Nathan McNew

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Employment

Towson University
Assistant Professor — August 2015-Present

Education

Dartmouth College — Fall 2010 - Spring 2015
Ph.D. Mathematics, Advisor: Carl Pomerance — June 2015
Thesis: Multiplicative problems in combinatorial number theory

A.M. Mathematics — June 2012

University of Denver — Fall 2006 - Spring 2010
B.S Mathematics and Physics, Summa Cum Laude, Phi Beta Kappa — June 2010

Publications

Numbers divisible by a large shifted prime and large torsion subgroups of CM elliptic curves
With Paul Pollack and Carl Pomerance. *Submitted for publication.*

Subsets of $\mathbb{F}_q[x]$ free of 3-term geometric progressions (Williams REU, 2015)
With Megumi Asada, Eva Fourakis, Sarah Manski, Steven J. Miller and Gwyneth Moreland. *Submitted for publication.*

Infinitude of k-Lehmer numbers that are not Carmichael
With Thomas Wright. *To appear in the International Journal of Number Theory*.

Ramsey theory over the integers: avoiding generalized progressions (Williams REU, 2014)
With Andrew Best, Karen Huan, Steven Miller, Jasmine Powell, Kimsy Tor and Madeleine Weinstein. *Submitted for publication.*

Geometric-progression-free sets over quadratic number fields (Williams REU, 2014)
With Andrew Best, Karen Huan, Steven Miller, Jasmine Powell, Kimsy Tor and Madeleine Weinstein. *To appear in the Proceedings of the Royal Society of Edinburgh Section A.*

Popular values of the largest prime divisor function
Submitted for publication.

On sets of integers which contain no three terms in geometric progression
Mathematics of Computation. **84** (2015), 2893–2910.

Efficient realization of nonzero spectra by polynomial matrices
With Nic Ormes. *Involve, A Journal of Mathematics.* **8** (2015), 1–24.

Radically weakening the Carmichael and Lehmer conditions
International Journal of Number Theory. **9** (2013), 1215-1224.

Selected Presentations

The Convex Hull of the Prime Number Graph
Combinatorial and Additive Number Theory, CUNY — May 2015
Elementary, analytic, and algorithmic number theory, U. of Georgia — June 2015
Illinois Number Theory Conference, UIUC — August 2015

Random multiplicative walks on the integers modulo n
Graduate Student Seminar, Dartmouth College — May 2015

Popular values of the largest prime divisor function
Combinatorial and Additive Number Theory, CUNY — May 2014
Canadian Number Theory Association Meeting XIII, Carleton College — June 2014
Quebec/Maine Number Theory Conference, Université Laval — September 2014
Department Colloquium, University of Maine — October 2014
Southeastern AMS Sectional Meeting, Huntsville, AL — April 2015

Unconventional Results in Multiplicative Combinatorial Number Theory
Invited Graduate Speaker, SERMON, Wofford College — April 2014

Using congruences to cover the integers
Graduate Student Seminar, Dartmouth College — February 2014

Things you can prove with a degree from DU, two results in number theory
Department Colloquium, University of Denver — February 2014

On sets of integers which contain no three terms in geometric progression
Maine/Quebec Number Theory Conference, University of Maine — October 2013
INTEGERS, University of West Georgia — October 2013
West Coast Number Theory, Pacific Grove, CA — December 2013
Exciting New Faces in Analytic Number Theory,
Hausdorff Center for Mathematics, Bonn Germany — June 2014
Department Colloquium, Williams College — July 2014

When does each prime dividing $\varphi(n)$ also divide $n-1$?
Quebec/Maine Number Theory Conference, Université Laval — October 2012
Canadian Mathematics Society Winter Meeting, Montreal — December 2012

Probabilistic Galois Theory
Graduate Student Seminar, Dartmouth College — October 2011

Efficient realization of nonzero spectra by polynomial matrices
Graduate Student Seminar, Dartmouth College — October 2010
Departmental Colloquium, University of Denver — May 2010

