





# Ryan Shifler, Ph.D.

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## Education

- 2013 – 2017  **Ph.D., Virginia Tech** in Mathematics.  
Thesis title: *Equivariant quantum cohomology of the odd symplectic Grassmannian.*
- 2011 – 2013  **M.S., Virginia Tech** in Mathematics.
- 2009 – 2011  **B.S., Salisbury University** in Mathematics.
- 2007 – 2009  **A.A. and A.S., Hagerstown Community College** in Mathematics and Arts and Sciences.












## Employment History

- 2022 – ...  **Associate Dean**, Henson School of Science and Technology, Salisbury University.
- 2023 – ...  **Associate Professor (with tenure)**, Department of Mathematical Sciences, Salisbury University.
- 2017 – 2023  **Assistant Professor**, Department of Mathematical Sciences, Salisbury University.
- 2011 – 2017  **Graduate Teaching Assistant**, Department of Mathematics, Virginia Tech.
- 2011 & 2014  **Adjunct Faculty**, Developmental Mathematics, Hagerstown Community College.

## Academic Administrative Experience

### Associate Dean of the Henson School of Science and Technology

2022 – ...

-  Collaborate with the Dean to implement and oversee programs of study housed in the Dean's Office.
-  Director of the Integrated Science Program.
-  Chair of the Urban and Regional Planning Program.
-  Participate in facilitating and overseeing a novel collaborative project with Wor-Wic Community College to implement a program of study in Forensic Science.
-  Complete data analytics on retention, time to degree progression, and placement exams to aid the dean in developing policies, procedures, and strategies that align with college-wide initiatives and priorities.
-  Coordinator of outreach activities across programs in the school of science.
-  Lead a grant writing team across academic departments to pursue faculty driven internal and external grant proposals.
-  Editor of the biannual Henson Newsletter.
-  Seminar organizer for the Henson School.
-  Oversight of the STEM Summer Enrichment Academy for secondary education students.
-  Ex officio member of the Henson Curriculum Committee.

### Mathematics and Computer Science Tutor Coordinator

Fall 2021 – Spring 2022 for the Department of Mathematical Sciences

Fall 2021 – Spring 2022 for the Department of Computer Science

Spring 2018 – Spring 2019 for the Department of Mathematics and Computer Science

## Academic Administrative Experience (continued)

- Facilitated application process and hiring with Department Chairs.
- Worked with student contracts, met deadlines for HR, and was cognizant of administrative factors.
- Broadened student recruitment to all science majors.
- Made effort to recruit students from diverse backgrounds.
- Introduced electronic sign-in system to track student attendance.

### Calculus Readiness Director

Spring 2018 – Spring 2019

- Calculus Readiness came about as my colleagues in the department noticed a significant decline in student's mastery of prerequisite material necessary to succeed in Calculus 1. The main idea was to offer students the opportunity to learn the prerequisite material in tandem with the material in Calculus.
- The students would attend a Calculus Readiness Session in the Math Emporium to learn about the prerequisite material right before that material was covered in Calculus 1.
- Developing the program required me to lead three other colleagues in the development of the Calculus Readiness Session materials. The material needed to follow in a logical order along with being introduced at the appropriate time to coincide with the Calculus 1 course. Finding a balance between these two goals took careful consideration.
- I organized Calculus Readiness Leaders to run the Calculus Readiness Sessions and created infrastructure to organize students across six sections of Calculus 1 (about 150 students) into Calculus Readiness Sessions.

## External Leadership Experience

### University System of Maryland (USM)

- Fall 2022 – . . .
- USM-Maryland Association of Community Colleges (MACC) Math Affinity Group, Co-Chair.

The group recommends and considers policy questions regarding admissions standards, the transfer with success act, the blueprint legislation, etc. Part of the work is having faculty across the State of Maryland agree on SLO's for mathematics courses to improve the experience for students transferring from a community college to a four-year IHE. In particular, I chaired a subcommittee on creating SLO's for differential equations across the state of Maryland.

- Fall 2023 – . . .
- USM High School Math Course Evaluation Group, member.

USM admission standards require 4 years of high school mathematics. This requires a team of math faculty across USM institutions to review whether courses for each LEA meet USM math admissions requirements.

