MATTHEW R. JUST MRJ

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Address *Department of Mathematics*
University of Georgia
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EDUCATION

2016–present **PhD in Mathematics** (In Progress)
University of Georgia · *Athens, GA*
Advisor: Paul Pollack

2014–16 **M.S. in Mathematics**
Georgia Southern University · *Statesboro, GA*
Thesis: *Combinatorial Optimization of Subsequence Patterns in Words*
Advisor: Hua Wang

2008–2012 **B.S. in Physics**
Georgia Southern University · *Statesboro, GA*

RESEARCH INTERESTS

Analytic number theory and enumerative combinatorics.

Secondary interests in modular forms, physics, computer science, and mathematical modeling of infectious diseases.

EMPLOYMENT

2016–present **Teaching Assistant**
University of Georgia · *Department of Mathematics* · *Athens, GA*

- Fall 2016: Teaching assistant for Writing Intensive Program, Graded for MATH 5020 (Arithmetic for Middle Grades Teachers) and MATH 2001 (Geometry for Elementary School Teachers)
- Spring 2017: Taught MATH 2200 (Analytic Geometry and Calculus)
- Fall 2017: Taught MATH 5001 (Arithmetic and Problem Solving)
- Spring 2018: Taught MATH 5001 (Arithmetic and Problem Solving)
- Fall 2018: Taught MATH 2250 (Calculus 1)
- Summer 2019: Taught MATH 2500 (Calculus 3)
- Fall 2019: Taught MATH 5020 (Arithmetic for Middle Grades Teachers)
- Spring 2020: Taught MATH 5035 (Algebra for Muddle Grades Teachers)
- Fall 2020: Taught MATH 5020 (Arithmetic for Middle Grades Teachers)
- Spring 2021: Taught MATH 5035 (Algebra for Muddle Grades Teachers)
- Summer 2021: Will teach MATH 2260 (Calculus 2)

2015–2016 **Teaching Assistant**
Georgia Southern University · *Department of Mathematical Sciences* · *Statesboro, GA*

- Taught recitations for Calculus I and II.
- Provided tutoring for undergraduate mathematics courses.

2014–2015 **Research Assistant**
Georgia Southern University · *Department of Public Health* · *Statesboro, GA*

- Three projects involving **interdisciplinary collaboration**.
- Work led to three publications.
- Assisted teaching a course in Advanced Infectious Disease Modeling.

2013–2014 **Secondary Mathematics Teacher**
Bulloch Academy · Statesboro, GA

- Taught Geometry, Trigonometry and Advanced Algebra.
- Served as faculty sponsor for Math Team and Beta Club.
- Coached cross country and track and field teams.

2010–2012 **Teaching Assistant**
Georgia Southern University · Department of Physics · Statesboro, GA

- Taught lab sections for introductory Physics and Astronomy courses.
- Assisted primary professor in creating and grading exams.
- Provided tutoring for students in introductory Physics.

HONORS

2015 · **2nd Place Presentation**, Natural Sciences, Georgia Southern Graduate Research Symposium

2016 · Outstanding Graduate Student, Georgia Southern University

2019 · Outstanding Teaching Assistant, University of Georgia

2020 · David Galewski Outstanding Graduate Teaching Award, University of Georgia

PUBLICATIONS

2015 **Transmission Models of Historical Ebola Outbreaks**
Emerging Infectious Diseases, **21(8)**, 1447-1450.
With J. Drake, I. Bakach, S. O'Regan, M. Gambhir, I. Fung

2015 **Typhoid transmission: a historical perspective on mathematical model development**
Transactions of the Royal Society of Tropical Medicine and Hygiene, **109 (11)**, 679-689.
With I. Bakach, M. Gambhir, and I. Fung

2015 **Colored patterns and their packing densities**
Cong. Numer. **225**, 23-28.
With H. Wang

2016 **Note on packing patterns in colored permutations**
Online J. Anal. Comb. **11**, 9 pp.
With H. Wang

2018 **The impact of shared sanitation facilities on diarrheal diseases with and without an environmental reservoir: a modeling study**
Pathogens and Global Health, **112(4)**, 195-202.
With S. Carden, S. Li, K. Baker, M. Gambhir, and I. Fung

2018 **Note on restricted parts in cyclic compositions**
Integers **18**, 13 pp.
With M. Gibson and H. Wang

2020 **On upper bounds for the count of elite primes**
Integers **20**, 5 pp.

