GEORGE H. SEELINGER—CV

https://ghseeli.github.io   ✉ ghseeli@umich.edu

RESEARCH INTERESTS

Algebraic combinatorics: symmetric functions, Schubert calculus, Macdonald polynomials

APPOINTMENTS

University of Michigan   Ann Arbor, Michigan
Postdoctoral Assistant Professor and Research Fellow   *August 2021–current*

EDUCATION

Doctor of Philosophy, Mathematics   University of Virginia, Charlottesville, Virginia
Advisor: Jennifer Morse   *May 2021*
Dissertation title: *K-theoretic Catalan functions*

Master of Science, Mathematics   Loyola University Chicago, Chicago, Illinois
                                                                        August 2015

Bachelor of Science, summa cum laude   Loyola University Chicago, Chicago, Illinois
Major: Mathematics and Computer Science   *May 2015*
Interdisciplinary Honors

PUBLICATIONS

Dens, nests, and the Loehr-Warrington Conjecture   arxiv:2112.07070
Joint with J. Blasiak, M. Haiman, J. Morse, and A. Pun

· Submitted (2022). Preprint available on arXiv.org

LLT polynomials in the Schiffmann algebra   arxiv:2112.07063
Joint with J. Blasiak, M. Haiman, J. Morse, and A. Pun

· Submitted (2022). Preprint available on arXiv.org

A proof of the Extended Delta Conjecture   arxiv:2102.08815
Joint with J. Blasiak, M. Haiman, J. Morse, and A. Pun

· Accepted in Forum of Math, Pi (2022). Preprint available on arXiv.org

A shuffle theorem for paths under any line   arxiv:2102.07931
Joint with J. Blasiak, M. Haiman, J. Morse, and A. Pun

· Accepted in Forum of Math, Pi (2022). Preprint available on arXiv.org

K-theoretic Catalan functions   arxiv:2010.01759
Joint with Jonah Blasiak and Jennifer Morse

· Advances in Mathematics, Volume 404, Part B (2022).

Canonical idempotents of multiplicity-free families of algebras   arxiv:1606.08900
Joint with Stephen Doty and Aaron Lauve

· L'Enseignment Mathematique, **64** (2018) 23–63.

RESEARCH TALKS

University of Michigan Combinatorics Seminar February 4, 2022
University of Michigan

· Title: *A raising operator formula for nabla on an LLT polynomial*

OIST Representation Theory Seminar October 25, 2021
Okinawa Institute of Science and Technology

· Title: *Diagonal harmonics and shuffle theorems*

University of Virginia Algebra Seminar April 5, 2021
University of Virginia

· Title: *K-theoretic Catalan functions*

LACIM Seminar March 19, 2021
Université du Québec à Montréal

· Title: *K-theoretic Catalan functions*

Junior Mathematician Research Archive December 1, 2020

· Title: *K-theoretic Catalan functions*

Philadelphia Area Combinatorics and Algebraic Geometry Seminar February 6, 2020
University of Pennsylvania

· Title: *K-theoretic Catalan functions*

Garsiafest 90: Future Directions in Algebraic Combinatorics June 18, 2019
The Scripps Seaside Forum, San Diego, CA. Lightning Talk

· Title: *Raising operators in Schubert calculus*

Mid-Atlantic Algebra, Combinatorics, and Geometry Workshop May 4, 2019
Drexel University. Poster

· Title: *K-theoretic Catalan functions*

Sage Days 65 June 11, 2015
Loyola University Chicago

· Title: *Orthogonal idempotents in semisimple Brauer algebras*

EXPOSITORY TALKS

University of Michigan Algebraic Combinatorics Reading Seminar 2021–2022
Seminar on diagonal harmonics, link homology, and cluster algebras

· Braid Varieties and Positroids Winter 2022
· Torus Knot Link Homology Fall 2021
· The shuffle theorem Fall 2021

University of Virginia Representation Theory Reading Seminar 2016 – 2020
Seminar talks on various topics; selected titles listed

· 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
Seminar talks on various topics

· 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
University of Virginia

· A Window into Symmetric Function Theory   March 2, 2021
· Generating functions: a mathematical link   October 2, 2018

TEACHING EXPERIENCE

Instructor of Record   University of Michigan

· Math 215: Multivariable and Vector Calculus   *Fall 2022*
· Math 417: Matrix Algebra   *Winter 2022*
· Math 115: Calculus I   *Fall 2021*

Instructor of Record   University of Virginia

· MATH 1310: Calculus I (flipped classroom)   *Fall 2019*
· MATH 1220: Survey of Calculus II   *Spring 2018*
· MATH 1210: Survey of Calculus I   *Fall 2017*

HONORS, AWARDS, AND FELLOWSHIPS

· AMS-Simons Travel Grant, 2022–2024
· 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, inducted October 14, 2014

SERVICE AND OUTREACH

Department

· **Co-organizer, Learning Seminar in Algebraic Combinatorics**   Fall 2021–present
· **Member and Webmaster, Association for Women in Mathematics**   Fall 2018–Spring 2021
  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

· **Reviewer for Algebraic Combinatorics**   Spring 2022
· **TA for ICERM Workshop session on Affine Schubert Calculus**   February 3, 2021
· **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

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

CONFERENCES ATTENDED

· Open Problems in Algebraic Combinatorics   May 16–20, 2022
University of Minnesota
· ICERM Geometry and Combinatorics from Root Systems   March 22–26, 2021
· ICERM Introductory Workshop: Combinatorial Algebraic Geometry   February 1–5, 2021
· 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,   May 3–4, 2019
Drexel University
· Triangle Lectures in Combinatorics, Wake Forest University   March 30, 2019
· Combinatorics and beyond: the many facets of Sergey Fomin's mathematics,   November 8–11, 2018
University of Michigan
· Workshop on Representation Theory, Combinatorics, and Geometry,   October 19–21, 2018
University of Virginia
· 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,   July 9–13, 2012
Institute for Mathematics and its Applications at University of Minnesota
· Sage Days 38, Centre de Recherches Mathématique, Montreal   May 7–11, 2012

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