### MD-DC-VA Section of the Mathematical Association of America (MAA)

- Fall 2020 – Fall 2022
- Program Chair

The main tasks of the Program Chair, an elected position, include finding 2-3 invited speakers, finding a workshop leader, and creating the schedule for the contributed talks at the Section Meetings. Section Meetings are held twice per year with one in the Fall and the other in the Spring. The impact of COVID pushed the Fall 2020 Section Meeting online and I was a key player in making sure the meeting was a success. There was no precedence for how to hold a virtual Section Meeting and I, along with the Section Chair, devised a plan that worked well and the attendees were able to enjoy the Section Meeting. The Spring 2021 Section Meeting also moved online and we kept the same plan as Fall 2020 and we were able to have an enjoyable Section Meeting.

- Spring 2020 and Fall 2021
- Salisbury University Representative/Site Coordinator for the MD-DC-VA Section Meeting

## External Leadership Experience (continued)

Salisbury University had planned to host the Spring 2020 Section Meeting and I was the Site Coordinator. We anticipated about 120 attendees. I had worked to make sure an appropriate number of hotel rooms were booked, classrooms were reserved, we had signage made, we had catering planned, and the the section Webmaster had the appropriate information to post on their website as mathematicians planned their trip to Salisbury University. Then COVID hit and the section meeting was cancelled. Salisbury University later hosted the Fall 2021 Section Meeting in-person and I was the Program Chair and the Site Coordinator. 72 people registered for the meeting. The COVID protocols were fluid and any one of the plans could change at anytime. There are usually a few dozen in person MAA events and in 2021 there were two or three with Salisbury University being one of them.

## Faculty Service

Fall 2023 – . . .	■ Tenure Committee, member.
Fall 2022 – . . .	■ Faculty Advisor for the Salisbury University Club Cross Country and Track and Field Team.
Fall 2021 – Spring 2025	■ Athletics Committee, member (3 terms).
Fall 2021 – Spring 2024	■ Faculty Development Committee, member.
Fall 2022 – Spring 2023	■ Search Committee for Statistics, member.
Spring 2021 – Spring 2022	■ Department Colloquium Organizer.

## Publications

### Mathematical Research

**Bold font indicates undergraduate coauthors.**

- *On the quantum parameter in the quantum cohomology of a family of odd symplectic partial flag varieties*, submitted. (with **C. Bean** and **C. Shank**.)
- *Minimum quantum degrees with Maya diagrams*, submitted.
- *Positivity determines the quantum cohomology of the odd symplectic Grassmannian of lines*, Communications in Algebra, to appear.
- *Curve neighborhoods and combinatorial property  $O$  for a family of odd symplectic partial flag manifolds*, Rocky Mountain Journal of Mathematics, to appear. (with **C. Bean** and **B. Cruikshank**.)
- *Curve neighborhoods of Schubert varieties in the odd symplectic Grassmannian*, Transformation Groups 29, 361-408, 2024. (with C. Pech.)
- *On the spectral properties of the quantum cohomology of the odd quadrics*, Involve, a Journal of Mathematics 16 (1), 27-34, 2023. (with **S. Warman**.)
- *Minimum quantum degrees for isotropic Grassmannians of types  $B$  and  $C$* , Annals of Combinatorics 26 (2), 453-480, 2022. (with C. Withrow.)
- *On Frobenius-Perron dimension*, Proceedings of the American Mathematical Society 150 (12), 5035-5045, 2022. (with C. Li, M. Yang, and **C. Zhang**.)
- *Galkin's lower bound conjecture holds for the Grassmannian*, Communications in Algebra 48 (2), 857-865, 2020. (with **L. Evans**, L. Schneider, **L. Short**, and **S. Warman**.)
- *Conjecture  $O$  holds for some horospherical varieties of Picard rank 1*, Involve, a Journal of Mathematics 13 (4), 551-558, 2020. (with **L. Bones**, **G. Fowler**, and L. Schneider.)
- *Conjecture  $O$  holds for the odd symplectic Grassmannian*, Bulletin of the London Mathematical Society 51 (4), 705-714, 2019. (with C. Li, and L. Mihalcea.)

