

CONTACT INFORMATION	University of North Texas, Department of Mathematics, Denton, Texas, USA 76203	<i>E-mail:</i> sean.griffin@unt.edu <i>Website:</i> <a href="https://sites.google.com/view/sgriffin/home">https://sites.google.com/view/sgriffin/home</a>
RESEARCH INTERESTS	Algebraic combinatorics, representation theory, and algebraic geometry: symmetric functions, affine Springer fibers, affine Grassmannian, Macdonald polynomials, coinvariant rings, Hilbert schemes, Schubert varieties, Hessenberg varieties, moduli spaces of curves, and hyperplane arrangements.	
EDUCATION	<b>University of Washington</b> , Seattle, WA Ph.D., Mathematics Thesis: <i>Combinatorics and Representation Theory of Rank Varieties, Springer Fibers, and Hyperplane Arrangements</i> Advisor: Sara Billey.	09/2014– 08/2020
	<b>Dartmouth College</b> , Hanover, NH -Spent Fall 2011 semester at Budapest Semesters in Math B.A., Mathematics Thesis: <i>G-edge colored planar rook algebra</i> . Advisor: Rosa Orellana.	09/2010–06/2014
EMPLOYMENT	<b>University of North Texas</b> , Denton, TX, USA Assistant Professor	09/2025–
	<b>Universität Wien</b> , Vienna, Austria Postdoctoral Researcher PI: Anton Mellit	07/2024–07/2025
	<b>University of California, Davis</b> , Davis, CA, USA Krener Assistant Professor Mentor: Erik Carlsson	07/2021–06/2024
	<b>Institute for Computational and Experimental Mathematics (ICERM)</b> , Brown University Providence, RI, USA Postdoctoral Fellow, Combinatorial Algebraic Geometry Semester Program Mentor: Leonardo Mihalcea	02/2021–05/2021
	<b>University of California, San Diego</b> , La Jolla, CA, USA Visiting Lecturer, Department of Mathematics	09/2020–12/2020
AWARDS & HONORS	<b>Best Student Paper</b> , The 32nd International Conference on Formal Power Series and Algebraic Combinatorics.	2020
	<b>Thomas and Grace Tseng Fellowship</b> , in recognition of research excellence, Department of Mathematics, University of Washington.	2019
	<b>Achievement Rewards for College Scientists (ARCS) Fellowship</b> , University of Washington	2014–2017
	<b>High honors in Mathematics</b> , Dartmouth College	2014

<b>The Hazleton Mirkil Prize for Best Senior Thesis Presentation,</b> Dartmouth College	2014
<b>Paul K. Richter and Evalyn E. Cook Richter Memorial Fund Grant,</b> Dartmouth College	2013
<b>Neukom Institute Scholar,</b> 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  $\Delta$ -Springer modules and the Delta Conjecture*  
Joint with M. Gillespie,  
IMRN, 14 (2024) 10895–10917.

*$\Delta$ -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  $\psi$  and  $\omega$  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  $\Delta$ -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  $\Delta$ -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  $\psi$  and  $\omega$  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 33rd 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** 10/2025  
Tulane University, New Orleans, LA

**AMS Special Session, Interactions between geometry, combinatorics,  
and flag varieties** 10/2025  
Saint Louis University, St. Louis, MO

**Alpine Algebraic Geometry Workshop** 09/2024  
Universitätszentrum Obergurgl, Obergurgl, Austria.

**AMS Special Session, Research in Combinatorics by Early Career Mathematicians** 04/2024  
San Francisco State University, San Francisco, CA.

**Western Algebraic Geometry Symposium (WAGS) 2024,** 04/2024  
UC Davis, Davis, CA.

**Geometry and Combinatorics of Lie Theory Special Session,** 03/2023  
AMS sectional meeting, Athens, GA.

**The 34th International Conference on Formal Power Series and  
Algebraic Combinatorics (FPSAC),** 06/2022  
Indian Institute of Science, Bangalore, India

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

	<b>Combinatorics Seminar</b> , UC San Diego, La Jolla, CA.	05/2019
	<b>CAGE Seminar</b> , University of Pennsylvania, Philadelphia, PA.	01/2019
	<b>Combinatorics Seminar</b> , University of Washington, Seattle, WA.	05/2017
	<b>Discrete Math Seminar</b> , Simon Fraser University, Burnaby, British Columbia.	02/2017
POSTERS	<b>Western Algebraic Geometry Symposium (WAGS) 2023</b> , Washington University in St. Louis. <i>Partial resolutions of the nilpotent cone and the Delta Theorem</i>	11/2023
	<b>Algebra, Geometry and Combinatorics Day (AlGeCom)</b> , University of Illinois at Urbana-Champaign. <i>Ordered set partitions, Garsia-Procesi modules, and rank varieties</i>	03/2020
	<b>The 29th International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC)</b> , Queen Mary University of London, London, UK. <i>Schur positivity and labeled binary trees</i>	07/2017
TEACHING	<b>University of North Texas</b>	
	<i>Math 2000</i> –Discrete Math Spring 26.	
	<i>Math 3740</i> –Vector Calculus Spring 26.	
	<i>Math 4520/5400</i> –Introduction to Functions of a Complex Variable Autumn 25.	
	<b>Krener Assistant Professor at University of California, San Diego</b>	
	<i>Independent reading course</i> –Higgs bundles, Hitchin systems, and affine Springer fibers Spring 24.	
	<i>Math 21D</i> –Calculus D Spring 24.	
	<i>Math 21C</i> –Calculus C Autumn 23.	
	<i>Independent reading course</i> –Soergel bimodules Winter 23.	
	<i>Math 150A</i> –Modern Algebra Autumn 22.	
	<i>Independent reading course</i> –Algebraic Geometry and Gröbner bases Autumn 22.	
	<i>Independent reading course</i> –Symmetric group representations Spring 22.	
	<i>Math 108</i> –Introduction to Abstract Math Autumn 21, Winter 22, Autumn 23	
	<i>Math 145</i> –Combinatorics Autumn 21, Winter 22, Winter 23, Spring 24.	
	<b>Visiting Lecturer at University of California, San Diego</b>	

*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

**Student research projects, Faculty mentor.**

Topic: Irreducible components of the  $\Delta$ -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.** 07/2024–08/2024  
Combinatorics and Geometry of Moduli Spaces of Curves

**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** 03/2023  
 Macdonald Theory at the Intersection of Combinatorics, Algebra and Geometry

**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, Presenter - Mathematical Card Tricks.** 03/2017–03/2019

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

REFEREEING

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

PROFESSIONAL  
 MEMBERSHIP

American Mathematical Society

CITIZENSHIP

USA

LANGUAGES

English—Native

Italian—Intermediate/Advanced (C1)

German—Beginner (A2)