CONTACT INFORMATION	University of North Texas, Department of Mathematics, Denton, Texas, USA 76203

E-mail: sean.griffin@unt.edu
Website: https://sites.google.com/view/sgriffin/home

RESEARCH INTERESTS

Algebraic combinatorics, representation theory, and algebraic geometry: symmetric functions, affine Springer fibers, Macdonald polynomials, coinvariant rings, affine flag varieties, Hilbert schemes, Schubert varieties, Hessenberg varieties, moduli spaces of curves, and hyperplane arrangements.

EDUCATION

University of Washington, Seattle, WA   09/2014– 08/2020
Ph.D., Mathematics
Thesis: *Combinatorics and Representation Theory of Rank Varieties, Springer Fibers, and Hyperplane Arrangements*
Advisor: Sara Billey.

Dartmouth College, Hanover, NH   09/2010–06/2014
-Spent Fall 2011 semester at Budapest Semesters in Math
B.A., Mathematics
Thesis: *G-edge colored planar rook algebra.*
Advisor: Rosa Orellana.

EMPLOYMENT

University of North Texas,   09/2025–
Denton, TX, USA
Assistant Professor

Universität Wien,   07/2024–07/2025
Vienna, Austria
Postdoctoral Researcher
PI: Anton Mellit

University of California, Davis,   07/2021–06/2024
Davis, CA, USA
Krener Assistant Professor
Mentor: Erik Carlsson

Institute for Computational and Experimental Mathematics (ICERM),   02/2021–05/2021
Brown University
Providence, RI, USA
Postdoctoral Fellow, Combinatorial Algebraic Geometry Semester Program
Mentor: Leonardo Mihalcea

University of California, San Diego,   09/2020–12/2020
La Jolla, CA, USA
Visiting Lecturer, Department of Mathematics

AWARDS & HONORS

Best Student Paper,   2020
The 32nd International Conference on Formal Power Series and Algebraic Combinatorics.

Thomas and Grace Tseng Fellowship, in recognition of research excellence,   2019
Department of Mathematics, University of Washington.

Achievement Rewards for College Scientists (ARCS) Fellowship,   2014–2017
University of Washington

High honors in Mathematics, Dartmouth College   2014

The Hazleton Mirkil Prize for Best Senior Thesis Presentation,   2014
Dartmouth College

Paul K. Richter and Evalyn E. Cook Richter Memorial Fund Grant,   2013
Dartmouth College

Neukom Institute Scholar, Dartmouth College   2013

PUBLICATIONS   *A combinatorial skewing formula for the Rise Delta Theorem*
Joint with M. Gillespie and E. Gorsky,
Comb. Theory, 5 (3) (2025) Paper No. 4.

Cocharge and skewing formulas for Δ-Springer modules and the Delta Conjecture
Joint with M. Gillespie,
IMRN, 14 (2024) 10895–10917.

Δ-Springer varieties and Hall-Littlewood polynomials,
Forum Math, Sigma, 12 (2024) e19.

Springer fibers and the Delta Conjecture at $t = 0$,
Joint with J. Levinson and A. Woo.
Adv. Math., 439 (2024), 109491.

Degenerations and multiplicity-free formulas for products of ψ and ω classes on $\overline{M}_{0,n}$,
Joint with M. Gillespie and J. Levinson.
Math. Zeitschrift, 304 (2023), Paper No. 56, 37 pages.

Lazy tournaments and multidegrees of a projective embedding of $\overline{M}_{0,n}$,
Joint with M. Gillespie and J. Levinson.
Comb. Theory, 3 (2023), Paper No. 3, 26 pages.

Ordered set partitions, Garsia-Procesi modules, and rank varieties,
Trans. Amer. Math. Soc. 374 (2021), pp. 2609-2660.

Existence and hardness of conveyor belts,
Joint with M. Baird, S.C. Billey, E.D. Demaine, M.L. Demaine, D. Eppstein, S. Fekete,
G. Gordon, J.S.B. Mitchell, J.P. Swanson.
Electron. J. Combin., 27(4), (2020), 21 pages.

