Curriculum Vitae - Yotam Smilansky

A. Personal information

1. Name

Yotam Smilansky (yotam.smilansky@manchester.ac.uk)

2. Education

Tel-Aviv University, School of Mathematical Sciences.   2005–2018

3. Qualifications

Ph.D. in pure mathematics   2019
Tel-Aviv University, School of Mathematical Sciences.
Thesis title: "Some counting problems in geometry, graphs and number theory".
Supervisor: Professor Barak Weiss (2013–2018), Professor Lior Bary-Soroker (2012–2013).

M.Sc. in pure mathematics *Summa Cum Laude.*   2012
Thesis title: "Sums of two squares – pair correlation and distribution in short intervals".
Supervisor: Professor Zeev Rudnick.

B.Sc. in pure mathematics   2009

4. Appointments held

Lecturer in Dynamical Systems and Analysis   September 2023–present
The University of Manchester, Department of Mathematics, within the School of Natural Sciences.

Hill Assistant Professor   October 2019–June 2023
Rutgers University, Department of Mathematics in the School of Arts and Sciences.
Mentor: Professor Joel Lebowitz.

Orzen Post-doctoral Fellow   October 2018–September 2019
Hebrew University of Jerusalem, Einstein Institute of Mathematics.
Mentor: Professor Zemer Kosloff.

Teaching Assistant   October 2009–September 2018
Tel-Aviv University, School of Mathematical Sciences.

5. Present appointment

Lecturer in Dynamical Systems and Analysis
The University of Manchester, Department of Mathematics, within the School of Natural Sciences.

B. Research contributions

1. Publications

(a) Peer reviewed

Discrepancy and rectifiability of almost linearly repetitive Delone sets.
    Nonlinearity, vol 35 (2022), 6204–6217.
    (with Yaar Solomon)

Statistics and gap distributions in random Kakutani partitions and multiscale substitution tilings.
    Journal of Mathematical Analysis and Applications, vol 516(2) (2022), 126535.

Classification and statistics of cut-and-project sets.
    Journal of the European Mathematical Society, DOI 10.4171/JEMS/1338 (2023).
    (with René Rühr and Barak Weiss)

A dichotomy for bounded displacement equivalence of Delone sets.
  Ergodic Theory and Dynamical Systems, vol 42(8) (2022), 2693–2710.
  (with Yaar Solomon)

Multiscale substitution tilings.
  Proceedings of the London Mathematical Society, vol 123(6) (2021), 517–564.
  (with Yaar Solomon)

Neural evidence suggests both interference and facilitation from embedding regularity into visual search.
  Journal of Cognitive Neuroscience, vol 33(4) (2021), 622—634.
  (with Anna Vaskevich, Alon Nishry and Roy Luria)

Bounded displacement non-equivalence in substitution tilings.
  Journal of Combinatorial Theory, Series A, vol 177 (2021), 105326.
  (with Dirk Frettlöh and Yaar Solomon)

Uniform distribution of Kakutani partitions generated by substitution schemes.
  Israel Journal of Mathematics, vol 240(2) (2020), 667–710.

The distribution of path lengths on directed weighted graphs.
  In: <u>Analysis as a Tool in Mathematical Physics: In Memory of Boris Pavlov</u>, vol 276 (2020), 351–372.
  (with Avner Kiro and Uzy Smilansky)

On the function field analogue of Landau's theorem on sums of two squares.
  Finite Fields and Their Applications, vol 39 (2016), 195–215.
  (with Lior Bary-Soroker and Adva Wolf)

Sums of two squares – pair correlation and distribution in short intervals.
  International Journal of Number Theory, vol 9(7) (2013), 1687–1711.

(b) Not peer reviewed

EMS Magazine: solved and unsolved problems, problem 241.
Rassias, M.T., Solved and unsolved problems. *European Mathematical Society Magazine*, vol 121 (2021), 58–67.

Oberwolfach report: classification and statistics of cut-and-project sets.
Workshop Report, vol 2 (2021), 30–32.

Oberwolfach report: Schmidt (α, β) games.
Workshop Report, vol 48 (2016), 2762–2765.

2. Grants awarded:

The University of Manchester and Tel-Aviv University Joint Research Seed Fund. 2023
5,000 GBP (Manchester based PI) and 21,500 NIS (Tel-Aviv based PI).

Rutgers Department of Mathematics Academic Initiative Proposal. 2020
3,000 USD, returned at the outbreak of the COVID-19 pandemic.

3. Any other research achievement

The Orzen Post-doctoral Fellowship. 2018
18,000 USD.

Excellence award for M.Sc. student, Tel-Aviv University School of Mathematical Sciences. 2013
6000 NIS.

5. Organisation, promotion and/or management of research

Seminars

Analysis and Dynamics seminar organizer. Fall 2023-present
University of Manchester, UK.

Reviewing

Discrete & Computational Geometry, Moscow Journal of Combinatorics and Number Theory, Experimental Mathematics, Studia Scientiarum Mathematicarum Hungarica: Combinatorics, Geometry and Topology.

