

Natalie Hobson

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Education

Ph.D., Mathematics, University of Georgia, Athens, GA, August 2017.

Dissertation: Vector bundles of conformal blocks from a combinatorial approach, published in *Advances in Geometry*, to appear.

Advisor: Angela Gibney

M.A., Mathematics Education, University of Georgia, Athens, GA, Expected May 2017.

Thesis: Experts' covariational and quantitative reasoning, published in the *Research in Undergraduate Mathematics Education* Conference.

Advisor: Kevin Moore

M.S., Mathematics, University of Georgia, Athens, GA, August 2013.

B.S., Mathematics, University of Washington, Seattle, WA, March 2012.

Minors: Education and Diversity

Thesis: Voting theory

Advisor: Sara Billey

Teaching

Experience

Assistant Professor, Sonoma State University, Rohnert Park, CA, August 2017 – Present.

Math 161: Differential and Integral Calculus I, Fall 2017.

Math 316: Graph Theory and Combinatorics, Fall 2017.

Instructor of Record, University of Georgia, Athens, GA.

Math 2001: Geometry for Elementary Teachers, Spring 2016.

Math 2250: Calculus I for Scientists and Engineers, Fall 2015, Spring 2015.

Math 1113: Precalculus, Fall 2014.

Head Teaching Assistant, Summer Institute for Mathematics at the University of Washington (SIMUW), Seattle, WA, June-August 2012 and 2014.

Professional Development Participation

UDL Faculty Learning Community, SSU Faculty Services, Fall 2017-Spring 2018.

Description: Meet bi-weekly with a cohort of 10 faculty members to explore and implement Universal Design for Learning (UDL) strategies. UDL is a design philosophy for instructional materials and curriculum intended to help students and learners of all abilities succeed in their education by way of not only making course content accessible for those who are differently abled but also by supporting learning in all its diverse and varied forms. Participate in a series of instructional technology demonstrations (led by technologists at DSS and the Faculty Center) and “assignments” for faculty to help instructors formulate a self-assessment of their existing electronic instructional materials, design an accessible syllabus, and redesign a selected course activity or learning object utilizing UDL best practices to be implemented for a course in Spring 2018. The capstone for this learning community will include a public presentation at a forthcoming conference on accessibility and inclusion to be sponsored by the Faculty Center in late Spring 2018.

Equity Reading Group, Fall 2017- Present.

Description: Meet virtually with group of six faculty math and math education faculty from various CSUs. Discuss readings around equity in mathematics. Collect and observe video of our own teaching to improve the ways in which we work with students and strategies for making our classroom more equitable for all students.

Awards and Grants

NSF RTG Fellowship, (Algebraic Geometry, Algebra and Number Theory Research and Training Group), Fall 2016-Summer 2017.

Diversity and Inclusion Graduate (DIG) Fellow, UGA graduate school, August 2016- May 2017.

Outstanding Graduate Teaching Award, Department of Mathematics, Spring 2016.

AMS Travel Grant, Spring 2016.

Scholarship of Teaching and Learning (SoTL) Mini-Grant, Center for the Integration of Research, Teaching, and Learning, University of Georgia, Fall 2015.

NSF RTG Fellowship, Department of Mathematics, University of Georgia, Summer 2015.

NSF VIRGE Fellowship, Department of Mathematics, University of Georgia, August 2012- May 2013.

Award for Excellence in Academics and K-12 Outreach, University of Washington, June 2012.

Professional Scholarship

Publications

Accepted in Refereed Journal Publications

“Quantum Kostka and the rank one problem for sl_{2m} ,” *Advances in Geometry*, de Gruyter, Berlin, to appear, accepted August 2017. arXiv:1508.06952

“Inverse function: Pre-service teachers’ techniques and meanings,” with Teo Paoletti, Irma E. Stevens, Natalie L.F. Hobson, Kevin C. Moore, Kevin R. LaForest. *Educational Studies in Mathematics*, Springer, Netherlands. To appear, accepted September 2017.