## Publications (continued)

- *Equivariant quantum cohomology of the odd symplectic Grassmannian*, *Mathematische Zeitschrift* 291 (3-4), 1569-1603, 2019. (with L. Mihalcea.)
- *Equivariant quantum cohomology of the odd symplectic Grassmannian*, Ph.D. Dissertation, Virginia Polytechnic Institute and State University Library, 2017.
- *Universal Groebner bases of circulant polynomial systems*, *Proceedings of The National Conference On Undergraduate Research (NCUR)*, 2011.

## Expository

- *Faculty writing groups for mathematicians*, *MAA Focus* (October/November 2018). (with J. Anderson, J. Austin, Y. Jing, L. Schneider, and S. Wesolowski.)

## Student Awards

- Departmental Honors Advisor     ▪ **Garrett Fowler** (2019), **Stephanie Warman** (2021), and **Laurie Short** (2021).
- MAA Sectional Presentation     ▪ **Garrett Fowler** presented *Conjecture O holds for some horospherical varieties of Picard rank 1* at the contributed paper session of the Spring 2019 MD-DC-VA meeting of the MAA. **Won the second place award for Best Paper.**
- JMM Poster Session Award     ▪ **Lela Bones** and **Garrett Fowler** presented the poster titled *Conjecture O holds for some horospherical varieties of Picard rank 1* at the undergraduate poster session of the JMM in Baltimore, MD. They received the **Outstanding Poster Award.**

## Professional Awards and Recognition

### Funding




- \$1,000     ▪ Received the Henson Travel Award to attend The Joint Mathematics Meeting held in San Francisco, CA held on January 3-6, 2024.
- \$4,000     ▪ Received through the Henson Summer Research Program at Salisbury University for Summer 2023.
- \$12,000    ▪ Received, with others across units, through the Building Research Enhancement Grants Program at Salisbury University in a collaborative project across units to support transfer students in the school of science for 2024.
- \$4,000     ▪ Received through the Henson Summer Research Program at Salisbury University for Summer 2022.
- \$10,645    ▪ Received through the Building Research Enhancement Grants Program at Salisbury University for 2020.
- \$1,000     ▪ Received the Henson Travel Award to attend The Joint Mathematics Meeting held in Denver, CO held on January 15-18, 2020.
- \$1,000     ▪ Received the Henson Travel Award to attend The Joint Mathematics Meeting held in Baltimore, MD held on January 16-19, 2019.
- \$1,000     ▪ Received the Henson Travel Award to attend The Joint Mathematics Meeting held in San Diego, CA held on January 10-13, 2018.
- \$1,000     ▪ Awarded grant (Declined) from the SU foundation to attend the 2018 MAA Math Fest in Denver, CO.
- \$450        ▪ Awarded to attend The Ohio State Workshop on Schubert Calculus held on May 9-12, 2018.

## Professional Awards and Recognition (continued)

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\$36,095     **Total amount awarded.**






### General

-  Nominated for SUSRC's Outstanding Research Mentor Award in 2018 and 2019.
-  Section NExT Fellow for the MD-DC-VA Section of the MAA.
-  Nominated for the University System of Maryland Board of Regents' Faculty Award for Mentoring in 2023.



## Presentations

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### Invited Talks

-  *Curve neighborhoods of Schubert Varieties of the odd symplectic Grassmannian*, Eastern Fall Sectional Meeting of the American Mathematical Society, UMass Amherst, October 1-2, 2022.
-  *Curve neighborhoods of Schubert Varieties of the odd symplectic Grassmannian*, Virginia Tech, Algebra Seminar, January 28, 2022.
-  *Curve neighborhoods of Schubert Varieties of the odd symplectic Grassmannian*, University of Poitiers, Groups, Algebra, and Geometry Seminar, November 18, 2021.
-  *Minimum quantum degrees for isotropic Grassmannians of types B and C*, (Cancelled) Virginia Tech, Algebra Seminar, April 3, 2020.
-  *Equivariant quantum cohomology of the odd symplectic Grassmannian*, Rutgers University, Algebra Seminar, February 22, 2017.

### Invited Talks at Salisbury University

-  *An introduction to (quantum) Schubert calculus*, Salisbury University Math and Computer Science Club Meeting, October 20, 2020.
-  *An invitation to algebraic geometry*, Salisbury University Math and Computer Science Department Colloquium, September 26, 2019.

