

# JACK R. DALTON

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Columbia, SC 29205

## Research Interests

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\* Analytic, Elementary, & Computational Number Theory \*  
\* Covering Systems \* Distribution of Primes \* Lattice Points \*

## Education

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2017-Present    **Doctoral Candidate**, Mathematics, GPA: 3.8 / 4.0  
University of South Carolina - Columbia

2015-2017      **Master of Science**, Mathematics, GPA: 3.8 / 4.0  
University of Vermont  
Thesis: An Exposition of Selberg's Sieve

2002-2006      **Bachelor of Science**, Mathematics, GPA: 3.8 / 4.0  
University of Massachusetts Dartmouth  
Summa Cum Laude

## Work Experience

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### University of South Carolina, Columbia, SC

Teaching:

Instructor of Record:

Math 111i Intensive Basic College Mathematics: Fall 2019  
Math 115 Precalculus Mathematics: Fall 2022, Fall 2018  
Math 116 Brief Precalculus Mathematics: Fall 2022, Fall 2020  
Math 122 Business Calculus: Summer 2022, Spring 2020, Spring 2019  
Math 141 Calculus I: Summer 2020  
Math 151/152 Calculus Workshop I & II: Spring 2022, Fall 2021  
Math 172 Math Modeling for Life Sciences: Spring 2021  
Math 241 Vector Calculus: Summer 2021, Summer 2019  
Math 344 Applied Linear Algebra: Summer 2018  
Math 344L Applied Linear Algebra Lab: Summer 2018

Teaching Assistant:

Math 141 Calculus I: Fall 2017  
Math 142 Calculus II: Spring 2018, Summer 2020

Tutoring:

Mathematics Department Tutoring Lab: 2017-Present

## University of Vermont, Burlington, VT

### Teaching:

Instructor of Record

Math 17 Applications of Finite Math: Spring 2017

Math 19 Fundamentals of Calculus I: Fall 2016

### Tutoring:

Help Sessions – Drop-in Tutoring for College Algebra, Precalculus,  
and Calculus I and II.

### Grading:

Math 251 Abstract Algebra I: Spring 2017

Math 241 Analysis of Several Real Variables I: Fall 2016

## Mentor Experience

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### Graduate Teaching Mentor Fall 2020 - Spring 2021.

After a full semester of training, 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. NSF Award Id #1544346.

## Publications

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### Appeared:

J. Dalton, O. Trifonov, *Extreme Covering Systems*, Journal of Integer Sequences, 25 (9), 2022.

### In Progress:

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

J. Dalton, O. Trifonov. *Representing Positive Integers as a Sum of a Square-free Number and Small Prime*.

## Talks Given

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2022 – PANTS XXXIV

“Some Open Problems in Covering Systems”

2022 – CTNT Conference

“Extreme Covering Systems”

2021 – U of SC Mathematics Graduate Colloquium

“Extreme Covering Systems”

2020 – U of SC Mathematics Graduate Colloquium

“Estimating the number of square-free integers in an interval and the connection with lattice points”

2017 – UVM Graduate Seminar

“e is Transcendental”

2017 – unQVNTS – Extension of Quebec Vermont Number Theory Seminar

“Sieve Methods and How They Relate to Bounded Gaps Between Primes”

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2016 – Am I a Seminar – UVM Math Graduate Student Seminar  
“Selberg's Sieve”  
2016 – Am I a Seminar – UVM Math Graduate Student Seminar  
“Introduction to Zhang's Bounded Prime Gaps Proof”

### **Honors and Awards**

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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

### **Exams and Certificates**

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HarvardX Certificate CS50x: Introduction to Computer Science 1  
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

### **Volunteer/Other**

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2022 Discover UofSC: Afternoon Session Reviewer  
2020-2021 Graduate Advisory Council Student Representative  
Fall 2019, Spring 2020, Fall 2020 – USC Math Graduate Colloquium Co-organizer  
2018-19 Fluid Dynamics Math Dept. Happy Hour Organizer  
2018 Habitat for Humanity Restore volunteer – coordinated donation drop offs  
2018 32nd High School Mathematics Contest Volunteer – U of SC  
2017 Coordinated catering for participants at Sage Days 87, UVM, Burlington, VT

### **Conferences Attended**

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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  
2021 – Combinatorial and Additive Number Theory (CANT) – Remote  
2021 – Palmetto Joint Arithmetic, Modularity, & Analysis Series (PAJAMAS) III – Remote  
2020 – AMS Fall Sectional – Special Session on Analytic Number Theory – Remote  
2020 – Palmetto Joint Arithmetic, Modularity, and Analysis Series (PAJAMAS) – Remote  
2019 – 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 Champaign  
 2018 – 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  
 2016 – 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  
 2007 – Joint Math Meetings – New Orleans, LA

### **Grants (facilitated)**

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#### **Incubator Grant for Basic College Mathematics Active Learning Resources Fall 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 Fall 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.