

# Dimitrios Vardakis

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## Current Position

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Lehrstuhl für Mathematik II

2023 – present

*Julius-Maximilians-Universität Würzburg, Institut für Mathematik*

## Work Experience

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- 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

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- *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

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- 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

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- 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

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- “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

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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

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