory of Automorphic Forms Workshop, Oberwolfach, Germany, Aug. 2011.
- 25th Automorphic Forms Workshop, Oregon State University, Mar. 2011.
- Colloquium, University of Toronto, Jan. 2011.
- International Conference on Spectral Geometry, Dartmouth College, Jul. 2010.
- Workshop on Quantum Chaos: Arithmetic and Dynamics, Princeton University, Apr. 2010.
- Workshop on Graphs and Arithmetic, CRM Montreal, Canada, Mar. 2010.
- Joint AMS–KMS Meeting, Seoul, Korea, Dec. 2009.
- Mathematical Physics Mini Conference, Tel Aviv University, Israel, Jul. 2008.
- Conference on Equidistribution on Homogeneous Spaces, The Ohio State University in Columbus Ohio, Jun. 2008.
- Workshop on Mathematical Aspects of Quantum Chaos, CRM Montreal, Canada, Jun. 2008.
- Quantum Chaos: Routes to Random Matrix Theory and Beyond, Banff International Research Station, Canada, Feb. 2008.
- Arithmetic Aspects of Random Matrices and Quantum Chaos, University of Bordeaux, France, Jan. 2006.
- Workshop on Quantum Chaos, Random Matrices and Their Applications, University of Bielfeld, Germany, May 2005.

SERVICE:

- Referee for: Annales Henri Poincaré, International Mathematics Research Notices (4), American Journal of Mathematics, Journal of Modern Dynamics (2), Geometric and Functional Analysis, Integers, Mathematical Research Letters, Annals of Mathematics, Duke Mathematical Journal (3), Journal of Number theory.
- Reviewer for Zentralblatt Math and AMS Mathematical Reviews.
- 2011/12 committees: VAP search committee and Colloquium committee.
- 2011/12: Co-organizer of the BC Mathematics Distinguished Lecturer Series.
- 2012: Co-organizer of special session for AMS sectional meeting at Boston College.
- 2012/13 committees: Pos-doc Hiring committee (chair), Colloquium committee and undergraduate committee.

- 2013/14 committees: VAP Hiring committee, Library committee, and Online presence committee.
- 2014/15 committees: Post-doc hiring committee, undergraduate committee, and space committee.
- 2015/16 committees: BC Math Society Liaisons, Graduate committee.
- 2015: Co-organizer of special session for AMS sectional meeting at Rutgers.
- 2015: Running math circle for grades 3-5 at Zervas Elementary School.
- 2011-present: Co-organizer of Boston College Number theory seminar.