Research talks in conferences, workshops, colloquiums and seminars

Ergodic Theory and Analysis Seminar (Online η Seminar).   2023
Rutgers University, NJ.

Ergodic Theory and Dynamical Systems Seminar.   2023
Hebrew University of Jerusalem, Israel.

Probability and Ergodic Theory Seminar.   2023
Ben-Gurion University of the Negev, Israel.

Groups, Dynamics and Related Topics Seminar.   2023
Technion, Israel.

Action Now Wandering Seminar.   2022
Tel-Aviv University, Israel.

Mathematics Colloquium.   2022
University of Haifa, Israel.

Workshop: Mathematics of Tilings and Quasiperiodic Systems.   2022
Research Institute for Mathematical Sciences, Kyoto, Japan.

Analysis and PDE Seminar.   2022
UCLA, CA.

Mathematical Colloquium.   2022
Holon Institute of Technology, Israel.

Zürich Ergodic Theory and Dynamical Systems Seminar.   2022
ETH and University of Zürich, Switzerland.

Ergodic Theory and Dynamical Systems Seminar.   2022
University of Bristol, UK.

Mathematics Colloquium.   2021
University of Haifa, Israel.

Geometric Functional Analysis and Probability Seminar.   2021
Weizmann Institute of Science, Israel.

Analysis Seminar.   2021
Tel-Aviv University, Israel.

Combinatorics Seminar.   2021
Hebrew University of Jerusalem, Israel.

Mathematics Colloquium.   2021
Bar-Ilan University, Israel.

Groups, Dynamics and Related Topics Seminar.   2021
Technion, Israel.

Mathematics Colloquium.   2021
Ben-Gurion University of the Negev, Israel.

Combinatorics Seminar.   2021
Bar-Ilan University, Israel.

Number Theory Seminar.   2021
Rutgers University, NJ.

Workshop: Geometry, Dynamics and Spectrum of Operators on Discrete Spaces.   2021
MFO, Oberwolfach, Germany.

Conference: Algebraic and Combinatorial Invariants of Subshifts and Tilings. 2021
CIRM, Marseille Luminy, France.

Probability and Ergodic Theory Seminar. 2020
Ben-Gurion University of the Negev, Israel.

Dynamical Systems e-Seminar. 2020
Hebrew University of Jerusalem, Israel.

Functional Analysis and Dynamical Systems Seminar. 2020
Leipzig University, Germany.

Group Actions Seminar. 2020
UC San Diego, CA.

Dynamics Seminar. 2020
University of Maryland, MD.

Experimental Mathematics Seminar. 2020
Rutgers University, NJ.

New England Dynamics and Number Theory Seminar. 2020
Online seminar.

One World Numeration Seminar,. 2020
Online seminar.

Dynamics and Number Theory Seminar. 2019
Brandeis University, MA.

Mathematical Physics Seminar. 2019
Rutgers University, NJ.

Mathematics Seminar. 2019
Hofstra University, NY.

Experimental Mathematics Seminar. 2019
Rutgers University, NJ.

Geometric Functional Analysis and Probability Seminar. 2019
Weizmann Institute of Science, Israel.

Mathematics Colloquium. 2019
University of Haifa, Israel.

Mathematics Colloquium. 2019
Bar-Ilan University, Israel.

Analysis Seminar. 2019
Hebrew University of Jerusalem, Israel.

Ergodic Theory and Dynamical Systems Seminar. 2019
Hebrew University of Jerusalem, Israel.

Dynamics Seminar. 2018
University of Maryland, MD.

Ergodic Theory and Statisctical Mechanics Seminar. 2018
Princeton University, NJ.

Dynamical Systems Seminar. 2018
Stony Brook University, NY.

Integrable Systems and Random Matrix Theory Seminar. 2018
Univerity of Michigan, MI.

Number Theory Seminar. 2018
Rutgers University, NJ.

Colloquium.   2018
The City University of New York, NY.

Dynamical Systems Seminar.   2018
University of Houston, TX.

Geometry-Analysis Seminar.   2018
Rice University, TX.

Groups and Dynamics Seminar.   2018
University of Texas at Austin, TX.

Ergodic Theory and Dynamical Systems Seminar.   2018
University of Warwick, UK.

Ergodic Theory and Dynamical Systems Seminar.   2018
University of Bristol, UK.

Model Sets and Aperiodic Order Conference.   2018
Durham University, UK.

The Israeli Mathematical Union annual meating.   2018
Technion, Israel.

Analysis Seminar.   2018
Tel-Aviv University, Israel.

Horowitz Seminar on Probability, Ergodic Theory and Dynamical Systems.   2018
Tel-Aviv University, Israel.

Probability and Ergodic Theory Seminar.   2018
Ben-Gurion University of the Negev, Israel.

