

Dimitrios Vardakis

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Current Position

Academic Staff: Chair of Mathematics II 2023 – present
Julius-Maximilians-Universität Würzburg, Institut für Mathematik

Work Experience

- Research assistant (at MSU) 2019 – 2022
- Graduate course grader (at MSU) 2020 – 2022
- Teaching assistant & recitation instructor (at MSU) 2017 – 2019
- Internship at Foundation for Research & Technology – Hellas (FORTH)
supervisor: *Achilles Tertikas* Summer 2015

Education

- *Michigan State University, Department of Mathematics*
Ph.D. in Mathematics 2017 – 2023
- *University of California, Irvine*
Summer school in Computational Learning Theory and Fourier Analysis 2022
- *University of Crete, Department of Mathematics & Applied Mathematics*
BSc in Mathematics 2012 – 2016

Awards & Funding

- Dissertation Continuation Fellowship (*provided by Michigan State University*) 2022
- NSF 1/4 Research Assistantship (*through academic advisor*) 2019, 2021
- 8th place at the national competition of the Hellenic Mathematical Society (HMS) 2012

Conferences, Workshops & Schools Attended

- Extremal Problems in Harmonic Analysis, Convexity, and Bellman Functions
— *Institute for Computational and Experimental Research in Mathematics (ICERM)*,
United States Providence, November 2022
- Probabilistic Methods in Geometry and Analysis
— *Institute for Computational and Experimental Research in Mathematics (ICERM)*,
United States Providence, October 2022
- Computational Learning Theory and Fourier Analysis
— *University of California, Irvine*, United States (online), October 2022
- Workshop on Harmonic Analysis and Related Topics in honor of Michael Lacey's birthday
— *Centre de Reserca Matemàtica*, Spain Barcelona, June 2022
- 11th International Conference on Harmonic Analysis and Partial Differential Equations
(El Escorial Meetings)
— *Instituto de Ciencias Matemáticas*, Spain Madrid, June 2022
- 8th European Congress of Mathematics (8ECM)
— *University of Primorska*, Slovenia (online) June 2021

- Harmonic Analysis and PDEs (HAPDE2019)
— *University of Helsinki*, Finland Helsinki, June 2019
- Geometric and Harmonic Analysis (GAHA2019)
— *University of Connecticut*, Connecticut, US Storrs, March 2019
- 3rd Annual Northeastern Analysis Meeting (NEAM)
— *State University of New York*, New York, US New Paltz, October 2018
- Recent Advances in Functional Analysis (RAFA2018)
— *Kent State University*, Ohio, US Kent, October 2018
- 15th Panhellenic Conference of Mathematical Analysis
— *University of Crete*, Greece Heraklion, May 2016

Research Interests

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|----------------------------|---|
| • Complex Analysis | • Harmonic Analysis on the Hamming Cube |
| • Dynamical Systems | • Boolean Functions |
| • Geometric Measure Theory | • Favard length |
| • Harmonic Analysis | • Random Cantor Sets |

Talks

- “The Favard length decay of random Cantor sets”, *invited talk at the Seminario Análisis y Aplicaciones*.
— *Instituto de Ciencias Matemáticas (ICMAT)*, Spain Madrid, January 2023
- “The Favard length decay of random Cantor Sets”, *contributing talk at Extremal Problems in Harmonic Analysis, Convexity, and Bellman Functions*.
— *Institute for Computational and Experimental Research in Mathematics (ICERM)*, United States Providence, November 2023
- “Majority is Stablest: Discreet and SoS”, *at the Computational Learning Theory and Fourier Analysis summer school*.
— *University of California, Irvine*, United States (online) October 2022
- “Free-boundary problems through Sakai’s theorem”, *contributing talk at the 11th International Conference on Harmonic Analysis and Partial Differential Equations (El Escorial Meetings)*.
— *Instituto de Ciencias Matemáticas*, Spain Madrid, June 2022
- “Free-boundary problems through Sakai’s theorem”, *invited talk at the Analysis & Mathematical Physics Seminar*.
— *Virginia Tech*, United States Blacksburg, April 2022
- “Geometry of graphs of continuous functions intersecting many lines at a few points”, *contributing talk at HAPDE2019*.
— *University of Helsinki*, Finland Helsinki, June 2019

Publications & Preprints

S. Kakaroumpas, T. H. Nguyen, D. Vardakis “Matrix-weighted estimates beyond Calderón-Zygmund theory”. Submitted in: *Mathematische Annalen*.
arXiv: [arXiv:2404.02246](https://arxiv.org/abs/2404.02246) [[math.CA](https://arxiv.org/archive/math)].

D. Vardakis, A. Volberg. “The Buffon’s needle problem for random planar disk-like Cantor sets”. In: *Journal of Mathematical Analysis and Applications*, **529**:2 (2023).
arXiv: [2205.14559](https://arxiv.org/abs/2205.14559) [[math.AP](https://arxiv.org/archive/math)]. DOI: [10.1016/j.jmaa.2023.127622](https://doi.org/10.1016/j.jmaa.2023.127622)

D. Vardakis, A. Volberg. “Free boundary problems via Sakai’s theorem”. In: *Algebra i Analiz*, **34**:3 (2022), pp. 252–275.

arXiv: [2105.14570v3 \[math.CV\]](#). URL: [Algebra i Analiz](#)

D. Vardakis, A. Volberg. “Free boundary problems in the spirit of Sakai’s theorem”. In: *Comptes Rendus. Mathématique*, Vol. 359 (2021) no. 10, pp. 1233–1238.

DOI: [10.5802/crmath.259](#)

D. Vardakis, A. Volberg. “Geometry of planar curves intersecting many lines in a few points”. In: *Algebra i Analiz*, **33**:6 (2021), pp. 214–234.

arXiv: [1909.03203v2 \[math.AP\]](#). URL: [Algebra i Analiz](#)

Languages & Other Interests

- Greek — Native
- English — Fluent
- German — learning
- Spanish — learning
- Classical guitar — Diploma
- Rock climbing, mountain climbing