Jack R. Dalton

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Education

Doctor of Philosophy in Mathematics May 2023
University of South Carolina, Columbia, SC
GPA: 3.8 / 4.0
Dissertation Title: Extreme Covering Systems, Primes Plus Squarefrees, and Lattice Points Close to a Helix
Advisor: Ognian Trifonov

Master of Science in Mathematics May 2017
University of Vermont, Burlington, VT
GPA: 3.8 / 4.0
Thesis Title: An Exposition of Selberg's Sieve
Advisor: Jonathan Sands

Bachelor of Science in Mathematics May 2006
University of Massachusetts Dartmouth, Dartmouth, MA
GPA: 3.8 / 4.0
Summa Cum Laude

Teaching Experience

Visiting Assistant Teaching Professor 2023-Present
University of Colorado Boulder, Boulder, CO
Courses Taught:

- Calculus I (Math 1300)-Taught 3 Times
- Calculus II (Math 2300) Taught 10 Times
- Calculus III (Math 2400) Taught 1 Time
- Introduction to Probability and Statistics (Math 3510) Taught 1 Time

Calculus II Coordinator 2024-2025
University of Colorado Boulder, Boulder, CO
During the Fall 2024 semester, I oversaw the instruction of 465 students taught by 12 instructors, 6 teaching assistants, and 6 learning assistants across 16 sections of Calculus II. During the Spring 2025 semester, I oversaw the instruction of 739 students taught by 19 instructors, 10 teaching assistants, and 11 learning assistants across 27 Sections of Calculus II. During these semesters, I ran weekly pedagogical discussion meetings and ensured course content alignment across sections. I organized and oversaw exam committees for coordinated exams, problem solved student concerns, worked to ensure grade consistency across sections, mentored graduate students with exam and rubric writing, and, along with my graduate student course assistant, oversaw weekly TA/LA training meetings about our active learning recitation projects.

Curriculum Development 2024
University of Colorado Boulder, Boulder, CO
Collaborated with Professor Rebekah Jones to develop and implement 35 online homework assignments for the new calculus textbook. Ensured full alignment with the updated curriculum.

Instructor of Record for TRIO / Opportunity Scholars Program 2022-2023
University of South Carolina, Columbia, SC
Courses Taught:
Precalculus Mathematics (Math 115) Taught 1 Time
Calculus I (Math 141) Taught 1 Time

Instructor of Record for Mathematics Department 2018-2023
University of South Carolina, Columbia, SC
Courses Taught:
Intensive Basic College Mathematics (Math 111I) Taught 1 Time
Precalculus Mathematics (Math 115) Taught 1 Time
Brief Precalculus Mathematics (Math 116) Taught 1 Time
Business Calculus (Math 122) Taught 3 Times
Calculus I (Math 141) Taught 1 Time
Calculus Workshop I & II (Math 151/152) Taught 2 Times
Finite Mathematics (Math 170) Taught 1 Time
Math Modeling for Life Sciences (Math 172) Taught I Time
Vector Calculus (Math 241) Taught 2 Times
Applied Linear Algebra (Math 344) Taught 1 Time
Applied Linear Algebra Lab (Math 344L) Taught 1 Time

Graduate Assistant 2022
University of South Carolina, Columbia, SC
Contributed to the development of protocols for the mathematics placement exam and assisted stakeholders from the Mathematics and Engineering departments to evaluate and improve support structures for entering engineering students in Calculus I.

Graduate Teaching Mentor 2020-2021
University of South Carolina, Columbia, SC
National Science Foundation (NSF) Award ID #1544346
After a semester of training, I mentored four novice instructors each semester (8 total over two semesters) as they transitioned from Graduate Teaching Assistants to Graduate Student Instructors. Conducted monthly observations of the novice instructors and held individual post-observation reflection and feedback meetings as well as small-group meetings to promote self-reflective teaching. Facilitated bi-weekly critical reflection group meetings with the novice instructors.

Mathematics Tutor 2017-2023
University of South Carolina, Columbia, SC
Tutored undergraduate students in College Algebra, Precalculus, and Calculus I-II in a drop in learning center setting.

Instructor of Record for Mathematics Department 2016-2017
University of Vermont, Burlington, VT
Courses Taught:
Applications of Finite Math (Math 17) Taught 1 Time
Fundamentals of Calculus I (Math 19) Taught 1 Time

Publications

Dalton, **J.**, Trifonov, O. (2022). *Extreme Covering Systems*, Journal of Integer Sequences, 25 (9)
Dalton, J., Trifonov, O. (2025). *Representing Positive Integers as a Sum of a Squarefree Number and a Small Prime.* In: Nathanson, M.B. (eds) Combinatorial and Additive Number Theory VI. CANT 2022 2023. Springer Proceedings in Mathematics & Statistics, vol 464. Springer, Cham. https://doi.org/10.1007/978-3-031-65064-2_6

Dalton, J., Jones, N., *On the Intervals for the Non-Existence of Covering Systems with Distinct Moduli.* In Preparation

Dalton, J., Howard, R., Trifonov, O., *Lattice Points Close to a Helix.* In Preparation

Awards and Honors

Commonwealth Scholar, University of Massachusetts Dartmouth
Stanley Z. Koplik Certificate of Mastery Award, State of Massachusetts, Dept. of Education
Louis Simeone Award, Academic Excellence, UMass Dartmouth
Lawrence Kennison Award, Academic Excellence, UMass Dartmouth
AP Scholar with Honor Award, College Board

Grants and Fellowships

Incubator Grant for Basic College Mathematics Active Learning Resources 2019
Senior personnel on an internal incubator grant ($10,000) funded by the College of Arts and Sciences. Lead a team in developing and implementing the final product of 119 pages of problem set and 69 pages of lesson plans for Basic College Mathematics, allowing graduate students to save (under an initial analysis) of 30-35 hrs/semester of content prep, redirecting time towards student learning.

