

Patrick K. McFaddin

LeConte College 300E
Department of Mathematics
University of South Carolina

pkmcfaddin@gmail.com
mcfaddin.github.io

Education

Ph.D., Mathematics

University of Georgia

May 2016

Athens, GA

- Advisor: Daniel Krashen
- Dissertation: K -Cohomology of Generalized Severi-Brauer Varieties

M.A., Mathematics

University of Georgia

August 2011

Athens, GA

- Advisor: Robert Varley

B.A., with Honors in Mathematics

University of Southern California

May 2010

Los Angeles, CA

Employment

University of South Carolina

Visiting Research Assistant Professor

Aug. 2016 - Present

University of Georgia

Graduate Research and Teaching Assistant

June 2010- May 2016

Research Interests

Algebra and algebraic geometry: algebraic K -theory, K -cohomology, algebraic cycles, motives and motivic cohomology, central simple algebras, algebraic groups, homogeneous and toric varieties, derived geometry.

Publications

1. The group of K_1 -zero-cycles on the second generalized Severi-Brauer variety of an algebra of index 4. *J. Algebra* 479 (2017), 192-202.
2. (with V. Alexeev, et al.) Extended Torelli map to the Igusa blowup in genus 6, 7, and 8. *Exp. Math.* 21 (2012), no. 2, 193-203.
3. (with E. J. Rhodes, et al.) Temporal changes in the frequencies and widths of the solar p-mode oscillations. *Proceedings of SOHO 24/GONG 2010*, pp. 134-138, 2011.

4. (with E. J. Rhodes, et al.) Temporal changes in the frequencies of the solar p-mode oscillations during solar cycle 23. Proceedings of the IAU, Vol. 6, Symposium S273, pp. 389-393, 2011.

Submitted articles and preprints

5. (with M. Ballard and A. Duncan) The toric Frobenius morphism and a conjecture of Orlov. arXiv:1709.07128, submitted, 2017.
6. Zero-cycles with coefficients for the second generalized symplectic involution variety of an algebra of index 4, arXiv:1703.03826, submitted, 2017.
7. (with M. Ballard and A. Duncan) On derived categories of arithmetic toric varieties. arXiv:1709.03574, submitted, 2018.

Work in Progress

1. Exceptional collections for generalized del Pezzo varieties via windows
(with M. Ballard and A. Duncan)
2. Twisted Milnor K -theory
(with M. Nguyen)
3. Kernels for Grassmann flops
(with M. Ballard and R. Vandermolen)
4. Patching over fields and étale K -theory.
5. The Chen-Gibney-Krashen moduli spaces revisited.
(with P. Gallardo, N. Giansiracusa, and X. Wu).
6. A cocycle-free proof of a theorem of Uematsu on the Brauer group of affine diagonal quadrics.
(with R. Gordon-Sarney, D. Adams, D. Litt, S. Mathur).

Selected Talks

Groups of Loops: They're Fundamental! <i>PME and Gamecock Math Club</i>	Feb. 2018
Introduction to Algebraic Cycles <i>Motives Seminar, University of South Carolina</i>	Feb. 2018
Twisted Linear Algebra <i>Graduate Colloquium, University of South Carolina</i>	Feb. 2018
Exceptional Collections on Toric Varieties <i>Algebraic Geometry Seminar, University of South Carolina</i>	Nov. 2017
Lectures on noncommutative motives <i>K-theory and related fields, Hausdorff Institute</i>	May-June 2017
Chow groups with coefficients for some twisted homogeneous varieties <i>Algebraic Geometry Seminar, Courant Institute of Mathematical Sciences</i>	March 2017
K_1-zero-cycles for some homogeneous varieties of type A_n and C_n <i>Algebra Seminar, University of Alberta</i>	March 2017

Zero-cycles with coefficients for some twisted homogeneous varieties <i>Georgia Algebraic Geometry Symposium, University of Georgia</i>	March 2017
K_1-zero-cycles on twisted Grassmannians <i>Topological Approaches to Arithmetic and Algebraic Geometry, University of Georgia</i>	Sept. 2016
Subfields of central simple algebras <i>Math Department Colloquium, California State University Sacramento</i>	Feb. 2016
Chow groups with coefficients and generalized Severi-Brauer varieties <i>Algebra and Number Theory Seminar, Emory University</i>	Feb. 2016

Teaching and Training

University of South Carolina

Instructor of Record

· Math 544- Linear Algebra	Spring 2018
· Math 142- Calculus I (2 sections)	Fall 2017
· Math 747- Algebraic Geometry: Schemes	Spring 2017
· Math 242- Elementary Differential Equations (2 sections)	Fall 2016

University of Georgia

Instructor of Record

· Math 2260- Calculus II for Science and Engineering	Fall 2015
· Math 1113- Pre-Calculus	Spring 2015
· Math 2250- Calculus I for Science and Engineering	Spring 2014
· Math 1113- Pre-Calculus	Fall 2013

