Paul Sobaje

Curriculum Vitae

University of Georgia
Department of Mathematics
psobaje.github.io
sobaje@uga.edu

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

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

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

- Exponentiation of commuting nilpotent varieties, *J. Pure and Appl. Algebra* 219 (2015), no. 6, pp. 2206-2217.
- Springer isomorphisms in characteristic p, *Transformation Groups* 20 (2015), no. 4, pp. 1141-1153.
- On liftings of projective indecomposable $G_{(1)}$-modules, *J. of Algebra*, 475 (2017), pp. 61-79. (Sandy Green memorial issue)
- (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.*
- *(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.*
- *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.*
- *On (p, r)-filtrations and tilting modules,* Proc. Amer. Math. Soc. 146 (2018), no. 5, 1951-1961.
- Unipotent elements and generalized exponential maps, submitted. arxiv.org/abs/1708.04153.
- (with Christopher Bendel, Daniel Nakano, and Cornelius Pillen) On tensoring restricted simple G-modules with the Steinberg representation, in preparation.

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

Jan. 2018 **Special 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 **Special 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*.