Labeled binary trees, subarrangements of the Catalan arrangements, and Schur positivity,
Joint with I.M. Gessel and V. Tewari.
Adv. Math., 356 (2019) 106814.

PREPRINTS   *On Macdonald expansions of q-chromatic symmetric functions and the Stanley–Stembridge conjecture*
Joint with A. Mellit, M. Romero, K. Weigl, and J. J. Wen,
arXiv:2504.06936 (2025), 13 pages. (submitted)

A geometric interpretation of the Delta Conjecture
Joint with M. Gillespie and E. Gorsky,
arXiv:2501.00197 (2024), 39 pages. (submitted)

Irreducible components of the two-column Δ-Springer fibers
Joint with J. Connor and K. Purohit,
arXiv:2411.17222 (2024), 19 pages. (submitted)

A proof of a conjecture of Monin and Rana on equations defining $\overline{M}_{0,n}$,
Joint with M. Gillespie and J. Levinson,
arXiv:2209.06688 (2022), 24 pages. (submitted)

Orbit harmonics for the union of two orbits,
arXiv:2204.04566 (2022), 5 pages.

EXTENDED ABSTRACTS	*A geometric interpretation and skewing formula for the Delta Theorem*, Joint with M. Gillespie and E. Gorsky, Séminaire Lotharingien de Combinatoire, Proceedings of the 37th International Conference on Formal Power Series and Algebraic Combinatorics 79 (2025), 12 pp. Accepted as a poster.

A cocharge formula for the Δ-Springer modules,
Joint with M. Gillespie,
Séminaire Lotharingien de Combinatoire, Proceedings of the 35th International Conference on Formal Power Series and Algebraic Combinatorics 89B.65 (2023), 12 pp.
Accepted as a poster.

Tournaments and slide rules for products of ψ and ω classes on $\overline{M}_{0,n}$,
Joint with M. Gillespie and J. Levinson,
Séminaire Lotharingien de Combinatoire, Proceedings of the 34th International Conference on Formal Power Series and Algebraic Combinatorics, 86B.79 (2022), 12 pp.
Accepted as a talk.

Springer fibers and the Delta Conjecture at $t = 0$,
Joint with J. Levinson and A. Woo,
Séminaire Lotharingien de Combinatoire, Proceedings of the 33nd International Conference on Formal Power Series and Algebraic Combinatorics, 85B.76 (2021), 12 pp.
Accepted as a talk.

Ordered set partitions, Tanisaki ideals, and rank varieties,
Séminaire Lotharingien de Combinatoire, Proceedings of the 32nd International Conference on Formal Power Series and Algebraic Combinatorics, 84B.90 (2020), 12 pp.
Accepted as a talk.

Schur positivity and labeled binary trees,
Joint with I.M. Gessel and V. Tewari,
Séminaire Lotharingien de Combinatoire, Proceedings of the 29th International Conference on Formal Power Series and Algebraic Combinatorics, 78B (2017), Article #73, 12pp.
Accepted as a poster.

CONFERENCE TALKS	**AMS Special Session, Emerging interactions between representation theory, geometry, and combinatorics** (anticipated) Tulane University, New Orleans, LA	10/2025
	AMS Special Session, Interactions between geometry, combinatorics, and flag varieties (anticipated) Saint Louis University, St. Louis, MO	10/2025
	Alpine Algebraic Geometry Workshop Universitätszentrum Obergurgl, Obergurgl, Austria.	09/2024
	AMS Special Session, Research in Combinatorics by Early Career Mathematicians San Francisco State University, San Francisco, CA.	04/2024
	Western Algebraic Geometry Symposium (WAGS) 2024, UC Davis, Davis, CA.	04/2024
	Geometry and Combinatorics of Lie Theory Special Session, AMS sectional meeting, Athens, GA.	03/2023
	The 34th International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC), Indian Institute of Science, Bangalore, India	06/2022

