

MATTHEW J. WILLIS

CURRICULUM VITAE

Visiting Assistant Professor
Department of Mathematics
Connecticut College
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Education.

University of North Carolina at Chapel Hill, Ph.D., Mathematics.	May 2012
Dissertation: <i>A new right key computation and its effect on the convexity of sets of Demazure tableaux</i>	
Advisor: Dr. Robert Proctor	
Masters: <i>Symmetric functions and MacDonalld polynomials</i>	May 2009
Advisor: Dr. Richard Rimanyi	
The College of New Jersey, B.A., Mathematics	May 2006

Academic Employment.

Visiting Assistant Professor, Department of Mathematics, Connecticut College	August 2013 - Present
Visiting Assistant Professor, Department of Mathematics and Computer Science, Hampden-Sydney College	August 2012 - May 2013
Graduate Teaching Assistant, Department of Mathematics, University of North Carolina at Chapel Hill	Fall 2006 - Spring 2012

Research Area.

Algebraic Combinatorics, Representation Theory / Lie Algebras, Symmetric Functions.

Research Papers.

A direct way to find the right key of a semistandard Young tableau, Annals of Combinatorics **17**, no. 2, 393-400 (2013).

Demazure tableaux for key polynomials, Demazure characters, and atoms, joint with Robert A. Proctor, European Journal of Combinatorics **43**, 172-184, (2015).

Relating the type A alcove path model to the right key of a semistandard Young tableau, with Demazure character consequences, submitted June 2015; found at arXiv:1506.04756 .

Convexity of sets of Demazure tableaux, and relationship to flagged Schur functions, joint with Robert A. Proctor, in preparation.

Research Talks.

Title to be determined, Mathematics seminar, The College of New Jersey	February 2015
<i>Connecting type A Demazure character formulas</i> , AMS Fall eastern sectional meeting, Rutgers University	November 2015
<i>Local condition sets for Demazure tableaux</i> , Algebra/Topology seminar, University of Albany	October 2014
<i>Local condition sets for Demazure tableaux</i> , Colloquium, Wesleyan University	September 2014
<i>Tableau descriptions of type A polynomials</i> , Algebra seminar, University of Connecticut	February 2014
<i>Describing (symmetric) polynomials with sets of semistandard Young tableaux</i> , Seminar in mathematics, Connecticut College	September 2013
<i>Analyzing sets of Demazure tableaux and their convexity</i> , MAA MD-DC-VA Sectional meeting at Virginia Military Institute	October 2012
<i>Convexity of the set of Demazure tableaux in type A</i> , Geometric Methods in Representation theory seminar at UNC Chapel Hill	November 2011
<i>Combinatorial descriptions of characters and other fun things with Young tableaux</i> , GMA visions seminar at UNC Chapel Hill	October 2011

Math Club Talks.

<i>Counting by coloring: How many ways can Platonic solids be colored?</i> , Senior seminar, Connecticut College	September 2015
<i>Polyhedral counting: How many ways Can Platonic solids be colored?</i> , Math club, University of Connecticut	October 2014
<i>Combinatorics of Young diagrams and tableaux</i> , Faculty interest presentations, Math and CS colloquium at Hampden-Sydney College	October 2012

Courses Taught.

Spring 2016, Connecticut College:

Math 107, *Introduction to Statistics*, one section.

Math 113, *Calculus C: Integrals and Series*, one section.

Math 315, *Topology*, one section.

Fall 2013 - Fall 2015, Connecticut College:

Math 107, *Introduction to Statistics*, six sections.

Math 112, *Calculus B: Derivatives and Integrals*, three sections.

Math 113, *Calculus C: Integrals and Series*, two sections.

Math 210, *Discrete Mathematics*, one section.

Math 212, *Multivariable Calculus*, one section.

Math 226, *Linear Algebra*, two sections.

Math 306, *Selected Topics: Algebraic Combinatorics*, one section.

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Math 391, *Individual Study*, “*The Symmetric Group*” by Bruce Sagan with Caleb Garza, co-taught with Warren Johnson.

Math 495, *Seminar in Mathematics*, advisor to Kaleigh Tierney and her talk “Are you Schur it’s symmetric?”

Fall 2012 - Spring 2013, Hampden-Sydney College:

Math 121, *Statistics*, two sections.

Math 141, *Calculus I*, four sections.

Math 252, *Transition to Higher Mathematics*, one section.

Summer 2012, Summer Bridge Program, University of North Carolina:

Math 110, *College Algebra*, one section.

Spring 2007 - Spring 2012, University of North Carolina:

Math 110, *College Algebra*, four sections.

Math 117, *Finite Mathematics*, one section.

Math 231, *Calculus of Functions of One Variable I*, eight sections.

Math 232, *Calculus of Functions of One Variable II*, two sections.

Conferences Attended.

<i>AMS Fall Eastern Sectional Meeting</i> , Rutgers University	November 2015
<i>Richard Stanley 70th Birthday Conference</i> , MIT	June 2014
<i>Discrete Mathematics Day</i> , Wesleyan University	October 2013
<i>Joint Mathematics Meetings</i> , San Diego, CA	January 2013
<i>MAA MD-DC-VA Sectional meeting</i> , Virginia Military Institute	October 2012
<i>Triangle Lectures in Combinatorics</i> , North Carolina State University	September 2012
<i>Joint Mathematics Meetings</i> , Boston, MA	January 2012
<i>Triangle Lectures in Combinatorics</i> , University of North Carolina	November 2011
<i>Triangle Lectures in Combinatorics</i> , North Carolina State University	April 2011
<i>Triangle Lectures in Combinatorics</i> , Duke University	September 2010

Honors and Scholarships.

Runner-up for the <i>J. Burton Linker Award for Outstanding Teaching</i> , University of North Carolina	Fall 2010, 2011
<i>Future Faculty Fellowship Award</i> , University of North Carolina	August 2010
Nominated for the <i>J. Burton Linker Award for Outstanding Teaching</i> , University of North Carolina	Fall 2009
<i>Degree Honors: Magna Cum Laude</i> , The College of New Jersey	Spring 2006
<i>Wendell B. Secor Award for excellence in Mathematics</i> , The College of New Jersey	Spring 2006
<i>Pi Mu Epsilon</i> chapter president, The College of New Jersey	Fall 2005
<i>Research Experience for Undergraduates Program</i> , Florida State University	Summer 2005
<i>Memorial Scholarship Award for outstanding academic achievement</i> , The College of New Jersey	Spring 2005

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<i>Carl N. Shuster Excellence in Mathematics Scholarship</i> , The College of New Jersey	Spring 2004
<i>Freshman Achievement Award for outstanding achievement as a mathematics major</i> , The College of New Jersey	Spring 2003

Memberships.

<i>Mathematical Association of America</i>	2006-present
<i>American Mathematical Society</i>	2006-present
<i>Phi Kappa Phi Honor Society</i>	2006-present