### Contributed Presentations

-  *Quantum cohomology determined with negative structure constants present* at The Joint Mathematics Meetings. San Francisco, CA January 3-6, 2024.
-  *(DEI)<sup>2</sup>: Diophantine equations involving diversity, equity, and inclusion* at The Mathematical Association of America Maryland-District of Columbia-Virginia Section Meeting. Stevenson University; Owings Mills, MD. October 13-14, 2023.
-  *A proposed generalization of a full rim hook removal on partitions* at The Mathematical Association of America Maryland-District of Columbia-Virginia Section Meeting. Montgomery College; Germantown, MD. April 22-23, 2022.
-  *Calculus readiness* at The Mathematical Association of America Maryland-District of Columbia-Virginia Section Meeting. Hood College and Frederick Community College; Frederick, MD, April 12-13, 2019.
-  *Calculus readiness* at the Joint Mathematics meetings. Baltimore, MD January 16-19, 2019.
-  *Calculus readiness* at The Mathematical Association of America Maryland-District of Columbia-Virginia Section Meeting. Mary Washington University; Fredericksburg, VA. November 2-3, 2018.
-  *Universal Groebner bases of circulant polynomial systems* at The Joint Mathematics Meetings. San Diego, CA January 10-13, 2018.

## Presentations (continued)

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- *Curve neighborhoods of the odd symplectic Grassmannian* at The Mathematical Association of America Maryland-District of Columbia-Virginia Section Meeting. Christopher Newport University; Newport News, VA. November 17-18, 2017.
- *Schubert calculus* at The Mathematical Association of America Maryland-District of Columbia-Virginia Section Meeting. Johns Hopkins University; Baltimore, Maryland. November 5, 2016.
- Seminar talk of *Quantum cohomology of the odd symplectic Grassmannian* at the Algebra Seminar. Virginia Tech; Blacksburg, Virginia. April 29, 2016.
- Show and tell presentation of *Quantum cohomology of the odd symplectic Grassmannian* at the Algebra Seminar. Virginia Tech; Blacksburg, Virginia. April 17, 2015.
- Master thesis defense of *Computation algebraic geometry applied to invariant theory*. Virginia Tech; Blacksburg, Virginia. April 30, 2013.
- *Universal Groebner bases of circulant polynomial systems* at The Salisbury University Student Research Conference. Salisbury University; Salisbury, Maryland. April 29, 2011.
- *Universal Groebner bases of circulant polynomial systems* at The Mathematical Association of America Maryland-District of Columbia-Virginia Section Undergraduate Research Conference. Received second place for the student paper awards. Randolph-Macon College; Ashland, Virginia. April 15-16, 2011.
- Poster presentation *Universal Groebner bases of circulant polynomial systems* at the National Conference of Undergraduate Research (NCUR). Ithaca College; Ithaca, New York. March 31-April 2, 2011.

## Conference and Workshop Attendance

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- Joint Mathematics Meetings, San Francisco, CA, January 3-6, 2024.
- Council of Colleges of Arts and Sciences (CCAS) Annual Meeting, San Diego, CA, November 1-4, 2023.
- Fall Meeting of the MD-DC-VA section of the MAA, Stevenson University, October 13-14, 2023.
- Council of Colleges of Arts and Sciences (CCAS) Annual Meeting, Washington, DC, November 2-5, 2022.
- Eastern Fall Sectional Meeting of the American Mathematical Society, UMass Amherst, October 1-2, 2022.
- Spring Meeting of the MD-DC-VA section of the MAA, Montgomery College, April 22-23, 2022.
- Fall Meeting of the MD-DC-VA section of the MAA, Salisbury University, November 5-6, 2021.
- Spring Meeting of the MD-DC-VA section of the MAA, virtual, April 23-24, 2021.
- Introductory workshop: Combinatorial Algebraic Geometry, ICERM, February 1-5, 2021. I served as a recitation leader.
- The conference *Quantum Groups and Cohomology Theory of Quiver and Flag Varieties*, virtual through Centre International De Rencontres Mathematiques Scientific Events, December 14-18, 2020. My collaborator, Clelia Pech, presented our joint work in an invited talk titled *Curve Neighbourhoods of the odd symplectic Grassmannian*.
- Fall Meeting of the MD-DC-VA section of the MAA, virtual, November 7, 2020.
- Fall Meeting of the MD-DC-VA section of the MAA, Norfolk State University, November 8-9, 2019.
- Attended and accompanied student Garrett Fowler to the MD-DC-VA section of the MAA meeting, Hood College and Frederick Community College, Frederick, MD, April 12-13, 2019.
- Attended and accompanied students Lela Bones and Garrett Fowler to the JMM held in Baltimore, MD, January 16-19, 2019.
- Fall Meeting of the MD-DC-VA section of the MAA, Mary Washington University, November 2-3, 2018.