Incubator Grant for Pre-Calculus Active Learning Resources 2018
Junior personnel on an internal incubator grant ($10,000) funded by the College of Arts and Sciences. Member of a team developing and implementing the final product of 121 pages of problem sets and even more pages of lesson plans for Pre-Calculus, allowing graduate students to save (under an initial analysis) of 26-30 hrs/semester of content prep, redirecting teacher time/effort towards student learning.

Conference Presentations

"The Nonexistence of Certain Types of Extreme Covering Systems" 2024

Joint Mathematics Meeting (JMM) – Invited Talk, Unable to attend due to illness

"Representing Positive Integers as a Sum of a Square-Free Number and a Small Prime" 2023
Joint Mathematics Meeting (JMM) – AMS Contributed Paper Session on Number Theory and Field Theory II

"Representing Positive Integers as a Sum of a Square-Free Number and a Small Prime" 2022
PAlmetto Number Theory Series (PANTS) XXXV

"Some Open Problems in Covering Systems" 2022
PAlmetto Number Theory Series (PANTS) XXXIV

"Extreme Covering Systems" 2022
CTNT Conference

"Extreme Covering Systems" 2021
University of South Carolina Mathematics Graduate Colloquium

"Estimating the Number of Square-Free Integers in an Interval and the Connection with Lattice Points" 2020
University of South Carolina Mathematics Graduate Colloquium

"e is Transcendental" 2017
University of Vermont Graduate Seminar

"Sieve Methods and How They Relate to Bounded Gaps Between Primes" 2017
unQVNTS – Extension of Quebec Vermont Number Theory Seminar

"Selberg's Sieve" 2016
Am I a Seminar – University of Vermont Math Graduate Student Seminar

"Introduction to Zhang's Bounded Prime Gaps Proof" 2016
Am I a Seminar – University of Vermont Math Graduate Student Seminar

Conferences Attended

Seminar in Undergraduate Mathematics Education	2023-Present
SIGMAA Inquiry-Based Learning's (IBL) Workshop Series	2023-Present
Front Range Number Theory Day	2024
Joint Mathematics Meetings – Boston, MA	2023
PAlmetto Number Theory Series (PANTS) XXXV – University of South Carolina	2022
PAlmetto Number Theory Series (PANTS) XXXIV – UNC Charlotte	2022
Connecticut Summer School in Number Theory Research Conference (CTNT) UConn	2022
Combinatorial and Additive Number Theory (CANT) – Remote	2022
Combinatorial and Additive Number Theory (CANT) – Remote	2021

PAlmetto Joint Arithmetic, Modularity, & Analysis Series (PAJAMAS) III – Remote 2021
AMS Fall Sectional – Special Session on Analytic Number Theory – Remote 2020
PAlmetto Joint Arithmetic, Modularity, and Analysis Series (PAJAMAS) – Remote 2020
John H. Barrett Memorial Lectures – University of Tennessee, Knoxville 2019
NSF CMBS: L-Functions & Multiplicative Number Theory- University of Mississippi 2019
PAlmetto Number Theory Series (PANTS) XXXII – UNC Charlotte 2019
PAlmetto Number Theory Series (PANTS) XXXIII – Clemson University 2019
Analytic & Combinatorial Numb. Thry: The Legacy of Ramanujan-U of Illinois 2019
PAlmetto Number Theory Series (PANTS) XXXI – University of South Carolina 2018
Connecticut Summer School in Number Theory & Research Conference (CTNT) – UConn 2018
PAlmetto Number Theory Series (PANTS) XXVII – University of Tennessee Knoxville 2018
Quebec-Maine Number Theory Conference – Universite Laval, Quebec City, Quebec. 2016
Connecticut Summer School in Number Theory & Research Conference (CTNT) – UConn 2016
Rubin Fest - L-functions and Arithmetic – Harvard University 2016
Super QVNTS - Kummer Classes and Anabelian Geometry – University of Vermont 2016
Quebec-Vermont Number Theory Seminar (QVNTS) – McGill & Concordia, Montreal 2016
Joint Math Meetings – New Orleans, LA 2007

Academic and Community Service

Educational Outreach
Coordinated Putnam Practice Exam Sessions CU Boulder 2023
Student Representative, JMM Graduate School Fair 2023
Poster Judge, Discover U of SC 2022
Graduate Advisory Council Student Representative, U of SC Mathematics Department 2021
Math Graduate Colloquium Co-organizer, U of SC Mathematics Department 2019-2020
Fluid Dynamics Math Dept. Happy Hour Organizer 2018-2019
Habitat for Humanity Restore volunteer – coordinated donation drop offs 2018
32nd High School Mathematics Contest Volunteer – U of SC 2018
Coordinated catering for participants at Sage Days 87, UVM, Burlington, VT 2017

Exams and Certificates

Credly Badge Online Teaching Academy - University of Colorado Boulder
HarvardX Certificate CS50x: Introduction to Computer Science I
SOA Exam P / CAS Exam 1: Passed
SOA Exam FM / CAS Exam 2: Passed
SOA Exam MFE / CAS Exam 3F: Passed
SOA VEE Economics: Approved
SOA VEE Corporate Finance: Approved