

GEORGE H. SEELINGER—CV

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RESEARCH INTERESTS

Algebraic combinatorics: symmetric functions, Schubert calculus, Macdonald polynomials

EDUCATION

Doctor of Philosophy, Mathematics

Advisor: Jennifer Morse

University of Virginia, Charlottesville, Virginia

Expected May 2021

Master of Science, Mathematics

Loyola University Chicago, Chicago, Illinois

August 2015

Bachelor of Science, summa cum laude

Major: Mathematics and Computer Science

Interdisciplinary Honors

Loyola University Chicago, Chicago, Illinois

May 2015

PUBLICATIONS

A shuffle theorem for paths under any line

Joint with J. Blasiak, M. Haiman, J. Morse, and A. Pun

· In preparation.

K -theoretic Catalan functions

Joint with Jonah Blasiak and Jennifer Morse

arxiv:2010.01759

· Preprint available on arXiv.org

Canonical idempotents of multiplicity-free families of algebras

Joint with Stephen Doty and Aaron Lauve

arxiv:1606.08900

· L'Enseignement Mathématique, **64** (2018) 23–63.

RESEARCH TALKS

Philadelphia Area Combinatorics and Algebraic Geometry Seminar

University of Pennsylvania

February 6, 2020

· Title: K -theoretic Catalan functions

Garsiafest 90: Future Directions in Algebraic Combinatorics

The Scripps Seaside Forum, San Diego, CA. Lightning Talk

June 18, 2019

· Title: *Raising operators in Schubert calculus*

Mid-Atlantic Algebra, Combinatorics, and Geometry Workshop

Drexel University. Poster

May 4, 2019

· Title: K -theoretic Catalan functions

Sage Days 65

Loyola University Chicago

June 11, 2015

· Title: *Orthogonal idempotents in semisimple Brauer algebras*

EXPOSITORY TALKS

University of Virginia Representation Theory Reading Seminar <i>Seminar talks on various topics; selected titles listed</i>	2016 – 2020
· “ k -Schur functions as Schubert representatives for the affine Grassmannian”	Spring 2020
· “Introduction to the affine Grassmannian”	Spring 2020
· “Chern class computations, flag manifolds, and the Grassmannian”	Spring 2019
· “Schur- Q functions and related combinatorics”	Fall 2018
· “Applications of the Jacobson-Morozov Theorem”	Fall 2017
· “The principal, subregular, and minimal nilpotent orbits”	Fall 2016
University of Virginia Integrable Probability and Combinatorics Seminar	2019
· Multispecies ASEP and nonsymmetric Macdonald polynomials	Fall 2019
· A q -analogue of de Finetti’s theorem	Spring 2019
· Extreme characters of $U(\infty)$	Spring 2019
Undergraduate Math Club <i>University of Virginia</i>	October 2, 2018
· Title: Generating functions: a mathematical link	

TEACHING EXPERIENCE

Instructor of Record	University of Virginia
· MATH 1310: Calculus I (flipped classroom)	<i>Fall 2019</i>
· MATH 1220: Survey of Calculus II	<i>Spring 2018</i>
· MATH 1210: Survey of Calculus I	<i>Fall 2017</i>

HONORS, AWARDS, AND FELLOWSHIPS

- Dorothy M. Batten Jefferson Fellowship, 2016–2021, by the Jefferson Scholars Foundation, UVa
- Phi Beta Kappa Honor Society, inducted May 7, 2015
- Alpha Sigma Nu Honor Society, induced October 14, 2014

SERVICE AND OUTREACH

Department

- **Member and Webmaster, Association for Women in Mathematics** Fall 2018–Present
Help maintain the UVa AWM chapter’s website and developed a blog for other members to post content.
- **Mentor, Directed Reading Program at University of Virginia** Fall, 2018
Guided my undergraduate DRP mentee, Dylan Hunt, through a machine learning textbook and helped him prepare for a presentation at UVa’s Math Club.
- **UVa Math Ambassador** Fall 2017– Spring 2019
UVa’s Mathematics outreach program to Albemarle County and Charlottesville city schools.
- **Panelist, Prospective Graduate Student Open House** Spring 2018

Professional

- **Organizing committee, Mid-Atlantic Algebra, Geometry, and Combinatorics Workshop** Spring, 2020
Cancelled due to Covid-19
- **Contributor, SageMath (Open-Source Computer Algebra Software)** 2013, 2015, 2018

University

- **Jefferson Scholar Selection Weekend Seminar Planner and Leader, Jefferson Scholars Foundation, UVa** Spring 2020
Cancelled due to Covid-19
- **Jefferson Scholar Selection Weekend Seminar Planner, Jefferson Scholars Foundation, UVa** Spring 2019
- **Panelist, Institute for Leadership and Citizenship Graduate School Panel Jefferson Scholars Foundation, UVa** Summer 2018
- **Member, Sujack Teaching Award Committee, Loyola University Chicago** Spring 2015

CONFERENCES ATTENDED

- Hilbert schemes, categorification, and combinatorics, UC Davis June 19–23, 2019
- Garsiafest, Scripps Seaside Forum, San Diego, CA June 17–20, 2019
- Algebra, Geometry and Combinatorics Day, Loyola University Chicago May 25, 2019
- Mid-Atlantic Algebra, Geometry, and Combinatorics (MAAGC) Workshop, Drexel University May 3–4, 2019
- Triangle Lectures in Combinatorics, Wake Forest University March 30, 2019
- Combinatorics and beyond: the many facets of Sergey Fomin's mathematics, University of Michigan November 8–11, 2018
- Workshop on Representation Theory, Combinatorics, and Geometry, University of Virginia October 19–21, 2018
- Women's Intellectual Network Research Symposium, University of Virginia September 15, 2018
- Joint Mathematics Meetings, San Diego, CA January 10–13, 2018
- AMS Fall Central Sectional Meeting, Loyola University Chicago October 2–4, 2015
- Sage Days 65, Loyola University Chicago June 8–12, 2015
- AMS Spring Western Sectional Meeting, University of Colorado Boulder April 13–14, 2013
- Sage-Combinat Days 40, Institute for Mathematics and its Applications at University of Minnesota July 9–13, 2012
- Sage Days 38, Centre de Recherches Mathématique, Montreal May 7–11, 2012

MATHEMATICAL SOFTWARE CONTRIBUTIONS

Contributions to SageMath

<http://sagemath.org>

- Implementation of Young's Raising Operators (ticket #26939) Fall 2018
- Implement Jucys-Murphys elements for Brauer algebra (ticket #18798) Summer 2015
- Major improvement to usability of diagram algebras (tickets #18707,18720,18762) Summer 2015
- Initial implementation of diagram algebras (ticket #14234) Spring 2013

k -Combinat for Sage

https://github.com/MareoRaft/k_combinat_for_sage/

- Maintain and improve code relating to Catalan functions

TECHNICAL STRENGTHS

Computer Languages

Proficiency with: Python, Sage, Java and Scala.
Experience with: Mathematica, R and C/C++.

Languages

Fluent: English
Elementary Proficiency: French, Italian.