Brandon Sweeting

Postdoctoral Researcher, Mathematics

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Department of Mathematics, Washington University in St. Louis, One Brookings Drive St. Louis, MO 63130
https://www.brandonsweeting.com | sweeting@wustl.edu | (561) 574-3821

Research Interests

· Harmonic Analysis · Bellman Functions · Singular Integral Operators · Sharp Estimates · BMO · Dyadic Analysis · Best Constants · Weights · Factorization Theory · Extrapolation Theory

Appointments

NSF MPS-Ascend Postdoctoral Research Fellow — 2024 – Present
Washington University in St. Louis — St. Louis, MO

Postdoctoral Researcher — 2021 – 2024
The University of Alabama — Tuscaloosa, AL

Education

PhD in Mathematics — 2014 – 2021
University of Cincinnati — Cincinnati, OH
Dissertation Advisor: Leonid Slavin
Dissertation: *Novel Bellman Estimates for A_p Weights*

BA in Mathematics — 2011 – 2014
University of South Florida — Tampa, FL
Summa Cum Laude

Grants

National Science Foundation (MPS-Ascend) – DMS #2402316 — 2024 – 2027
Harmonic Analysis Techniques in the Study of Operators in Several Complex Variables — $300,000

Publications

1. Brandon Sweeting *On those weights satisfying a weak-type inequality for the maximal operator and fractional maximal operator*, Arxiv e-prints: arXiv:2410.04031 (2024) [Submitted]

2. David Cruz-Uribe, Brandon Sweeting, *Weighted weak-type inequalities for maximal operators and singular integrals*, Rev Mat Complut (2024). https://doi.org/10.1007/s13163-024-00492-7

3. Zoe Nieraeth, Cody B. Stockdale, Brandon Sweeting, *Quantitative weighted weak-type estimates for multilinear sparse operators*, Arxiv e-prints: arXiv:2401.15725 (2024) [Submitted]

4. Cody B. Stockdale, Brandon Sweeting, *Weighted weak-type boundedness and compactness in Calderón-Zygmund theory* [In Preparation]

5. Leonid Slavin, Brandon Sweeting, *Sharp dyadic estimates via non-infinitesimal Bellman majorants* [In Preparation]

Conference Talks

AMS Sectional Meeting, University of Wisconsin-Milwaukee — 04/20/24
Special Session on Recent Developments in Harmonic Analysis
Multiplier Weak-Type Inequalities for the Maximal Operator
Invited Talk, 20 Minutes

AMS Sectional Meeting, Florida State University — 03/23/24
Special Session on Geometric Measure Theory and Partial Differential Equations
Multiplier Weak-Type Inequalities for Maximal Operators and Singular Integrals
Invited Talk, 20 Minutes

13th Ohio River Analysis Meeting, University of Kentucky — 03/16/24
Multiplier Weak-Type Inequalities for the Maximal Operator
Contributed Talk, 20 Minutes

Joint Mathematics Meetings, American Mathematical Society — 01/06/24
AMS Special Session on New Faces in Operator Theory and Function Theory
Multiplier Weak-Type Inequalities for Maximal Operators & Singular Integrals
Invited Talk, 20 Minutes

Workshop in Analysis, Georgia Institute of Technology — 12/08/23
Multiplier Weak-Type Inequalities for Maximal Operators & Singular Integrals
Invited Talk, 20 Minutes

19th Prairie Analysis Seminar, Kansas State University — 11/03/23
Multiplier Weak-Type Inequalities for Maximal Operators & Singular Integrals
Contributed Talk, 20 Minutes

AMS Sectional Meeting, University of Cincinnati — 04/15/23
Special Session on Inequalities in Harmonic Analysis
Multiplier Weak-Type Inequalities for Maximal Operators & Singular Integrals
Invited Talk, 20 Minutes

12th Ohio River Analysis Meeting, University of Cincinnati — 03/18/23
Multiplier Weak-Type Inequalities for Maximal Operators & Singular Integrals
Contributed Talk, 20 Minutes

39th Southeastern Analysis Meeting, Clemson University — 03/10/23
Multiplier Weak-Type Inequalities for Maximal Operators & Singular Integrals
Contributed Talk, 20 Minutes

AMS Sectional Meeting, American Mathematical Society — 11/20/21
Special Session on Harmonic Analysis and Spectral Theory
On the John-Nirenberg Constant of BMO^p, $0 < p < 1$
Invited Talk, 20 Minutes (Virtual)

17th Prairie Analysis Seminar, Kansas State University — 11/06/21
New Estimates for Dyadic Carleson Sequences
Contributed Talk, 20 Minutes (Virtual)

AMS Sectional Meeting, American Mathematical Society 04/17/21
Special Session on Sharp Estimates in Harmonic Analysis, II
New Estimates for Dyadic Carleson Sequences
Invited Talk, 20 Minutes (Virtual)

10th Ohio River Analysis Meeting, University of Kentucky 03/20/21
The John-Nirenberg Constant of BMO^p, $0 < p < 1$
Contributed Talk, 20 Minutes (Virtual)