Articles in Refereed Conference Proceedings

Hobson, N. L. F. and Moore, K. C., (2017, February). *Graphing habits: “I just don’t like that.”* Proceedings of the Twentieth Annual Conference on Research in Undergraduate Mathematics Education. Pittsburgh, PA: West Virginia University.

Moore, K. C., Paoletti, T., Stevens, I. E., **Hobson, N. L. F.**, (2016, February). *Graphing habits: “I just don’t like that.”* Proceedings of the Nineteenth Annual Conference on Research in Undergraduate Mathematics Education. Pittsburgh, PA: West Virginia University.

Paoletti, T., Mauldin, K. D., Moore, K. C., Stevens, I. E., **Hobson, N. L. F.**, & LaForest, K. R., (2015). *Changing cones: Students’ images of a dynamic situation.* In T. G. Bartell, K. N. Bieda, R. T. Putnam, K. Gradfield, & H. Dominguez (Eds.), Proceedings of the 37th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (pp. 427). East Lansing, MI: Michigan State University.

Stevens, I. E., LaForest, K. R., Paoletti, T., **Hobson, N. L. F.**, Paoletti, T., & Moore, K. C., (2015). Undergraduate students’ inverse strategies and meanings. In T. G. Bartell, K. N. Bieda, R. T. Putnam, K. Gradfield, & H. Dominguez (Eds.), Proceedings of the 37th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (pp. 262). East Lansing, MI: Michigan State University.

Paoletti, T., Stevens, I. E., **Hobson, N. L. F.**, LaForest, K., & Moore, K.C., (2015, February). *Pre-service teachers’ inverse function meanings.* Proceeding of the Eighteenth Annual Conference on Research in Undergraduate Mathematics Education. Pittsburgh, PA: West Virginia University.

Ghosh-Hajra, S., & **Hobson, N.L.F.**, (2015, February). *Exploring preferences, performance, and opinions of pre-service teachers in a cooperative mathematics content course.* Proceeding of the Eighteenth Annual Conference on Research in Undergraduate Mathematics Education. Pittsburgh, PA: West Virginia University.

Preprints Submitted

“Analogies between the crossing number and the tangle crossing number,” with Anderson, R., Bai, S., Barrera-Cruz, F., Czbarka, E., Da Lozzo, G., Lin, J., Mohr, A., Smith, H., Székely, L., Whitlatch, H. submitted September 2017 to *Discrete Applied Mathematics*. Available: arXiv:1709.08119

Projects with SSU Students

SSU Mathematics and Statistics Stretch Course Assessment, Fall 2017—Present.

Student: Adriana Sigala (with Dr. Martha Byrne).

Connections between Algebraic Geometry, Combinatorics, and Astronomy, Fall 2017—Present.

Student: Jacob Paxton.

Invited Presentations

“Tableaux, Hives, and Integer Triangles: Playing with Puzzles to Solve Difficult Problems”
Saint Mary’s College Colloquium, October 2017.

Major Professional Conference Involvement

Organizer for session on “Incorporating social justice projects into the college mathematics curriculum”
at the AMS-MAA Joint Mathematics Meetings. San Diego, CA, January 2018.

Organizer for special session on “Teaching and Learning in Undergraduate Mathematics” at the AMS
Spring Sectional, Portland State University, April 2018.

Reviewer MAA Research in Undergraduate Mathematics Education (RUME) Conference Proceedings.
Fall 2017.

Curriculum and Course Development and Assessment

Researcher, SSU Mathematics and Statistics Stretch Course Assessment (with Martha Byrne), Fall
2017—Present.

Description: Design and implement assessment to evaluate SSU Math and Stat
Department’s pilot of four sections of stretch mathematics courses. Collect student
consent to participate, communicate with instructors, collect student work and projects,
design and disseminate mindset questionnaires. Analyze data. Collaborate with
department to make recommendations for scaling stretch courses and full
implementation.

