Julian Rosen

Contact Information

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Research Interests

Number theory, arithmetic algebraic geometry, Galois theory

Professional Experience

2018 - present	University of Maine	Fixed-term Assistant Professor Mathematics & Statistics
Spring 2018	University of Michigan	Lecturer, Mathematics
2017	University of Michigan	Visiting Scholar, Mathematics
Fall 2016	University of Michigan	Lecturer, Mathematics
2015 - 2016	University of Georgia	Assistant Professor - Limited Term, Mathematics
2013 -2015	University of Waterloo	Postdoctoral Fellow, Pure Mathematics

Education

University of Michigan

(2007 - 2013) PhD, Pure Mathematics (degree conferred on 2013/08/16)

- Dissertation title: The arithmetic of multiple harmonic sums
- Advisor: Jeffrey C. Lagarias

University of Oklahoma

(2003 - 2007) BS in Mathematics, with Distinction

Advising

- James Poulin, Master of Arts in Mathematics, University of Maine
  [co-advised with Jack Buttcane]
  Thesis title: Calculating infinite series using Parseval's identity

Research Articles

Published

- **How to tee a hyperplane**
  Am. Math. Mon. (accepted for publication)

- **A finite analogue of the ring of algebraic numbers**
  J. Number Theory, **208** (2020), 59-71

- **The sequence of prime coefficients of an algebraic power series**
  RIMS Kôkyûroku 2160 (2020), 249-253

- **The completed finite period map and Galois theory of supercongruences**
  Int. Math. Res. Notices, 2018, doi:10.1093/imrn/rny004

- **Dynamical imaging with interferometry**
  with M. Johnson, K. Bouman, L. Blackburn, A. Chael, H. Shiokawa, F. Roelofs, K. Akiyama, V. Fish, and S. Doeleman
  Astrophys. J., 850(2):172, 2017 doi:10.3847/1538-4357/aa97dd

- **A general family of congruences for Bernoulli numbers**
  Int. J. Number Theory, **14**(7), 2018, 1895-1902

- **Extensions of CM elliptic curves and orbit counting on the projective line**
  with A. Shnidman
  Research in Number Theory 2017 **3**:9

- **Asymptotic relations for truncated multiple zeta values**,
  J. London Math. Soc. (2015), doi: 10.1112/jlms/jdu084

- **Multiple harmonic sums and Wolstenholme's theorem**,
  International Journal of Number Theory, **9**(8), 2013, 2033-2052

- **Chebyshev mappings of finite fields**,
  Amer. Math. Monthly **119**(2), 2012, 151-155 with Z. Scherr, B. Weiss, M. Zieve

- **Universal mixing of quantum walks on graphs**,
  Quantum Information and Computation **7**(8), 2007, 738-751
  with W. Carlson, A. Ford, E. Harris, C. Tamon, K. Wrobel

Submitted for publication

- **The moduli space of G-algebras** (with Andrew O'Desky)
  arXiv:2011.07716, 2020

Selected Presentations

Québec-Maine number theory conference, Fall 2020
Title: **The p-adic periods of number fields**

Algebra and number theory seminar, Dartmouth University, Winter 2020
Title: **Complex and p-adic periods**

Multiple zeta seminar, Kyushu University, Fall 2019
Title: **Proving combinatorial congruences with truncated MZVs**

Several aspects of multiple zeta values, RIMS, Fall 2019
Title: **Mod p reductions of p-adic periods**

Maine-Québec number theory conference, Fall 2019
Title: **Iterates of a derivation in positive characteristic**

Algebra seminar, University of Kentucky, Winter 2019
Title: **Elements of an infinite product of finite fields coming from geometry**

Québec-Maine number theory conference, Fall 2018
Title: **Divisibility properties of recurrent sequences**

MSRI Hot Topics: Galois Theory of Periods and Applications, Spring 2017
Title: **A Galois theory of supercongruences**

Joint Math Meetings, Winter 2016
Title: **Multiple harmonic sums in number theory**

Canadian Mathematical Society meeting, Summer 2015
Title: **Quadratic forms and curves on abelian surfaces**

Canadian Number Theory Association meeting, Summer 2014
Title: **Multiple zeta values and their truncations**

Seminaires d'algebre et de theorie des nombres
École Polytechnique Fédérale de Lausanne, Summer 2014
Title: **Multiple zeta values and some arithmetic analogues**

Number theory seminar, Fields Institute, Winter 2014
Title: **Multiple zeta values and their truncations**

Teaching

University of Maine

Intro to Abstract Algebra I (MAT 463)	Fall 2020
Intro to Abstract Mathematics (MAT 261)	Spring 2019, Spring 2020
Calculus III (MAT 228)	Fall 2019 (2 sections), Fall 2020, Spring 2021 (2 sections), Fall 2021 (2 sections)
Calculus I (MAT 126)	Fall 2018 (2 sections), Spring 2019

University of Michigan

Intro to Probability (Math/Stats 425)	Winter 2018
Calculus II (Math 116)	Winter 2018, Fall 2010, Fall 2009, Winter 2009
Calculus I (Math 115)	Fall 2016 (2 sections), Fall 2008
Data, Functions, and Graphs (Math 105)	Fall 2011 (co-coordinator), Winter 2008, Fall 2007

Michigan Math and Science Scholars

Math and the Internet (w/ Mark Conger)	Summer 2018
Combinatorial Combat (w/ Mort Brown)	Summer 2011, Summer 2010

University of Georgia

Precalculus (Math 1113)	Spring 2016 (2 sections), Fall 2015 (2 sections)

University of Waterloo

Linear Algebra for Engineering (Math 215)	Winter 2015
Linear Algebra 1 for Honours Math (Math 136)	Fall 2014
Calculus II for the Sciences (Math 128)	Winter 2014
Applied Linear Algebra II (Math 225)	Fall 2013

Canada/USA Mathcamp

Designed and taught several courses for talented high school students, including point-set topology, group theory, number theory, and combinatorial geometry	Summer 2009, Summer 2008