Andrew B. Maurer
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Education

- **University of Georgia** — Athens, Georgia
  Mathematics, Ph.D Candidate. — 2014 – Present
  - Advisor: Daniel K. Nakano
  - Research Area: Cohomology of Lie superalgebras.
- **University of Massachusetts** — Amherst, Massachusetts
  Mathematics, BS. Computer Science, Minor. — 2010 – 2014
  - Advisor: Farshid Hajir
  - Senior Project: Hasse-Witt invariants of Jacobi polynomials.

Research

- **Representations, cohomology, and geometry of Lie superalgebras.**

  I am studying the relative cohomology ring $\mathrm{H}^\bullet(\mathfrak{g}, \mathfrak{l}; \mathbf{C})$ of a Lie superalgebra $\mathfrak{g} = \mathfrak{g}_{\bar{0}} \oplus \mathfrak{g}_{\bar{1}}$ relative to a reductive subalgebra $\mathfrak{l} \subseteq \mathfrak{g}_{\bar{0}}$. My conjecture is that $\mathrm{H}^\bullet(\mathfrak{g}, \mathfrak{l}; \mathbf{C})$ is finitely generated over $\mathrm{H}^\bullet(\mathfrak{g}, \mathfrak{g}_{\bar{0}}; \mathbf{C})$ and that there is a very nice spectral sequence abutting to this relative cohomology. Once this is established I will be able to use algebro-geometric techniques to investigate the mapping of support varieties induced by $\mathrm{H}^\bullet(\mathfrak{g}, \mathfrak{g}_{\bar{0}}; \mathbf{C}) \to \mathrm{H}^\bullet(\mathfrak{g}, \mathfrak{l}; \mathbf{C})$.

  This research builds on work by Benson, Boe, Carlson, Friedlander, Gruson, Hochschild, Kujawa, Nakano, Parshall, and Serre.

- **Tropical geometry, algebra, and Grassmannians**

  The Grassmannian $\mathrm{Gr}(d, n)$ is often identified with the image of the Plücker embedding. This variety is isomorphic to the GIT quotient of $\mathrm{M}_{d\times n}$ by the (left) action of GL_d. There has been much interest in defining tropical analogues of the Grassmannian, with several constructions due to Speyer and Sturmfels. With N. Giansiracusa, I have been working on an analogue that mimics the GIT construction. We have discovered many interesting similarities and many interesting differences when compared to the classical theory.

  This research builds on work by Fink, G. Giansiracusa, N. Giansiracusa, Rincón, Speyer, and Sturmfels.

Invited Talks

- **Cohomology, Support Varieties, and Lie Superalgebras** Spring 2016
  University of Colorado Boulder, Student Algebra Seminar

Talks at University of Georgia

- **Tropical linear spaces** Fall 2015
  UGA Tropical Geometry VRG
- **The tropical Grassmannian** Fall 2015
  UGA Tropical Geometry VRG
- **Asymptotically good families** Spring 2015
  UGA Graduate Student Seminar
- **Determinental complexity of the permanent** Spring 2015
  UGA Student Algebraic Geometry Seminar
- **Construction of Grassmannian for Schubert calculus** Fall 2014
  UGA Schubert Calculus on Grassmannian VRG
- **Computability with an eye towards elliptic curves** Fall 2014
  Elliptic Curves Discussion Section

Conferences, Summer Schools, and Workshops Attended

- **Topological & Geometric Aspects of the Representation Theory of Finite Groups (Summer School & Workshop)** — Summer 2016
  Pacific Institute for the Mathematical Sciences
- **Character Theory and the McKay Conjecture Summer School** — Summer 2016
  Mathematical Sciences Research Institute
- **Southeastern Lie Theory Workshop** — Summer 2016
  University of Virginia
- **Hodge Theory in Combinatorics Mini-Conference** — Spring 2016
  Georgia Institute of Technology
- **Georgia Algebraic Geometry Symposium** — Fall 2015
  Georgia Intstitute of Technology
- **Discrete Mathematics and Algorithms** — Fall 2015
  Clemson University Mini-Conference
- **Georgia Algebraic Geometry Symposium** — Fall 2014
  University of Georgia
- **Algebraic Geometry Northeastern Series** — Fall 2014
  University of Pennsylvania

Service

- **UGA MathCamp** — Summer 2016
  UGA Department of Mathematics
- **Algebra Qualifying Exam Preparation Assistant** — Summer 2016
  UGA Department of Mathematics
- **Graduate Visitation Day Organizer** — Spring 2016
  UGA Department of Mathematics
- **President** — Spring 2016
  Secretary — Fall 2015
  UGA Chapter of the American Mathematical Society
- **Logistic Organizer** — Fall 2014 – Spring 2015
  Student Algebraic Geometry Seminar

Graduate Coursework

- **University of Georgia:** Elliptic Curves, Varieties, Schemes, Algebraic Curves, Sheaves and Cohomology, Flag Varieties, Lie Algebras, Toric Varieties, Complex Multiplication, Central Simple Algebras, Schubert Calculus VRG, Tropical Geometry VRG.
- **University of Massachusetts:** Algebra I & II, Real Analysis I & II, Complex Analysis, Topology, Manifolds I & II, Asymptotic Problems, Algebraic Number Theory, Theory of Computation.

Teaching History

- **Upward Bound:** SAT / ACT Math Teacher — Summer 2014, Upward Bound Summer Program
- **Math 300:** Introduction to Proofs Teaching Assistant — Fall 2013 – Spring 2014, University of Massachusetts
- **Math 127 & 128:** Calculus I & II Teaching Assistant — Fall 2011 – Spring 2013, University of Massachusetts
- **Math 235:** Linear Algebra Supplemental Instruction Leader — Fall 2011 – Spring 2012, University of Massachusetts

Computer Skills

- **General Programming:** Java and Python.
- **Mathematical Programming:** Sage, Pari/GP, and Magma, R.
- **Scripting Languages:** Perl, `bash`.
- **Markup:** LaTeX, `org-mode`, and HTML.
- **Operating Systems:** Windows, Mac OS, GNU/Linux.