

Curriculum Vitae

Sohail Farhangi

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Citizenship Status: U.S. Citizen

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Primary research Interests: Ramsey Theory, Ergodic Theory and Dynamical Systems

Secondary research Interests: Theory of Uniform Distribution, Number Theory, Representation Theory, Functional Analysis, (semi)Group theory

Employment:

- Postdoctoral researcher at Beijing Institute of Mathematical Sciences and Applications (BIMSA) September 2025-Present
- Postdoctoral researcher at the University of Adam Mickiewicz, November 2022-August 2025.

Education:

- The Ohio State University, Ph.D. in mathematics, August 2022
 - *Thesis Advisor:* Vitaly Bergelson
 - *Thesis:* [Topics in Ergodic Theory and Ramsey Theory](#)
- Virginia Polytechnic Institute and State University, M.S. in mathematics, December 2016.
 - *Thesis Advisor:* Ezra Brown
 - *Thesis:* [On Refinements of Van der Waerden's Theorem](#)
- Virginia Polytechnic Institute and State University, B.S. in mathematics, December 2015.
- Thomas Jefferson High School of Science and Technology, Advanced Studies Diploma, June 2013.

Awards and Honors:

- The Ohio State University, August 2016 - Spring 2022
 - Received a Distinguished First-Year Graduate Teaching Associate Award from The Ohio State University Math Department, Spring 2018.
 - Selected as a finalist for the Graduate Teaching Associate Award from The Ohio State University Math Department, Spring 2020, Spring 2021, and Spring 2022.
 - Selected as a finalist for the Graduate Associate Teaching Award from the (entire) Ohio State University, Spring 2022.

Publications:

- (1) [Pointwise Ergodic Theorems For Higher Levels Of Mixing](#), *Studia Math.*, 261(3):329–344, 2021.
 - <https://arxiv.org/abs/2107.07861>
- (2) Distance Graphs and Arithmetic Progressions, *Integers* (joint work with [Jarosław Grytczuk](#)), 21A (Ron Graham Memorial Volume): Paper No. A11, 6, 2021.
 - <https://math.colgate.edu/integers/vol21a.html>
- (3) On the partition regularity of $ax + by = cw^m z^n$ (joint work with [Richard Wagner](#)), *Integers*, 23: Paper No. A18, 52, 2023.
 - <https://arxiv.org/abs/2105.02190>
- (4) A generalization of van der Corput's difference theorem with applications to recurrence and multiple ergodic averages, *Dynamical Systems*, 2023, DOI: 10.1080/14689367.2023.2230160
 - <https://arxiv.org/abs/2303.11832>
- (5) Van der Corput's difference theorem for amenable groups and the left regular representation.
 - <https://arxiv.org/abs/2308.05560>
 - **Accepted.** To appear in *Indagationes*, <https://doi.org/10.1016/j.indag.2024.10.001>.
- (6) Uniform vector-valued pointwise ergodic theorems for operators (joint work with Micky Barthmann).
 - <https://arxiv.org/abs/2404.05877>
 - **Accepted.** To appear in *Discrete and Continuous Dynamical Systems*, <https://www.aims.org/article/doi/10.3934/dcds.2025032>.

Submitted preprints:

- (7) A generalization of van der Corput's Difference Theorem.

- <https://arxiv.org/abs/2106.01123>
- (8) Asymptotic dynamics on amenable groups and van der Corput sets (joint work with [Robin Tucker-Drob](#)).
 - <https://arxiv.org/abs/2409.00806>
- (9) Undecidability in the Ramsey theory of polynomial equations and Hilbert's tenth problem (joint work with [William \(Bill\) Mance](#), and [Stephen \(Steve\) Jackson](#)).
 - <https://arxiv.org/abs/2412.14917>

In preparation:

- (10) Notions of normality for dynamically generated Cantor series (joint work with William (Bill) Mance, preprint available upon request)

Conferences Attended and Talks Given: A full list of conferences that I have attended, talks that I have given, and slides that I have used can be found at <https://sohailfarhangi.com/publications-and-preprints-1/talks-given/>. Below I only list some situations in which I was externally funded.

- (1) Gave a talk at the conference on Ergodic group actions and unitary representations at IMPAN, June 2024.
- (2) Presented a poster at Numeration, June 2024.
- (3) Gave a talk at the Millican Colloquium at University of North Texas, March 2024.
- (4) Gave a talk at SEALS and at the logic seminar at University of Florida, March 2024.
- (5) Gave a talk at the Descriptive Dynamics and Combinatorics Seminar at McGill University, September 2023.
- (6) Gave talks at Chemnitz University of Technology at the analysis seminar and the discrete math seminar, June 2023.

Teaching:

See <https://sohailfarhangi.com/teaching-resources/> for the notes and handouts that I have produced for some of the classes that I have TAed.

- Leader of the Thomas Jefferson High School USA Math Olympiad Training Sessions, September 2012 - June 2013.
- Have provided over 20 hours of lectures to the Fairfax Math Circle, September 2011 to May 2015.
- Leader of the Virginia Tech Putnam Training Sessions, Fall 2014.
- Grader and counselor at the ROSS Mathematics Program (in Columbus Ohio), Summer 2015.
- Worked as a tutor for 12 hours a week at the Virginia Tech Math Emporium, Spring 2016.
- Grader and counselor at the China ROSS Mathematics Program (in Nanjing China), Summer 2016.
- Assisted with exam creation and grading for the OSU [Rasor-Bareis-Gordon Competition](#).
- The Ohio State University
 - (1) Teaching Assistant for calculus 1 (Math 1151), Fall 2017.
 - (2) Teaching Assistant for calculus 2 for engineers (Math 1172), Spring 2018 and Fall 2018.
 - (3) Teaching Assistant for college algebra (Math 1148), Summer 2018.
 - (4) Teaching Assistant for multivariable calculus (Math 2153), Summer 2019.
 - (5) Teaching Assistant for precalculus (Math 1150), Fall 2019.
 - (6) Teaching Assistant for mathematical topics for engineers (Math 2173), [Spring 2020](#).
 - (7) Grader for ordinary differential equations (Math 2255), [Summer 2020](#).
 - (8) Teaching Assistant for mathematical topics for engineers (Math 2173), [Fall 2020](#).
 - (9) Teaching Assistant for engineering mathematics B (Math 2177), [Spring 2021](#).
 - (10) Worked at the [Buckeye Aha Math Moments \(BAMM\)](#) program, Summer 2021.
 - (11) Teaching Assistant for Calculus III (Math 2153), [Fall 2021](#) and [Spring 2022](#).
- Supervised an ISEM 28 project in 2025 on "Undecidability in the Ramsey theory of polynomial equations".

Languages:

(1) English: Mother tongue (2) Farsi: Spoken fluently (3) Polish: B1 certified. (4) Spanish: Studying for A2 certification. (5) Mandarin Chinese: Started Studying.

Journal Refereeing:

- (1) The Australasian Journal of Combinatorics (1 article)
- (2) Bulletin de la Société Mathématique de France (1 article)

- (3) Discrete and Continuous Dynamical Systems (1 article)
- (4) Conference proceedings published at the Banach center (1 article)
- (5) Proceedings of the American Mathematical Society (1 article)
- (6) Transactions of the American Mathematical Society (1 article)
- (7) Integers (1 article)