Lucas Bouck

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Education

George Mason University
B.S., Mathematics, May 2018 (Expected)
Minor: Computer Science
Overall GPA: 3.99
Math GPA: 4.00

Research Interests

Partial Differential Equations, Numerical Analysis

Research Experience

Department of Mathematical Sciences, George Mason University
January 2016-Present
Currently conducting research in applied mathematics on modeling quantum random walks with fractional partial differential equations, under the mentorship of Dr. Harbir Antil.

Summer Undergraduate Research Fellowship, NIST
May 2017-August 2017
Conducted research on 2 dimensional root finding using Chebyshev polynomials with Dr. Ian Bell in the Applied Chemicals and Materials Division of the National Institute for Standards and Technology.

Talks & Poster Presentations

SIAM Central States Section Meeting Mini Symposium
Colorado State University, Ft. Collins, CO, September 2017
Title: "Fractional Dynamics for Quantum Random Walks"

Applied and Computational Math Seminar Talk
George Mason University, Fairfax, VA, September 2017
Title: "Root Finding with Chebyshev Polynomials in Two Dimensions"

Summer Undergraduate Research Fellowship Colloquim Talk
National Institute of Standards and Technology, Boulder, CO, August 2017
Title: "Root Finding with Chebyshev Polynomials in Two Dimensions"

Invited Seminar Talk
Naval Research Lab, Washington, D.C., May 2017
Title: "Fractional Dynamics for Quantum Random Walks"

Extreems-Qed Undergraduate Research Conference
University of William and Mary, Williamsburg, VA, March 2017
Title: "Fractional Dynamics for Quantum Random Walks"

Joint Math Meetings Student Poster Session
Atlanta, GA, January 2017
Title: "Introducing Fractional Dynamics to Quantum Random Walks"

Shenadoah Undergraduate Math and Statistics Conference
James Madison University, Harrisonburg, VA, September 2016
Title: "Introducing Fractional Dynamics to Quantum Random Walks"

Software Contributions

ChebTools
GitHub: https://github.com/usnistgov/ChebTools
Description: C++ tools for working with Chebyshev Expansions. I provided Jupyter notebooks for documentation and am the main contributor to the 2D functionality of the library that is currently under construction.

Other Professional Activities

Nonlocal School on Fractional Equations
Iowa State University, Ames, IA, August 2017
Attended a summer school on fractional order partial differential equations.

Education Experience

Learning Assistant, George Mason University
January 2017-May 2017
Hold office hours and teach students supplementary material for a Calculus III class

Math Tutor, George Mason University
August 2016-Present
Tutor students in math and physics courses ranging from lower to upper-level.

Grader, George Mason University
September 2015-December 2015
Graded quizzes for a Discrete Mathematics Class

Awards

Goldwater Scholarship Honorable Mention
March 2017
Received an honorable mention for the most prestigious undergraduate scholarship in the natural sciences, mathematics, and engineering in America.

Outstanding Poster Award
January 2017
Awarded to the top 15% of posters based on judges' scores in each topic area at the student poster session at the 2017 Joint Math Meetings.

Amer Bešlagić Award
April 2016
Awarded for performance in math classes during first two years at GMU.

University Scholarship
August 2014
George Mason University's highest value and most prestigious scholarship.

Dean's List
Fall 2014-Spring 2017

Technical Skills

Python, C++, Java, LaTeX, Matlab

Graduate Math Coursework

George Mason University
Calculus of Variations, Partial Differential Equations (Current),
Adaptive Finite Element Methods (Audited)

Undergrad Math Coursework

George Mason University
Calculus I and II, Calculus III, Discrete Mathematics,
Linear Algebra, Differential Equations, Intro to Advanced Math ,
Numerical Analysis I and II, Advanced Calculus I and II,
Advanced Linear Algebra, Abstract Algebra, Modern Applied Math I,
Functions of a Complex Variable, Intro to PDEs with Numerical Methods,

Computer Science Coursework

George Mason University
Intro to Computer Programming, Object Oriented Programming, Data Structures (Current), Formal Methods and Models (Current)

Other Relevant Coursework

George Mason University
Probability and Statistics for Engineers and Scientists I and II, University Physics I and II (Current), General Chemistry I and II