	The 33rd International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC), Bar-Ilan University, Ramat-Gan, Israel (hybrid)	01/2022
	The 32nd International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC), Online due to pandemic.	07/2020
	Emerging Connections in Symmetric Functions mini-symposium, 2020 SIAM Conference on Discrete Mathematics, Portland, OR (cancelled due to pandemic)	06/2020
	Joint Mathematics Meetings (JMM) 2020, AMS Contributed Paper Session on Combinatorics and Graph Theory, IV, Colorado Convention Center, Denver, CO.	01/2020
	Garsiafest: Future Directions in Algebraic Combinatorics, Scripps Institute, La Jolla, CA.	06/2019
	AMS Fall Western Sectional Meeting, Special Session on Combinatorial Representation Theory, University of California at Riverside, Riverside, CA.	11/2017
SEMINAR TALKS	**Important Papers in Algebraic Combinatorics (IPAC)**, online.	06/2025
	Combinatorics and Representation Theory Seminar, KIAS, Seoul.	04/2025
	Algebraic Geometry Seminar (online), University of Vienna, Vienna, Austria.	12/2024
	Combinatorics, Lie Theory, and Topology Seminar, Università di Pisa, Pisa, Italy.	12/2024
	Combinatorics Seminar, Washington University in St. Louis, St. Louis, MO.	11/2023
	Combinatorics Seminar, UC Berkeley, Berkeley, CA	10/2023
	Combinatorics Seminar, University of Minnesota, Twin Cities, Minneapolis, MN.	3/2023
	Student Combinatorics Seminar, University of Minnesota, Twin Cities, Minneapolis, MN.	3/2023
	Algebraic Combinatorics Seminar (online), University of Waterloo, Waterloo, ON, Canada.	1/2022
	Combinatorics Seminar (Online), Washington University in St. Louis, St. Louis, MO.	11/2021
	Combinatorics Seminar, UC Berkeley, Berkeley, CA	10/2021
	Rocky Mountain Algebraic Combinatorics Seminar, Colorado State University, Fort Collins, CO	08/2021
	FRAGMENT Seminar, Colorado State University, Fort Collins, CO	08/2021
	Algebraic Geometry Seminar (online), UC Davis, Davis, CA	05/2020
	Algebra and Representation Theory Seminar, University of Rome Tor Vergata, Rome, Italy.	11/2019
	Combinatorics Seminar, Washington University in St. Louis, St. Louis, MO.	10/2019
	Combinatorics and Number Theory Seminar, Portland State University, Portland, OR.	10/2019
	Combinatorics Seminar, UC San Diego, La Jolla, CA.	05/2019
	CAGE Seminar, University of Pennsylvania, Philadelphia, PA.	01/2019
	Combinatorics Seminar, University of Washington, Seattle, WA.	05/2017
	Discrete Math Seminar, Simon Fraser University, Burnaby, British Columbia.	02/2017

POSTERS	**Western Algebraic Geometry Symposium (WAGS) 2023**, Washington University in St. Louis.	11/2023

Partial resolutions of the nilpotent cone and the Delta Theorem

Algebra, Geometry and Combinatorics Day (AlGeCom), University of Illinois at Urbana-Champaign.   03/2020

Ordered set partitions, Garsia-Procesi modules, and rank varieties

The 29th International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC), Queen Mary University of London, London, UK.   07/2017

Schur positivity and labeled binary trees

TEACHING

University of North Texas

Math 4520/5400–Introduction to Functions of a Complex Variable
    Autumn 25.

Krener Assistant Professor at University of California, San Diego

Independent reading course–Higgs bundles, Hitchin systems, and affine Springer fibers
    Spring 24.

Math 21D–Calculus D
    Spring 24.

Math 21C–Calculus C
    Autumn 23.

Independent reading course–Soergel bimodules
    Winter 23.

Math 150A–Modern Algebra
    Autumn 22.

Independent reading course–Algebraic Geometry and Gröbner bases
    Autumn 22.

Independent reading course–Symmetric group representations
    Spring 22.

Math 108–Introduction to Abstract Math
    Autumn 21, Winter 22, Autumn 23

Math 145–Combinatorics
    Autumn 21, Winter 22, Winter 23, Spring 24.