Awards and Honors

Dartmouth Fellowship — Fall 2010-Spring 2015

Dartmouth Graduate Poster Session Winner — Spring 2015

Outstanding Graduate Student Teaching Award — April 2014
Dartmouth Center for the Advancement of Learning

NSF Graduate Student Fellowship Honorable Mention — Spring 2012

Teaching Experience

Assistant Professor, Towson University

Math 273: Calculus I Fall 2015

Math 467: Algebraic Structures Fall 2015

Instructor, Dartmouth College

Math 20: Discrete Probability Fall 2013

Math 10: Introduction to Statistics Spring 2013

Co-Instructor, Dartmouth College

Math 25: Elementary Number Theory Fall 2014

Taught weekly seminars on algorithms and programming in elementary number theory.

Teaching Assistant, Dartmouth College

Math 23: Differential Equations Spring 2012

Math 13: Calculus of Vector Valued Functions Fall 2011

Math 23: Differential Equations Winter 2011

Math 8: Calculus of Functions of One and Several Variables Fall 2010

I held tutorial sessions to answer questions, and assisted in grading exams.

Professional Activities and Service

MSRI Summer School: Gaps Between Primes July 2015

A two week long program with lectures and problem sessions on recent progress regarding gaps between prime numbers.

Arizona winter school: Arithmetic Statistics March 2014

A week long workshop with lectures and problem sessions on topics in Arithmetic Statistics. I participated in the problem group for Melanie Matchett Wood's section on Asymptotics for number fields and class groups.

Warwick University summer school: number theory for cryptography June 2013

A week long course for PhD students in number theory and closely related fields with little or no knowledge of cryptography. Topics covered included high-speed cryptography, complex multiplication of elliptic curves, discrete logarithms and efficient integer factorization.

Dartmouth Mathematics Teaching Seminar Summer 2012

An intensive course taken by graduate students who have advanced to PhD candidacy. Involves discussion of educational philosophies, classroom techniques, and course design. Culminates in the design and instruction of two week long math camps for local middle and high school students.

Banff International Research Center: Diophantine equations June 2012

A workshop on contemporary techniques in Diophantine equations. Topics included the modular approach, the Brauer-Manin obstruction, Chabauty methods, and linear forms in logarithms.

Pure Math Committee Towson University 2015-Present

Colloquium Committee Towson University 2015-Present

Math Club Faculty Sponsor Towson University 2015-Present

Dartmouth Number Theory Seminar Organizer Fall 2011-Spring 2013

Dartmouth Graduate Student Council Math department Rep. Fall 2013-Summer 2014

Referee: Journal of Number Theory 2014-Present

Educational Outreach

Williams College REU Graduate Mentor Summer 2014, 2015

Worked with five undergraduate students at the Williams College REU to generalize results on geometric-progression-free subsets of the integers to number fields.

Putnam Supervisor at Dartmouth College and Towson University 2013-Present

Worked through practice exams with students preparing to participate in the Putnam competition, and proctored the exam.

Extreme Academics, University of Denver Nov. 2011, Feb 2014, Apr. 2015, Mar, 2016

Invited to participate in a panel discussion about applying to and doing research in grad school.

Young Mathematicians Conference, Ohio State University August 2014

Mentor to students and served on a panel discussion about applying to graduate School.

Dartmouth College Science Day April 2014

Showed visiting elementary school students about the mathematics of hexaflexagons.

Johns Hopkins Center for Talented Youth May 2011

Designed and led three one-hour workshops for middle and high school students and their parents. Topic: Cryptography

Vermont Southeast Regional MATHCOUNTS Volunteer February 2011

Gave a talk to middle school students about what it is like to do research in mathematics, helped proctor and grade competition.

MATHCOUNTS Coach: Jefferson Academy Middle School, Broomfield CO 2006-2010

Led weekly problem sessions with the team, discussed problem solving strategies and concepts in combinatorics and probability.