37th Southeastern Analysis Meeting, University of Florida 03/13/21
New Estimates for Dyadic Carleson Sequences
Contributed Talk, 20 Minutes (Virtual)

Seminar/Colloquium Talks

Colloquium, Saint Louis University 09/27/24
Weighted Weak-Type Inequalities in Harmonic Analysis

Analysis Seminar, Temple University 02/12/24
Multiplier Weak-Type Inequalities for Maximal Operators & Singular Integrals

Analysis Seminar, University of Alabama 10/04/23
Multiplier Weak-Type Inequalities for Maximal Operators & Singular Integrals

Analysis Seminar, Washington University in St. Louis 09/18/23
Multiplier Weak-Type Inequalities for Maximal Operators & Singular Integrals

Analysis Seminar, University of Alabama 09/21/22
Mixed Weak-Type Estimates for Classical Operators

Analysis Seminar, Clemson University 09/24/21
On the John-Nirenberg Constant of BMO^p, $0 < p < 1$

Analysis Seminar, University of Alabama 01/29/21
Novel Bellman Estimates for A_p *Weights*

Conference and Workshop Organization

Expanding Pathways in Harmonic Analysis 2025 04/05/25 - 04/06/25
with Brett D. Wick and Elodie Pozzi

JMM Special Session on New Directions in Harmonic Analysis 01/11/25
with Cody B. Stockdale, A. Walton Green, and Nathan A. Wagner

Conferences and Workshops Participation

MAA MathFest 2024 08/07/24 - 08/10/24
Indianapolis, IN

Geometry of Measures and Free Boundaries 2024 07/20/24 - 07/26/24
University of Washington

Harmonic Analysis and Differential Equations — 06/23/24 - 06/29/24
Macquarie University

Multivariable Operator Theory Conference 2024 — 06/10/24 - 06/14/24
Washington University in St. Louis

Extremal Problems in Harmonic Analysis — 11/28/22 - 12/02/22
ICERM at Brown University

Workshop on Harmonic Analysis and Related Topics — 07/13/22 - 07/17/22
Centre de Recerca Matemàtica

11th International Conference on Harmonic Analysis & PDE — 07/06/22 - 07/10/22
Universidad Autónoma de Madrid

CBMS 2020 Conference — 06/23/22 - 06/27/22
Florida State University

Teaching Experience

The University of Alabama

- Discrete Mathematics — Spring 2024
- Discrete Mathematics — Fall 2023
- Introduction to Complex Variables — Spring 2023
- Applied Differential Equations I — Fall 2022
- Introduction to Linear Algebra — Spring 2022
- Discrete Mathematics — Fall 2021

University of Cincinnati

- Introduction to Mathematical Reasoning — Summer 2021
- Introduction to Mathematical Reasoning — Spring 2021
- Foundations of Quantitative Reasoning — Fall 2020
- Mathematics of Social Choice — Summer 2020
- Mathematics of Management Science — Spring 2020
- Mathematics of Social Choice — Fall 2019
- Mathematics of Social Choice — Summer 2019
- Mathematics of Management Science — Spring 2019
- Mathematics of Social Choice — Fall 2018
- Mathematics of Management Science — Spring 2018

· Applied Calculus I — Fall 2017

· Mathematics of Social Choice — Spring 2017

· Mathematics of Management Science — Fall 2016

· Applied Calculus II — Summer 2016

University of Cincinnati (TA)

· Calculus II, 3 sections — Spring 2016

· Calculus I, 2 sections — Fall 2015

· Calculus I, 3 sections — Spring 2015

· Calculus II, 3 sections — Fall 2014

Honors and Awards

· MAA Project NExT Fellow — Fall 2024 – Present

· Maita Levine Award for Outstanding GA — Spring 2020

· Albert C. Yates Fellow — 2014 – 2021

· King O'Neal Scholar — Spring 2014

Graduate Coursework

· Real Analysis · Complex Analysis · Functional Analysis · Linear Algebra · Topology · Probability · Ordinary Differential Equations · Partial Differential Equations · Stochastic Differential Equations · Geometric Function Theory · Geometric Analysis · Harmonic Analysis · Numerical Analysis

Relevant Skills

· *Languages:* English, French

· *Programming Languages:* Python, Java, Swift, Mathematica

· *Programming Libraries/APIs:* TensorFlow, Keras, Scikit-Learn, PyCUDA, Scipy, Numpy

Professional Activities

· National Math Alliance Mentor — 2024 – present

· WashU Math Circle Co-Organizer — 2024 – present

· WashU Joint Post-Baccalaureate Program Mentor — 2024 – present

· Journal Referee: *Collectanea Mathematica*

Professional Affiliations

- Black Faculty and Staff Association (UA) 2023 – 2024
- The American Mathematical Society (AMS) 2014 – present
- Pi Mu Epsilon, Florida Epsilon Chapter (USF) 2013 – present