Visiting Lecturer at University of California, San Diego

Math 10A–Calculus I.
    Autumn 20.

Math 103A–Modern Algebra
    Autumn 20.

Predoctoral Instructor at University of Washington

Math 307–Introduction to Differential Equations.
    Summer 19, Summer 17, Spring 17, Winter 17.

Math 308–Matrix Algebra with Applications.
    Winter 19, Summer 20.

Math 381–Discrete Mathematical Modeling.
  Summer 18.

Instructor in UW Engineering Abroad Program (Rome, Italy)

Introduction to Differential Equations
  Autumn 19

Teaching Assistant at University of Washington

Math 120–Precalculus.
  Winter 16.

Math 124–Calculus with Analytic Geometry I.
  Autumn 17 (as a TA mentor), Spring 16, Summer 15, Spring 15, Winter 15, Autumn 14.

Math 126–Calculus with Analytic Geometry III.
  Autumn 16, Autumn 15.

MENTORING	**Undergraduate research projects**, *Faculty mentor.*	
	Topic: Irreducible components of the Δ-Springer varieties Joshua Connor and Kavish Purohit	06/2023–12/2024
	Topic: The biCyclic Sieving Phenomenon (senior thesis) Wantong Zhu	01/2023–06/2024
	Topic: Generalized permutation pattern avoidance in labeled trees Jiaxin Chen, Jiaxin Lu, Wantong Zhu	06/2022–12/2022
	Topic: Finding explicit Veronese curves with given tangency conditions Sagar Roy	06/2022–09/2022
	Washington Experimental Math Lab (WXML), *Graduate Student Mentor.*	03/2018–06/2018
	UW Math Department, *Teaching Assistant Mentor.*	09/2017–12/2017
	AWM Student Chapter Mentoring Program, *Mentor.*	09/2017–06/2018
	University of Washington Math REU Program, *Graduate Mentor.*	06/2017–08/2017
ORGANIZING	**BIRS 5 day workshop, Banff, Canada**, *Co-Organizer.* Combinatorics and Geometry of Moduli Spaces of Curves	07/2024-08/2024
	FPSAC 2023, Davis, CA, *Organizing Committee member.*	06/2022–07/2023
	Learning Seminar on Soergel Bimodules, *Organizer.*	04/2023–06/2023
	AMS Spring 2023 Sectional Meeting Special Session, *Co-Organizer* Macdonald Theory at the Intersection of Combinatorics, Algebra and Geometry	03/2023
	Learning Seminar on Perverse Sheaves, *Organizer.*	06/2022–12/2022
	UC Davis Algebra and Discrete Math Seminar, *Organizer.*	09/2021–12/2021
	FPSAC 2020, Online, *Organizing Committee member.*	05/2020–07/2020
	Student Seminar on D-modules and Perverse Sheaves, *Organizer.*	01/2020–07/2020
	UW Combinatorics Pre-Seminar, *Co-organizer.*	09/2018–08/2019
SERVICE & OUTREACH		

UC Davis Math Day, University of California at Davis, Davis, CA., *presenter.*   4/2022

UW Math Department Graduate Program Committee, *Graduate Member.*   09/2018–06/2019

FPSAC 2018, Dartmouth College, *Volunteer.*   07/2018

UW Math Department, *Graduate Student Representative.*   06/2018–06/2019

University of Washington Math Day for High School Students,   03/2017–03/2019
Presenter - Mathematical Card Tricks.

Association for Women in Math, UW Student Chapter, *Elected Treasurer.*   06/2016–06/2018

Refereeing   Annals of Combinatorics
Electronic Journal of Combinatorics
Forum of Mathematics, Sigma
International Mathematics Research Notices
Mathematische Zeitschrift
Proceedings of FPSAC 2019
Selecta Mathematica
Transactions of the American Mathematical Society

Citizenship   USA

Languages   English—Native

Italian—Intermediate/Advanced (C1)

German—Beginner (A2)