

Nathan McNew

Department of Mathematics, Towson University
8000 York Road, Towson, MD 21252
nmcnew@towson.edu
www.nathanmcnew.com

Employment

Towson University

Assistant Professor

Fisher Endowed Chair in Mathematics

August 2015-Present

December 2016-Present

Education

Dartmouth College

Ph.D. Mathematics, Advisor: Carl Pomerance

Thesis: Multiplicative problems in combinatorial number theory

A.M. Mathematics

Fall 2010 - Spring 2015

June 2015

June 2012

University of Denver

B.S Mathematics and Physics, Summa Cum Laude, Phi Beta Kappa

Fall 2006 - Spring 2010

June 2010

Publications

Random multiplicative walks on the integers modulo n

To appear in Mathematika.

Numbers divisible by a large shifted prime and large torsion subgroups of CM elliptic curves

With Paul Pollack and Carl Pomerance. *To appear in International Math Research Notices.*

The most frequent values of the largest prime divisor function

Experimental Mathematics. **26** (2017), 210–224.

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. *Finite Fields and Their Applications.* **44** (2017), 135–147.

Infinitude of k -Lehmer numbers that are not Carmichael

With Thomas Wright. *International Journal of Number Theory.* **12** (2016), 1863–1869.

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.*

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.

When sets can and cannot have MSTD subsets

With Steven J. Miller, Victor Xu and Sean Zhang. *Submitted for publication.*

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.*

Awards and Honors and Grants

Jess and Mildred Fisher Endowed Chair in the Mathematical and Computing Sciences Towson University	2016-2019
Grant for MASON Number Theory Foundation	October 2016
Dartmouth Fellowship	Fall 2010-Spring 2015
Dartmouth Graduate Poster Session Winner	Spring 2015
Outstanding Graduate Student Teaching Award Dartmouth Center for the Advancement of Learning	April 2014
NSF Graduate Student Fellowship Honorable Mention	Spring 2012

Professional Activities

MASON Conference <i>Co-organized (with Angel Kumchev) the first in a new series of regional number theory conferences for the Mid-Atlantic region.</i>	October 2016
Project NExT <i>MAA program for new faculty to explore innovative new teaching techniques and transition from graduate school into a teaching position.</i>	August 2016-August 2017
MSRI Summer School: Gaps Between Primes <i>A two week long program with lectures and problem sessions on recent progress regarding gaps between prime numbers.</i>	July 2015
Arizona winter school: Arithmetic Statistics <i>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.</i>	March 2014
Warwick University summer school: number theory for cryptography <i>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.</i>	June 2013
Dartmouth Mathematics Teaching Seminar <i>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 middle and high school students.</i>	Summer 2012
Banff International Research Center: Diophantine equations <i>A workshop on contemporary techniques in Diophantine equations including the modular approach, the Brauer-Manin obstruction, Chabauty methods, and linear forms in logarithms.</i>	June 2012

Service

MASON MidAtlantic Seminar On Numbers, Co-organizer	October 2016
Regional Undergraduate Mathematics Conference , Co-organizer	April 2017
Baltimore Number Theory Seminar Cofounder and co-organizer	Fall 2015-Present
Graduate Committee-Applied and Industrial Math Program Towson U.	2016-Present
Pure Math Committee Towson University	2015-Present
Department Representative to MAA Towson University	2016-Present
Colloquium Committee Towson University	2015-Present
Math Club Faculty Sponsor Towson University	2015-Present
Problem Solving Team Coach 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, Information Security Journal, Mathematics Magazine, Mathematics of Computation	2014-Present
Reviewer: Mathematical Reviews	2015-Present

Teaching Experience

Assistant Professor , Towson University	
Math 273: Calculus I	Fall 2015
Math 467: Algebraic Structures	Fall 2015
Math 275: Calculus III (2 sections)	Spring 2016
Math 273: Calculus I	Fall 2016
Math 314: Cryptography	Fall 2016, Spring 2017
Math 490: Senior Seminar	Spring 2017
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
<i>Taught weekly seminars on algorithms and programming in elementary number theory.</i>	
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>I held tutorial sessions to answer questions, and assisted in grading exams.</i>	

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** November 2011, March 2013, February 2014, April 2015, March 2016, April 2017
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.

Selected Presentations

- Primitive and geometric-progression-free sets without large gaps**
Combinatorial and Additive Number Theory, CUNY May 2017
Colloquium, U. of Denver April, 2017
- Random multiplicative walks on the integers modulo n**
Canadian Number Theory Association Meeting XIV, U. of Calgary June 2016
INTEGERS, U. of West Georgia October 2016
JMM Special Session on Analytic Number Theory, Atlanta GA January 2017
- Numbers divisible by a large shifted prime**
SouthEast Regional Meeting On Numbers, James Madison University April 2016
Combinatorial and Additive Number Theory, CUNY May 2016
- 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
Joint Mathematics Meetings, Austin TX	January 2015
Southeastern AMS Sectional Meeting, Huntsville, AL	April 2015
Penn State Number Theory Seminar, Penn State University	April 2016
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
Joint Math Meetings, Baltimore, MD	January 2014
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