Developer, Support course for students in Math and Stats Stretch courses, Fall 2017—Present.

Description: Work collaboratively with three other members of the Math and Stats
Department to design course syllabus and structure for a one unit support course for
students enrolled during the Fall semester of a stretch mathematics course sequence.

Other Professional Activities

Organizing Committees

Organizing committee member, Bay Area Discrete Math (BADMath) Conference, Fall 2017—Present.

Participation:

Co-Requisite Mathematics Summit, organized by chancellor’s office, lead by representative from
the Dana Center, Los Angeles CA, August 10-11, 2017.

MAA MathFest and Mini-Conference on Inquiry-Based Learning in Mathematics, Chicago IL,
July 2017.

Professional Affiliations

Mathematical Association of America. August 2017—Present.
Society for Advancing Chicanos/ Hispanics & Native American Science (SACNAS). August 2016-Present.
Society for Industrial and Applied Mathematics (SIAM). 2016- Present.
American Mathematics Society (AMS). 2012—Present.
Association for Women in Mathematics (AWM). 2012—Present.
National Council of Teachers of Mathematics (NCTM). 2013—Present.

Service to the University

Service to the Department of Mathematics and Statistics

Mathematics and Statistics Department Committees
Math Education Committee, Fall 2017—Present.
Search Committee, Fall 2017—Present.
SSU Math and Stats Department Faculty Representative, MAA Fall 2017—Present.
Organizer (with Martha Shott and Brigitte Lahme), “Info Session for Math and Stats Majors: What do to NOW to prepare for after graduation,” September 2017.
Organizer, Math and Stats Major Weekly Newsletter, Fall 2017—Present.

Service Outside of the Department of Mathematics and Statistics

Mentor, Math Alliance for Doctoral Studies in the Mathematical Sciences, Fall 2017—Present.
Description: Math Alliance is a community of math faculty and students with the goal to increase the number of doctoral degrees in the mathematical sciences among groups that have been traditionally underrepresented. Mentors commit to encouraging and supporting undergraduate students from underrepresented groups to continue in doctoral programs in the Mathematical Sciences. Opportunities to attend conferences around mentoring and supporting students.

Instructor, SSU Recreation Center, Fall 2017- Present.
Description: Lead yoga class twice a week for students and Recreation Center members. Provide students with a practice of mindfulness, strength, and flexibility training.

Other Teaching and Mentoring Involvement

Fellow (2017 cohort), Project NExT (New Experiences in Teaching),
Description: Project NExT is a professional development program for (about 80) new or recent Ph.D.s in the mathematical sciences. It addresses all aspects of an academic career: improving the teaching and learning of mathematics, engaging in research and scholarship, finding exciting and interesting service opportunities, and participating in professional activities. It also provides the participants with a network of peers and mentors as they assume these responsibilities.

UndocuAlly Training, SSU UndocuResource Center, October 2017.
Description: Training for staff and faculty on the history, legislation, and current/ future realities for undocumented students. Training lead by Nancy Jodaitis from Educations for Fair Consideration.

Service to the Community

Volunteer, Sebastopol Community Apple Press, October 2017.

Description: The Slow Food Russian River operates the Sebastopol Community Apple Press at the Luther Burbank Gold Ridge Experiment Farm in Sebastopol. The use of the press is a free community service. Volunteers help community members operate the press.

Volunteer, Taste of Sonoma, Green Music Center at SSU, September 2017.

Description: Taste of Sonoma is a benefit event for local educational, health, and environmental organizations.

Volunteer, Sonoma County Bicycle Coalition, August 2017—Present.

Description: The Bicycle Coalition is a non-profit that works to make Sonoma county a safe and responsible biking community through advocacy and education. Volunteers park bikes and provide assistance at events.