Recitation Instructor

· Math 2200- Analytic Geometry and Calculus	Spring 2011
	Fall 2010

FLIP (Focus on Learning, Innovation and Pedagogy) Participant

Center for Teaching Excellence, University of South Carolina

Fall 2017

Observer of first-time graduate instructors

University of Georgia, supervised by Lisa Townsley

Spring 2015

UGA graduate student teacher training

Courses with Robert Rumley, Jon Hanke, Matt Mastin, and Lisa Townsley

2010- 2014

Professional Activities

Magellan Explorer Project Advisor

for Danielle Wood, University of South Carolina

Spring 2017- Present

Top Scholar Review Committee Member and Interviewer

University of South Carolina

Fall 2017-Spring 2018

Comprehensive Exam Committee Member <i>University of South Carolina</i>	Spring-Fall 2017
· Candace Bethea · Alicia Lamarche · Robert Vandermolen	
Referee <i>Pacific Journal of Mathematics</i>	2017
South Carolina 4 Square Club (SC4SC) <i>Club Advisor</i>	Fall 2017
USC Graduate Student Seminar <i>Job Market Panelist</i>	Sept. 2017
UGA conference on algebraic and analytic aspects of quadratic forms <i>Co-organizer with D. Krashen, P. Clark, and K. Thompson</i>	July 2017
University of South Carolina High School Math Competition <i>Volunteer Judge and Proctor</i>	Feb. 2017
UGA Graduate Student Bootcamp <i>Job Market Panelist/Speaker on "How to give a good math talk"</i>	June 2016
University of Georgia Math Camp <i>Graduate Instructor</i>	June 2016 July 2014
Project REFOCUS <i>21st Century Skills Program Volunteer</i>	Spring 2016 Fall 2015
University of Georgia High School Math Tournament <i>Volunteer</i>	Nov. 2014 Nov. 2013
A Place Called Home Non-Profit Youth Center <i>Volunteer Tutor, K-12, all subjects</i>	Spring 2008
Member of the American Mathematical Society	

Skills

Technology

Self-instructed coding in Python, HTML, website building, Mathematica, Sage, Git, L^AT_EX, MyMathLab, WebAssign, WebWork, BlackBoard, experience with Windows, Mac, Linux (via Ubuntu) operating systems.

Language

- French, limited working proficiency
- Spanish, elementary proficiency

Awards

Great Lakes National Scholarship <i>Great Lakes Educational Loan Services</i>	Aug. 2015
Outstanding Teaching Assistant <i>University of Georgia</i>	March 2015
VIGRE Graduate Fellowship	Aug. 2011 - July 2012

Conferences and Workshops Attended

A Day of Algebraic Geometry in Savannah <i>Georgia Southern University</i>	March 2018
Georgia Algebraic Geometry Symposium <i>Georgia Institute of Technology</i>	Feb. 2018
Joint Mathematics Meetings <i>San Diego, CA</i>	Jan. 2018
Stacks Project Workshop <i>University of Michigan</i>	July-Aug. 2017
CAAATQuaFs (Conference on Quadratic Forms) <i>University of Georgia</i>	July 2017
K-theory and Related Fields Trimester Program <i>Hausdorff Research Institute for Mathematics</i>	May-June 2017
Georgia Algebraic Geometry Symposium <i>University of Georgia</i>	March 2017
Lectures in Arithmetic Geometry at Rice <i>Rice University</i>	Feb. 2017
Topological Approaches to Arithmetic and Algebraic Geometry <i>University of Georgia</i>	Sept. 2016
Arithmetic Algebraic Geometry <i>Courant Institute of Mathematical Sciences</i>	Aug. 2016
Joint Mathematics Meetings <i>Seattle, WA</i>	Jan. 2016
Georgia Algebraic Geometry Symposium <i>Emory University</i>	Oct. 2015
Local-Global Principles and Their Obstructions <i>University of Pennsylvania</i>	Oct. 2015
Grad Student Bootcamp for the Alg. Geom. Research Institute <i>University of Utah</i>	July 2015
The 12th Brauer Group Conference <i>Pingree Park, CO</i>	June 2015
Arizona Winter School: Arithmetic and Higher-Dimensional Varieties <i>University of Arizona</i>	March 2015

Georgia Algebraic Geometry Symposium <i>University of Georgia</i>	Oct. 2014
Representation Theory and K-Theory <i>University of Southern California</i>	May 2014
Southeastern Lie Theory Workshop <i>University of Georgia</i>	May 2014
Georgia Algebraic Geometry Symposium <i>University of Georgia</i>	Oct. 2013
Torsors, Nonassociative Algebras, and Cohomological Invariants <i>Fields Institute</i>	June 2013
Homotopical Methods in Algebraic Geometry <i>University of Southern California</i>	May 2013
Workshop on Torsors, Motives, and Cohomological Invariants <i>Fields Institute</i>	May 2013
Oberwolfach Seminar on Algebraic Groups and Patching <i>Mathematisches Forschungsinstitut Oberwolfach</i>	Oct. 2012
Georgia Algebraic Geometry Symposium <i>University of Georgia</i>	May 2012
VIGRE Summer School Program in Algebraic Geometry <i>University of Georgia</i>	May 2012
Arizona Winter School: Ramification and Geometry <i>University of Arizona</i>	March 2012
Algebraic Geometry Northeastern Series Workshop <i>Stony Brook University</i>	Oct. 2011
A Celebration of Algebraic Geometry <i>Harvard University</i>	Aug. 2011
K-Theory and Motives <i>University of California, Los Angeles</i>	March 2011
Compact Moduli and Vector Bundles <i>University of Georgia</i>	May 2010

References

Matthew Ballard

Department of Mathematics
University of South Carolina

Vladimir Chernousov

Department of Mathematical and
Statistical Sciences
University of Alberta

Alexander Duncan

Department of Mathematics
University of South Carolina

Daniel Krashen

Department of Mathematics
University of Georgia

Andrew Kustin (Teaching)

Department of Mathematics
University of South Carolina

Lisa Townsley (Teaching)

Department of Mathematics
University of Georgia