Noah S. Daleo

Assistant Professor, Worcester State University

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Education

Ph.D. Mathematics, North Carolina State University, 2015
Dissertation title: Algorithms and applications in numerical elimination theory
Advisor: Dr. Jonathan Hauenstein

M.S. Mathematics, North Carolina State University, 2012

B.S. Mathematics, Kennesaw State University, 2010

Courses Taught at WSU

MA 180: Introduction to Functions	Properties and applications of linear, quadratic, polynomial, rational, exponential, and logarithmic functions; systems of equations; complex numbers. (*Spring 2017*)
MA 190: Precalculus	Exponential functions, logarithmic functions, trigonometry, systems of equations, and applications. (*Fall 2015, Spring 2017*)
MA 201: Calculus II	Techniques of integration, infinite sequences and series, power series, and applications. (*Spring 2016, Fall 2016*)
MA 202: Business Calculus	Limits, derivatives of algebraic functions, integration, partial derivatives, and business applications. (*Fall 2015, Spring 2016*)
MA 220: Discrete Mathematics I	Computational complexity, recurrence relations, proof techniques, set theory, and functions. (*Fall 2015*)
MA 290: Discrete Mathematics II	Logic, quantified statements, counting techniques, probability, equivalence relations, graph theory, and topics from linear algebra. (*Spring 2016*)
MA 340: Modern Geometry	Axiomatic development of Euclidean and non-Euclidean geometry. (*Fall 2016*)
MA 497: Mathematical Computing	Special topics course created for Fall 2016. Designed to introduce students to a variety of mathematical software packages. Covers numerical and symbolic computation with discussion of how algorithms are used in practice. (*Fall 2016*)

Teaching Experience at NCSU

Instructor
Spring 2013, Calculus II
Fall 2012, Calculus II
Spring 2012, Calculus I
Fall 2011, Calculus I

Substitute instructor
Spring 2011, Pre-Calculus
Fall 2013, Algebraic Geometry

Recitation leader
Spring 2011, Pre-Calculus

Lecture assistant
Fall 2010, Calculus II

Math tutor
Fall 2011 - Spring 2013

Honors and Awards

2012 Maltbie Teaching Award from the NCSU Mathematics Department.

2012 Outstanding Teaching Assistant Award from the NCSU Mathematics Department.

2012 NCSU Office of Faculty Development "Thank a Teacher" recipient.

2010 Award for Outstanding Presentation at the MAA Undergraduate Poster Session held at the Joint Mathematics Meetings.

Research Interests

My research is focused on numerical algorithms in algebraic geometry with an emphasis on numerical elimination theory. This work includes applications to mathematics, science, and engineering.

Research Articles

A. Bernardi, N. S. Daleo, J. D. Hauenstein, and B. Mourrain. Tensor decomposition and homotopy continuation. Available at arxiv.org/abs/1512.04312 (2016).

N. S. Daleo and J. D. Hauenstein. Numerically testing generically reduced projective schemes for the arithmetic Gorenstein property. *Lecture Notes in Computer Science*, 9582, 137-142 (2016).

D. Mehta, N. S. Daleo, F. Dörfler, and J. D. Hauenstein. Algebraic geometrization of the Kuramoto model: Equilibria and stability analysis. *Chaos*, 25, 053103 (2015).

N. S. Daleo and J. D. Hauenstein. Numerically deciding the arithmetically Cohen-Macaulayness of a projective scheme. *Journal of Symbolic Computation*, 72, 128-146 (2016).

N. S. Daleo, J. D. Hauenstein, and L. Oeding. Computations and equations for Segre-Grassmann hypersurfaces. *Portugaliae Mathematica* 73(1), 71-90 (2016).

D. Mehta, N. S. Daleo, J. D. Hauenstein, and C. Seaton. Gauge-fixing on the lattice via orbifolding. *Physical Review D*, 90, 054504 (2014).

Research Presentations

Numerical algebraic geometry and the Kuramoto Model. WPI Math Colloquium. Worcester, MA, January 2017.

