

Paul Sobaje

Curriculum Vitae

University of Georgia
Department of Mathematics
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Education

- Aug. 2011 **Ph.D. in Mathematics**, *University of Southern California*.
Thesis: Blocks of finite group schemes
Advisor: Eric Friedlander
Dec. 1998 **B.A. in Mathematics**, *University of California, Los Angeles*.

Experience

Academic Positions

- 2018– **Assistant Professor**, *Georgia Southern University*.
2015–2018 **Postdoctoral Associate**, *University of Georgia*.
2014–2015 **Assistant Professor (NTT)**, *University of Southern California*.
2011–2014 **Research Fellow**, *University of Melbourne*.
2006–2011 **Graduate Assistant**, *University of Southern California*.

Non-Academic Positions

- 2000–2005 **Database Programmer/Research Analyst**, *STATS LLC/Fox Sports*, Los Angeles.

Research Interests

Representation theory and structure of finite groups, algebraic groups, Lie algebras, quantum groups, and affine group schemes, particularly over fields of characteristic p . Study of the nilpotent and unipotent varieties of algebraic groups. Use of support varieties and other cohomological invariants in representation theory.

Publications and Preprints

- [1] Module invariants and blocks of finite group schemes, *Bull. London Math. Soc.* 45(1) (2013), pp. 213–224 .
- [2] Support varieties for Frobenius kernels, *J. Pure and Appl. Algebra* 216 (2012), pp. 2657–2664.
- [3] On exponentiation and infinitesimal one-parameter subgroups of reductive groups, *J. of Algebra* 385 (2013), pp. 14–26.

- [4] Exponentiation of commuting nilpotent varieties, *J. Pure and Appl. Algebra* 219 (2015), no. 6, pp. 2206-2217.
- [5] Springer isomorphisms in characteristic p , *Transformation Groups* 20 (2015), no. 4, pp. 1141-1153.
- [6] On liftings of projective indecomposable $G_{(1)}$ -modules, *J. of Algebra*, 475 (2017), pp. 61-79. (Sandy Green memorial issue)
- [7] (with William Hardesty and Daniel Nakano) On the existence of mock injective modules for algebraic groups, *Bull. London Math. Soc.* 49 (2017), no. 5, 806-817.
- [8] (with Martina Lanini and Arun Ram) A Fock space model for decomposition numbers for quantum groups at roots of unity, to appear in *Kyoto J. of Mathematics*.
- [9] Varieties of G_r -summands in rational G -modules, to appear in *Proceedings of the conference on "Geometric and Topological aspects of Representations of Finite groups" in honor of David Benson's 60th birthday, to be published by Springer*.
- [10] On (p, r) -filtrations and tilting modules, *Proc. Amer. Math. Soc.* 146 (2018), no. 5, 1951-1961.
- [11] Unipotent elements and generalized exponential maps, *Advances in Mathematics* 333 (2018), pp. 463-496.
- [12] (with Christopher Bendel, Daniel Nakano, and Cornelius Pillen) On tensoring restricted simple G -modules with the Steinberg representation, submitted.

Teaching Experience

- Fall 2017 **Math for elementary teachers**, University of Georgia.
- Fall 2017 **Precalculus**, University of Georgia.
- Spring 2017 **Calculus II**, University of Georgia.
- Fall 2016 **Applied Linear Algebra**, University of Georgia.
- Fall 2016 **Algebraic Groups**, University of Georgia.
- Spring 2016 **Applied Linear Algebra**, University of Georgia.
- Fall 2015 **Calculus II**, University of Georgia.
- Spring 2015 **Calculus I**, University of Southern California.
- Fall 2014 **Topology**, University of Southern California.
- Fall 2014 **Precalculus**, University of Southern California.
- Fall 2013 **Calculus I**, University of Melbourne.

Mentoring

- Spring 2015 **Nico Courts, undergraduate research**, University of Southern California.
(currently Ph.D. student at University of Washington)

2015–2016 **William Hardesty, Secondary Doctoral Thesis Advisor**, *University of Georgia*.
(currently postdoc at Louisiana State University)

Service

2016–2017 **Postdoctoral Member, Vertical Research Group**, *University of Georgia*.
April 2017 **Outside Member for Ph.D. Thesis Committee**.
Seth Rothschild, Tufts University (Advisor: George McNinch)

Organization

2015–2018 **Algebra seminar organizer**, *University of Georgia*.
Jan. 2017 **AMS JMM Special Session Organizer**, *Atlanta, GA*.
March 2016 **AMS Southeastern Sectional Special Session Organizer**, *Athens, GA*.

Selected Talks

Mar. 2018 **Colloquium**, *Georgia Southern University*.
Mar. 2018 **Algebra Seminar**, *University of Georgia*.
Jan. 2018 **Colloquium**, *University of California, Santa Barbara*.
Sep. 2017 **Special Session Speaker**, *AMS Southeastern Sectional Meeting, Orlando*.
Jan. 2017 **Special Session Speaker**, *Joint Mathematics Meetings, Atlanta*.
Sep. 2016 **Algebra Seminar**, *University of Georgia*.
Aug. 2016 **Workshop on Geometric and Topological Aspects of the Representation Theory of Finite Groups**, *PIMS, Vancouver*.
March 2016 **Pure Mathematics Seminar**, *University of South Alabama*.
March 2016 **Colloquium**, *University of South Alabama*.
Jan. 2016 **Special Session Speaker**, *Joint Mathematics Meetings, Seattle*.
Oct. 2015 **Contributed talk**, *SE Lie Theory Workshop, Raleigh*.
Aug. 2015 **AGANT Oberseminar**, *University of Georgia*.
Aug. 2015 **Algebra Seminar**, *University of Georgia*.
Feb. 2015 **Colloquium**, *University of Oklahoma*.
Oct. 2014 **Special Session Speaker**, *AMS Western Sectional Meeting, San Francisco*.
Oct. 2014 **Special Session Speaker**, *AMS Western Sectional Meeting, San Francisco*.
Dec. 2013 **Algebra Seminar**, *University of Southern California*.
June 2013 **Special Session Speaker**, *Second Pacific Rim Mathematical Association (PRIMA) Congress, Shanghai*.
Sep. 2012 **Algebra Seminar**, *University of Sydney*.
May 2012 **Algebra, Geometry, and Topology Seminar**, *University of Melbourne*.

- Feb. 2012 **Combinatorics, representations, and structure of Lie type**, *University of Melbourne*.
- Sep. 2011 **Group-valued moment maps with applications to mathematics and physics**, *University of Adelaide*.
- Nov. 2010 **Colloquium**, *California State University Long Beach*.
- Oct. 2010 **Algebra and Combinatorics Seminar**, *Texas A&M University*.

Awards

- 2013 **Humboldt Research Fellowship**, *Germany*.
(declined to take one-year position at USC)
- 2010 **Department Teaching Award**, *University of Southern California*.
- Spring 2009 **Department Merit Fellow**, *University of Southern California*.

Other Professional Activities

- Referee: **Proceedings of the London Math. Society, Journal of Algebra, J. Pure and Applied Algebra, Algebras and Representation Theory**.
- Trainer: **For incoming graduate assistants**, *University of Southern California, August 2008, 2009*.