## Conference and Workshop Attendance (continued)

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- The Ohio State Workshop on Schubert Calculus held on May 9-12, 2018.
- Spring Meeting of the MD-DC-VA section of the MAA, VMI/Washington and Lee, April 13-14, 2018.
- Joint Mathematics Meetings, San Diego, CA, January 10-13, 2018.
- Fall Meeting of the MD-DC-VA section of the MAA, Christopher Newport University, November 17-18, 2017.
- Joint Mathematics Meetings, Atlanta, GA, January 4-7, 2017.
- Fall Meeting of the MD-DC-VA section of the MAA, Johns Hopkins University, November 4-5, 2016.
- Workshop on Symplectic Varieties and Geometric Representation Theory, UNC, October 29-30, 2016.
- Algebraic Groups, Quantum Groups and Geometry, University of Virginia. May 24-27, 2016.
- Fall Eastern Sectional Meeting, Rutgers University, New Brunswick, NJ. November 14-15, 2015.
- Positivity in Combinatorial Algebraic Geometry at the University of Oregon, Eugene, OR. August 10-14, 2015.
- Graduate Student Combinatorics Conference at the University of Kentucky, Lexington, KY. March 27-29, 2015.
- Triangle Lectures in Combinatorics at North Carolina State University, Raleigh, NC. February 21, 2015.
- Fall Southeastern Sectional Meeting, University of North Carolina at Greensboro, Greensboro, NC. November 8-9, 2014.
- Spring Meeting of the MD-DC-VA section of the MAA, Salisbury University, April 12-13, 2013.
- Fall Meeting of the MD-DC-VA section of the MAA, Virginia Military Institute, October 26-27, 2012.
- Spring Meeting of the MD-DC-VA section of the MAA, Randolph-Macon College, April 15-16, 2011.

## Journal Refereeing

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- Journal of Algebraic Combinatorics.
- Communications in Algebra.

## Courses Taught

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### Salisbury University

- MATH 140 Algebra and Trigonometry.
- MATH 201 Differential Calculus.
- MATH 202 Integral Calculus with Sequences and Series.
- MATH 210 Discrete Mathematics.
- MATH 306 Linear Algebra.
- MATH 310 Multivariable Calculus.
- MATH 385 (Independent Study) Topology.
- MATH 385 (Independent Study) Sports Analytics.
- MATH 390 (Undergraduate Research) Taught numerous times on varying topics in Schubert Calculus.
- MATH 406 Geometric Structures.
- MATH 441 Abstract Algebra 1.
- MATH 442 Abstract Algebra 2.
- MATH 451 Analysis 1.

## Courses Taught (continued)

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- MATH 452 Analysis 2.
- MATH 490 (Topics Course) Undergraduate Algebraic Geometry.
- MATH 490 (Topics Course) Combinatorics.
- HONR 495 Honors Thesis.
- COSC 390 (Undergraduate Research) Project on programming in Schubert Calculus.

### Virginia Tech

- MATH 2015 Differential Calculus for Biological Sciences.
- MATH 2016 Integral/Multivariable Calculus for Biological Sciences.
- MATH 1225 Engineering Differential Calculus.
- MATH 1226 Engineering Integral Calculus with Sequences and Series.
- MATH 2204 Engineering Multivariable Calculus.

### Hagerstown Community College

- MATH 099 Developmental College Algebra.
- MATH 100 Developmental College Algebra.

## Memberships

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- Mathematical Association of America, member.
- American Mathematical Society, member.
- Council of Colleges of Arts and Sciences, member.

## References

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Available on Request.