Accepted	**On factorizations into coprime parts** With N. Lebowitz-Lockard, to appear in *Int. J. Number Theory*.
Accepted	**On a divisor of the central binomial coefficient** With M. Schneider, to appear in *Ramanujan J.*
Accepted	**Comparing multiplicative orders mod p, as p varies** With P. Pollack, to appear in *New York J. Math*
Accepted	**Note on a binomial coefficient divisor** to appear in *Math. Mag.*
Submitted	**Anti-palindromic compositions** With G. E. Andrews and G. Simay
Submitted	**On numbers which are orders of only abelian groups**
Submitted	**Compositions that are palindromic modulo** m
Submitted	**Partition Eisensten series** With R. Schneider
Submitted	**Palindromic sequences** With N. Lebowitz-Lockard
Preprint	**The supernorm of a partition** With M. Dawsey and R. Schneider
Preprint	**Density of factors in ordered factorizations**
Preprint	**Derivatives of Gaussian polynomials**
In prep	**A quantum analogue of the Fibonacci distribution** With N. Jakkam
In prep	**A composition proof of the nesting property of the Chebyshev polynomials** With M. Sloane
In prep	**Sequentially powerful factorizations**
In prep	**On the count of k-group numbers**

ACADEMIC TALKS

May 2021	*Partition Eisenstein series and semi-modular forms* **Invited talk, Vanderbilt Number Theory Seminar, Nashville, TN**
Apr. 2021	*Partition Eisenstein series and semi-modular forms* **Invited talk, Specialty Seminar in Partition Theory, q-Series and Related Topics (online)**
Mar. 2021	*Racecars and avalanches* **University of Georgia Graduate Student Seminar, Athens, GA**
Oct. 2020	*Fermat and the elite primes* **Invited talk, University of Mississippi Graduate Student Seminar, Oxford, MS**
Oct. 2020	*Numbers which are only orders of specific types of groups* **Invited talk, UT Tyler Number Theory Seminar, Tyler, TX**
Nov. 2019	*On a map between partitions and integers* **Contributed talk, MAAIM Conference, Atlanta, GA**

Feb. 2019 — *Fun with POSETS*
SMARTS Seminar, Athens, GA

Sept. 2016 — *Restricted parts in cyclic compositions*
UGA Graduate Student Seminar, Athens, GA

June 2016 — *Combinatorial optimization of subsequence patterns in words*
Thesis defense, Statesboro, GA

March 2016 — *Pattern containment in various words*
Contributed Talk, AMS Spring Southeastern Sectional Meeting, Athens, GA

Feb. 2016 — *Words packed with color: an introduction to colored pattern packing*
Invited talk, Eagle Undergraduate Mathematics Conference, Statesboro, GA

Sept. 2015 — *Subsequence pattern packing in permutations and compositions*
Discrete Math Seminar, Armstrong Atlantic State University, Savannah, GA

May 2015 — *Optimal Permutations in restricted permutation sets*
28th Cumberland Conference, Columbia, SC

April 2015 — *Packing densities of colored and non-colored permutations*
Georgia Southern Graduate Research Symposium, Statesboro GA
2nd Place Presentation, Natural Sciences

March 2015 — *On colored packing densities*
Special Session on Discrete Mathematics, MAA Southeastern Section Conference, Wilmington, NC

Feb. 2015 — *Pattern packing in colored permutations*
46th Southeastern International Conference, Boca Raton, FL

MENTORING

Directed Reading Program

Five time graduate mentor with the UGA Directed Reading Program. This program assigns graduate students with undergraduate students to explore a topic outside of the mathematics core curriculum for one semester. Undergraduate students gain valuable experience learning LaTeXand preparing a talk on their topic.

- Fall 2017: Alex Mann, pattern packing in permutations
- Spring 2018: Michael Sloan, tilings and integer compositions
- Spring 2019: Nikou Zarrabi, combinatorial game theory
- Fall 2019: Max Schneider, combinatorial number theory
- Fall 2020: Nikita Jakkam, probabilistic game theory

Undergraduate Research Program

Currently serving as Undergraduate Research Program Mentor for combinatorics and number theory. Work with undergraduate Max Schneider has been accepted for publication, and work with Nikita Jakkam is currently in preparation for submission.

Peer Learning Assistant Mentor

Supervised two undergraduate student Peer Learning Assistants (PLAs) in Fall 2018 while teaching MATH 2250 (Monica Markley and Allyson Fountain). These are undergraduate students that are interested in pursuing careers in education and are assigned a faculty or graduate student mentor for one semester.

COMPUTER SKILLS

R Programming Certificate
John Hopkins University
Awarded: September 4, 2014

R, MatLab, python, LaTeX, Mathematica

OTHER ACTIVITIES

AMS and **MAA** member

Refereed for Theory and Applications of Graphs, Research in Number Theory, Journal of Integer Sequences, Integers

Accomplished guitarist

Proud member of the UGA duplicate bridge club and the club for mathematicians that play bridge