jacobdenson

Research Interests

Harmonic Analysis and Geometric Measure Theory

Contact Information

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Math Stack Overflow:
jacob-denson
Website:
https://jdjake.github.io/

Education

2020-2025
PhD in Mathematics at the University of Wisconsin, Madison.
2017-2019
Masters in Mathematics at the University of British Columbia
Thesis:
Cartesian Products Avoiding Patterns.
2013-2017
Bachelors in Computing Science at the University of Alberta.

Teaching Assistantships

2024
Multivariate Calculus
Linear Algebra
2023
Preparatory Algebra
Lecturer
Introduction to Discrete Mathematics
2022
Elementary Matrix and Linear Algebra
Introduction to Discrete Mathematics
Introduction to Partial Differential Equations

Publications

Multipliers of Spherical Harmonics

Jacob Denson

TODO

(Submitted 2024)

Large Salem Sets Avoiding Nonlinear Configurations

Jacob Denson

https://arxiv.org/abs/2110.09592

(Submitted 2024)

Cartesian Products Avoiding Patterns

Jacob Denson

https://open.library.ubc.ca/soa/cIRcle/collections/ubctheses/24/items/1.0387448

MSc Thesis (University of British Columbia) *(2019)*

Large Sets Avoiding Rough Patterns

Jacob Denson, Malabika Pramanik, Joshua Zahl

https://doi.org/10.1007/978-3-030-61887-2_4

Harmonic Analysis and Applications *(2021) pp. 59–75. Springer International Publishing*

Proofs in Three Bits or Less (Expository Article)

Jacob Denson

https://issuu.com/cms-studc/docs/margin-spring2018

CMS Notes from the Margin *(2018) pp. 1–3*

Graduate Awards

2023-2024	**Henry Schaerf Mathematics Graduate Award** Awarded to three mathematics graduate students each year who have demonstrated promise in their academic work.
2019	**February Fourier Talks Poster Presentation Award (2nd Place)** Awarded to the top three posters presented at the February Fourier Talks poster session.
2018	**NSERC CGSM Master's Scholarship** Awarded to 3000 students in Master's programs across all disciplines in the sciences and engineering across Canada. Provides financial support to high-calibre scholars allowing them to concentrate more fully on their studies in their chosen fields.

Conference Presentations

2024-Now **Characterizations of Boundedness For Multipliers of Spherical Harmonics**
Presented at:
- *The 2024 Ohio River Analysis Meeting.*
- *Poster at the 2024 Madison Lectures in Harmonics Analysis*
- *The AMS 2024 Spring Central Sectional Meeting*
- *The AMS 2024 Fall Western Sectional Meeting*

2020-2021 **Salem Sets Avoiding Patterns**
Presented at:
- *The 2020 Ohio River Analysis Meeting.*
- *The University of Wisconsin Analysis Student Seminar.*
- *The 17th Prairie Analysis Seminar.*

2018-2019 **Fractals Avoiding Fractal Sets**
Presented at:
- *The 2018 Mid-Atlantic Analysis Meeting.*
- *The 2018 CMS Winter Meeting.*
- *The 2019 Geometric and Harmonic Analysis (GAHA) Conference.*
- *Poster at the 2019 February Fourier Talks. Awarded Prize for 2nd Best Poster out of 19 participants.*
- *Poster at the 2019 Madison Lectures in Fourier Analysis.*

Select Expository Talks

Talk Notes can be found at my website: https://jdjake.github.io/notes:

2024 **On Trilinear Oscillatory Integral Inequalities and Related Topics (After Christ)**
UW Madison 2022 Spring School: Multilinear Singular and Oscillatory Integrals with Applications

2023 **Detangling Entangled Paraproducts (After Durcik)**
Bonn 2023 Summer School: Analysis of Multiple Ergodic Averages

2023 **The Lax Hörmander Parametrix for the Half-Wave Equation**
UW Madison Graduate Analysis Seminar

2022 **Anticoncentration and Polynomial Decompositions (After Kane)**
UC Irvine 2022 Summer School: Learning Theory and Fourier Analysis

2022 **Nodal Domains on Riemannian Manifolds via Diffusion Processes (After Steinerberger)**
Bonn 2022 Summer School: Nodal Domains and Landscape Functions

2022 **Logarithmic Improvements to L^p Bounds for Laplace-Beltrami Eigenfunctions on Hyperbolic Manifolds (After Sogge and Blair)**
UW Madison 2022 Summer School: Harmonic Analysis on Manifolds

2021 **Algorithmic Aspects of Brascamp Lieb Inequalities (After Garg, Gurvits, Oliveira, and Wigderson)**
Bonn 2021 Summer School: Brascamp Lieb Inequalities

2019 **Incidence Theorems over Field of Arbitrary Characteristic (after Kollár)**
Math 616A Class: The Polynomial Method

2018 **Hodge Theory: Harmonic Analysis in Topology**
Math 529 Class: Differential Topology

2017 **Proofs in Three Bits or Less**
UBC Graduate Seminar