Numerical algebraic geometry and synchronization of coupled phase oscillators. SIAM Annual Meeting. Boston, MA, July 2016.

Equilibria and stability analysis in applications via numerical algebraic geometry. Joint Mathematics Meetings. San Antonio, TX, January 2015.

Algebraic geometrization of the Kuramoto model: Equilibria and stability analysis. AMS Sectional Meeting. San Francisco State University, October 2014.

Symbolic and numerical perspectives on elimination theory. Graduate Student Recruitment Day talk. North Carolina State University, March 2014.

A numerical approach to tensor decomposition. Graduate Student Numerical Analysis seminar. North Carolina State University, November 2013.

Numerical algebraic geometry with an application to physics. Applied Math Club seminar. North Carolina State University, October 2013.

Polynomial images of algebraic sets with applications. Minisymposium presentation at SIAM Conference on Applied Algebraic Geometry. Colorado State University, August 2013.

Controlling the spread of a disease under the uncertainty of the model parameters. Undergraduate poster presentation at Joint Mathematics Meetings. San Francisco, CA, January 2010.

Conferences Attended

SIAM Annual Meeting, Boston, MA, July 2016.

Algebraic Geometry Northeastern Series (AGNES), Brown University, October 2015.

Joint Mathematics Meetings, San Antonio, TX, January 2015.

AMS Sectional Meeting, San Francisco State University, October 2014.

East Coast Computer Algebra Day, Duke University, April 2014.

Triangle Lectures in Combinatorics, UNC Chapel Hill, February 2014.

Joint Mathematics Meetings, Baltimore, MD, January 2014.

Triangle Lectures in Combinatorics, North Carolina State University, September 2013.

SIAM Conference on Applied Algebraic Geometry, Colorado State University, August 2013.

Joint Mathematics Meetings, San Francisco, CA, January 2010.

Service and Professional Development

Undergraduate Curriculum Committee, Fall 2016 - present.
The CC evaluates and makes recommendations concerning major and general education requirements; proposals for new programs of study; and deletions, additions to or changes in the college's inventory of classes.

MAA Early Career Mentoring Network, Fall 2016 - present.
Signed up as a mentee to further my professional development and to make connections with the larger mathematical community. Each mentee is assigned an experienced mentor working in mathematics.

Search Committee, WSU Math Department, Fall 2015 - Spring 2016.
Served on search committee which successfully resulted in two new hires.

RCR 101: Foundations in the Responsible Conduct of Research, August 2014.
Completed online course covering research ethics.

NCSU Fundamentals in Teaching Workshops, 2011-2014.
Participated in online workshops: Classroom Assessment Techniques, Classroom Management, Establishing Credibility & Authority in the Classroom, Managing Disruptive Classroom Behavior.

NCSU Mathematics Teaching Assistant Workshop, August 2013.
Answered questions from incoming graduate students as part of a panel of experienced teaching assistants.

NCSU Mathematics Teaching Assistant Workshop, August 2010 and August 2011.
Participated in a series of discussion sessions and presented an undergraduate lesson before a group of faculty members.

Funding

2014-2015 NCSU research assistant support via NSF grant DMS-1262428 (Advisor: Dr. Jonathan Hauenstein).

2015 NCSU graduate student travel funding to attend the 2015 Joint Mathematics Meetings.

2013-2014 NCSU research assistant support via DARPA Young Faculty Award (Advisor: Dr. Jonathan Hauenstein).

2013 SIAM Student Travel Award to attend the 2013 SIAM Conference on Applied Algebraic Geometry.

2010-2013 Teaching assistant support, NCSU Dept. of Mathematics.

2010 Undergraduate research support via NSF grant DMS-0810925 (Advisor: Dr. Ana-Maria Croicu).

2010 Undergraduate research and travel support via Kennesaw State University Mentor-Protégé grant.

Computer Skills

Software and programming languages
Proficient in MATLAB, Octave, Bertini, LaTeX, Windows, and Linux.
Some knowledge of Maple, Sage, HTML, and Excel.

Educational technology
Blackboard, MyMathLab, WebAssign, Moodle, and PowerPoint.