

Patrick K. McFaddin

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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

Fordham University

Assistant Professor

Aug. 2019 - Present

University of South Carolina

Visiting Research Assistant Professor

Aug. 2016 - June 2019

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 categories.

Publications

1. (with M. Ballard and A. Duncan) On derived categories of arithmetic toric varieties. *Ann. K-Theory* 4 (2019), no. 2, 211-242.
2. Zero-cycles with coefficients for the second generalized symplectic involution variety of an algebra of degree 4, *J. Pure Appl. Algebra*, 223 (2019), no. 7, 2822-2830.
3. (with M. Ballard and A. Duncan) The toric Frobenius morphism and a conjecture of Orlov, *Eur. J. Math.* 5 (2019), no. 3, 640-645.

Last updated October 29, 2019

4. 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.
5. (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.

Submitted articles and preprints

6. (with M. Ballard, N. Chidambaram, D. Favero, and R. Vandermolen) Kernels for Grassmann flops. arXiv:1904.12195, 2019.
7. (with M. Ballard and A. Duncan) Derived categories of centrally-symmetric smooth toric Fano varieties. arXiv:1812.09392, 2018.

Physics and Astronomy Research

8. (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.
9. (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.

Awards

AMS–Simons Travel Grant <i>American Mathematical Society and the Simons Foundation</i>	July 2018 - June 2020
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 <i>National Science Foundation</i>	Aug. 2011 - July 2012

Selected Talks

Arithmetic and geometry of algebraic cycles <i>Lincoln Center Math Seminar, Fordham University</i>	Oct. 2019
Resolutions of tori and derived categories of toric varieties <i>Emerging Research in Alg. Groups, Motives, and K-Theory, St. Petersburg, Russia</i>	Sept. 2019
Toric varieties and their derived categories <i>Mathematics Department Colloquium, Georgia Southern University</i>	Feb. 2019
Geometric study of subfields of some non-commutative algebras <i>Carolina Math Seminar, University of South Carolina</i>	Nov. 2018
Algebraic cycles on homogeneous varieties <i>Algebra, Geometry, and Number Theory Seminar, Tufts University</i>	Oct. 2018
Galois descent for exceptional collections on toric varieties <i>Algebra Seminar, University of Tennessee, Knoxville</i>	Sept. 2018

Exceptional collections on some arithmetic toric varieties <i>K-theory Conference Workshop, Universidad de Buenos Aires</i>	July 2018
Derived categories of arithmetic toric varieties <i>The 13th Brauer Group Conference, Pingree Park, CO</i>	June 2018
Groups of loops: they're fundamental! <i>PME and Gamecock Math Club, 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 non-commutative motives <i>K-theory and related fields trimester program, 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
Chow groups with coefficients and generalized Severi-Brauer varieties <i>Algebra and Number Theory Seminar, Emory University</i>	Feb. 2016

Teaching and Training

Fordham University

Instructor of Record

- Math 1100- Finite Mathematics Fall 2019
- Math 1108- Math for Business: Finite Fall 2019

University of South Carolina

Instructor of Record

- Math 599- Abstract Algebra and Music Fall 2018
- 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
<i>Recitation Instructor</i>	
· Math 2200- Analytic Geometry and Calculus	Spring 2011
	Fall 2010
Mental Health and International Students	Nov. 2018
<i>International Accelerator Program, University of South Carolina</i>	
FLIP (Focus on Learning, Innovation and Pedagogy) Participant	Fall 2017
<i>Center for Teaching Excellence, University of South Carolina</i>	
Observer of first-time graduate instructors	Spring 2015
<i>University of Georgia, supervised by Lisa Townsley</i>	
UGA graduate student teacher training	2010- 2014
<i>Courses with Robert Rumley, Jon Hanke, Matt Mastin, and Lisa Townsley</i>	

Professional Activities

Faculty Advisor for Math-CISC Major	Fall 2019- Present
<i>Fordham University</i>	
New Beginnings Life Skills Program Volunteer	Fall 2018- Summer 2019
<i>South Carolina Department of Juvenile Justice</i>	
Magellan Explorer Project Advisor	Spring 2017- Spring 2018
<i>for Danielle Wood, University of South Carolina</i>	
Top Scholar Review Committee Member and Interviewer	Fall 2017-Spring 2018
<i>University of South Carolina</i>	
Motives at South Carolina	Spring 2018
<i>Seminar Organizer</i>	
Comprehensive Exam Committee Member	Spring 2017-Fall 2018
<i>University of South Carolina</i>	
· Candace Bethea	
· Tracy Huggins	
· Alicia Lamarche	
· Robert Vandermolen	
Referee	2017-2018
<i>Pacific Journal of Mathematics</i>	
South Carolina 4 Square Club (SC4SC)	Fall 2017- Spring 2019
<i>Club Advisor</i>	
USC Graduate Student Seminar	April 2019
<i>Job Market Panelist</i>	Sept. 2017
UGA conference on algebraic and analytic aspects of quadratic forms	July 2017
<i>Co-organizer with D. Krashen, P. Clark, and K. Thompson</i>	
University of South Carolina High School Math Competition	Feb. 2017
<i>Volunteer Judge and Proctor</i>	Feb. 2018

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, \LaTeX , MyMathLab, WebAssign, WebWork, BlackBoard, experience with Windows, Mac, Linux (via Ubuntu) operating systems.

Language

- French, limited working proficiency
- Spanish, elementary proficiency

Conferences and Workshops Attended

Emerging Research in Algebraic Groups, Motives, and K-Theory <i>Euler International Mathematical Institute, St. Petersburg, Russia</i>	Sept. 2019
Rationality problems in algebraic geometry <i>American Institute of Mathematics, San Jose, CA</i>	July 2019
Derived algebraic geometry and its applications <i>Mathematical Sciences Research Institute, Berkeley, CA</i>	March 2019
Joint Mathematics Meetings <i>Baltimore, MD</i>	Jan. 2019
Carolina Math Seminar <i>University of South Carolina</i>	Nov. 2018
K-theory Conference Workshop (ICM Satellite) <i>Universidad de Buenos Aires, Argentina</i>	July 2018
K-theory Conference School (ICM Satellite) <i>Universidad Nacional de La Plata, Argentina</i>	July 2018

The 13th Brauer Group Conference <i>Colorado State Mountain Campus, Pingree Park, CO</i>	June 2018
Discover USC <i>Mentor for Danielle Wood, University of South Carolina</i>	April 2018
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
CAATQuaFs (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>Colorado State Mountain Campus, 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

Daniel Krashen
Department of Mathematics
Rutgers University

Andrew Kustin (Teaching)
Department of Mathematics
University of South Carolina

Alexander Merkurjev
Department of Mathematics
University of California, Los Angeles

Lisa Townsley (Teaching)
Department of Mathematics
University of Georgia