The Batsheva de Rothschild Seminar on Quasicrystals, Delone sets and Generalizations of Lattices.   2018
Ohalo, Israel.

Research School: Tiling Dynamical System (short presentation).   2017
CIRM, Marseille Luminy, France.

Arbeitsgemeinschaft: Diophantine Approximation, Fractal Geometry and Dynamics.   2016
MFO, Oberwolfach, Germany.

From Quantum Chaos to Graphs and Spectral Patterns (poster session).   2016
Weizmann Institute of Science, Rehovot, Israel.

D. Teaching and learning

Programs and training

IMA Induction Course for New Lecturers in the Mathematical Sciences.   2023
Cambridge, UK.

4. Teaching/assessment undertaken outside of the University of Manchester:

Instructor (lecturer) at Rutgers University   2019–2023
Classrooms of 50-80 students each.

Department	Year	Course	Remarks
Mathematics	2022/23	Math 135 - Calc I Life&Soc Sci	4 sections
	2021/22	Math 477 - Probability	3 sections
	2020/21	Math 477 - Probability	4 sections
	2019/20	Math 477 - Probability	
		Math 152 - Calc II Math/Phys Sci	

Lecturer and course coordinator at Tel-Aviv University 2013–2018

Classrooms of 80-130 students each.

Faculty	Year	Course	Remarks
Engineering	2017/18	Linear Algebra	Course coordinator
	2016/17	Linear Algebra	Course coordinator
	2014/15	Complex Analysis	
	2013/14	Linear Algebra	
	2012/13	Calculus	

Recitation instructor at Tel-Aviv University 2009–2018

Classrooms of 30-60 students each.

Faculty	Year	Course	Remarks
Exact Sciences	2017/18	Linear Algebra II	
		Number Theory	2 sections
	2016/17	Linear Algebra II	
		Number Theory	2 sections
	2015/16	Calculus II	
		Calculus I (physics)	
	2014/15	Real Analysis	
		Calculus II	
		Calculus I (physics)	
	2013/14	Linear Algebra II	
	2012/13	Algebraic Structures I	
		Linear Algebra I	
	2009/10	Linear Algebra I	
		Calculus I (computer science)	
Engineering	2014/15	Complex Analysis	Taught in English
	2012/13	Linear Algebra	
	2011/12	Complex Analysis	5 sections
		Calculus	
	2010/11	Calculus	
		Linear Algebra	3 sections
	2009/10	Calculus	
Management	2010/11	Basics of Mathematics	

Consistently excellent student satisfaction surveys and reviews. Examples appear on
https://sites.math.rutgers.edu/~smilansky/ and a 5/5 rating on the US based www.ratemyprofessor.com.

Teaching awards

Excellence award for mathematics lecturer. 2014 AND 2017
Tel-Aviv University Faculty of Engineering.

The Ruth and Nathan Eliosef award for excellence in teaching. 2017
Tel-Aviv University School of Mathematical Sciences.

Rector's top 100 list of outstanding teachers, junior faculty member. 2013, 2014, 2017 AND 2018
Tel-Aviv University.

Excellence award for teaching assistance. 2010
Tel-Aviv University School of Mathematical Sciences.

Selected contributions to development of curriculum

Math 477 - Probability (4th year undergraduate course at Rutgers): 2020-2022
Completely redesigned the course as a problem driven course, prepared full course notes and videos. Rewritten all homework assignments and prepared all midterms (2-4 for each section) and final exams.

Number Theory (3rd year undergraduate course for math majors at Tel-Aviv University): 2016-2017
I designed the recitations to present chapters about the multi-cultural history of math, demonstrated by historical sources that originate from Asian, Mediterranean and Western European civilizations.

Linear Algebra for Electronic Engineering (1st year undergraduate course at Tel-Aviv University): 2016-2017
As course coordinator I was in charge of all aspects of the course, supervising 3 lecturers and 9 recitation classes. I have revised the course notes and they are still in use at Tel-Aviv and other Israeli universities (as of 2023).

G. Outreach and public engagement

1. Details of effective engagement with the community in the presentation and explanation of scholarly activity

Undergraduate talks

Maths Society Talks. 2023 PLANNED
University of Manchester, UK.

Undergraduate Colloquium. 2018
University of Houston, TX.

3. Other promotion of engineering and /or physical sciences within the local, regional or national community

Entries in mathematical encyclopedias

OEIS sequence A328074.
OEIS Foundation Inc. (2020), The On-Line Encyclopedia of Integer Sequences, https://oeis.org/A328074.

Square and triangle multiscale substitution tilings.
D. Frettlöh, F. Gähler, E. Harriss, Tiling Encyclopedia, https://tilings.math.uni-bielefeld.de/substitution/square-multiscale and https://tilings.math.uni-bielefeld.de/substitution/triangle-multiscale.

These two encyclopedias are used by mathematical researchers as well as serving an active community of non-specialist enthusiasts who enjoy the oddities of mysterious integer sequences and aperiodic tilings, respectively.