JOSHUA RUITER

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Department of Mathematics

CONTACT INFORMATION

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EDUCATION

Ph.D., Mathematics, Michigan State University $\hfill$ September 2016 - Present

Advisor: Igor Rapinchuk. $\hfill$ Graduation expected May 2022

B.A., Mathematics, Calvin College $\hfill$ September 2012-May 2016

Thesis advisor: Christopher Mosely.

RESEARCH

Current interests: Abstract homomorphisms and representations of algebraic groups, special unitary groups, special orthogonal groups, algebraic K-theory, group cohomology, Brauer groups.

Publications:

- On abstract homomorphisms of some special unitary groups. With coathor Igor Rapinchuk. Preprint, arXiv:2107.07351. https://arxiv.org/abs/2107.07351

- Consensus and clustering in opinion formation on networks. With coauthors Julia Bujalski, Grace Dwyer, Todd Kapitula, Quang-Nhat Le, Harjasleen Malvai, Jordan Rosenthal-Kay. 376. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences.* http://doi.org/10.1098/rsta.2017.0186

- An Algebraic Characterization of Highly Connected 2n-Manifolds. With coathors Shamuel Auyeung, Daiwei Zhang. *Rose-Hulman Undergraduate Mathematics Journal*: Vol. 17 : Iss. 2 , Article 5. https://scholar.rose-hulman.edu/rhumj/vol17/iss2/5

Seminars participated in:

- *St. Petersburg University algebraic gropus seminar*
- *Quadratic forms, linear algebraic groups, and beyond (QFLAG)*
- *ALGAR 2021 - Systems of quadratic forms over arithmetic fields, University of Antwerp*

$\hfill$ Summer 2021

- *MSU Student algebra seminar*, organizer 2020-2021
- *Group cohomology, Brauer groups, and local class field theory* (Lead organizer, MSU) Spring 2019
- *Derived categories (MSU)* $\hfill$ Spring 2018
- *Algebraic K-theory (MSU)* $\hfill$ Spring 2018

Talks:

- *Abstract homomorphisms of some special unitary grousp*
  St. Petersburg Univeristy algebraic groups seminar $\hfill$ Fall 2021

- $\mathrm{GL}_n(\mathbb{R})$ *is a beautiful butterfly*
  Calvin University Math Colloquium   Fall 2021
- *Abstract homomorphisms of special unitary groups*
  MSU Student Algebra Seminar   Fall 2021
- *Pinnings of algebraic groups*
  MSU Student Algebra Seminar   Spring 2021
- *An algebraic approach to musical scales*
  MSU GAUSS Seminar   Fall 2020
- *Galois descent*
  MSU Student Algebra Seminar   Fall 2020
- *The norm torus*
  MSU Student Algebra Seminar   Fall 2019
- *Extending the norm map to* $\mathbb{G}_m$
  MSU Student Algebra Seminar   Fall 2019
- *Root systems with plentiful examples*
  MSU Student Algebra Seminar   Fall 2019
- *Universal central extensions of groups with connections to K-theory*
  MSU Student Algebra Seminar   Fall 2018
- *Absolute values on the rational numbers and Ostrowski's theorem*
  Calvin College Math Colloquium   Fall 2018
- *Absolute values, Ostrowski's theorem, and completions of fields*
  MSU Student Algebra Seminar   Fall 2018
- *The Galois correspondence for infinite Galois extensions*
  MSU Student Algebra Seminar   Spring 2018
- *Lie algebras and their root systems*
  Calvin College Math Colloquium   Spring 2016
- *Classification of manifolds via homotopy*
  Calvin College Math Colloquium   Spring 2015
- *Is it possible to play in tune?*
  Calvin College Math Colloquium   Fall 2015

TEACHING

- Math 234 - Multivariable calculus, Lead TA, MSU   Fall 2021
- Math 299 - Transitions to proofs, MSU   Spring 2021
- Math 299 - Transitions to proofs, MSU   Fall 2020
- Math 235 - Ordinary differential equations, MSU   Summer 2020
- Math 299 - Transitions to proofs, MSU   Spring 2020
- Math 299 - Transitions to proofs, MSU   Fall 2019
- Math 133 - Calculus 2, MSU   Summer 2019
- Math 124 - Survey of calculus, MSU   Spring 2019
- Math 124 - Survey of calculus, MSU   Fall 2018
- Math 234 - Multivariable calculus, MSU   Summer 2018
- Math 234 - Multivariable calculus, MSU   Summer 2017

EXPERIENCE AND TRAINING

- Diversity, equity, and inclusion training seminar.   August 2021

- Student mentoring workshop with CUR (Council on Undergraduate Research).   June 2020
- Online teaching workshop SOIREE (Spartan Online Instructional Readiness Education Experience).
  May 2020
- Instructor for Mathnasium of Okemos.   August 2019-December 2020
- Graduate assistant for summer REU in dynamical systems at ICERM with Todd Kapitula and Bjorn Sandstede.   Summer 2016

SERVICE

- Graduate student panel for SURIEM REU.   June 2021

HONORS AND AWARDS

- Dissertation Completion Fellowship   Summer 2021
- TA Award for Excellence in Teaching, MSU Department of Mathematics   Spring 2021
- Herbert T. Graham Scholarship   Spring 2021
- MSU College of Natural Science Recruiting Fellowship   2016-2017