CURRICULUM VITAE

DAVID SWINARSKI

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Professional Preparation

Columbia University	M.A., M.Phil, and Ph.D in Mathematics, 2008 Advisers: Ian Morrison and Michael Thaddeus Dissertation: *Geometric invariant theory and moduli spaces of pointed curves.*
University of Oxford	M.Sc in Mathematics by Research, 2003 Adviser: Frances Kirwan Thesis: *Geometric invariant theory and moduli spaces of maps.*
University of Notre Dame	B.S. in Mathematics and English, *summa cum laude*, 2001

Appointments

July 2021–June 2024, Chair, Department of Mathematics, Fordham University
January 2018–June 2021, Associate Dean, Faculty of Arts and Sciences, Fordham University
July 2018–December 2018, Acting Associate Dean of Arts and Sciences, Fordham University
2017–present, Associate Professor, Fordham University
2016–2018, Associate Chair, Mathematics Department
2011–2017, Tenure-track Assistant Professor, Fordham University
2008–2011, Post-doctoral Researcher and Part-time Instructor, University of Georgia

Mathematics research publications

(1) Swinarski, David. "Modelling elevator traffic with social distancing in a university classroom building." *Building Serv. Eng. Res. and Technol.* **42** (2021), no. 1, p. 82–97.
(2) Layton AM, Swinarski D, Port JL, McCauley A, Thomashow BM, Bulman WA. "Exercise motion analysis demonstrating correction of paradoxical chest wall motion following 3D printed sternal implant for sternal chondrosarcoma resection." *J Case Rep Images Surg* **5** (2019); 100063Z12AL2019.
(3) Moon, H. and D. Swinarski. "On the S_n-invariant F-conjecture." *J. Algebra* **517** (2019), 439–456.
(4) Swinarski, D. "Software for computing conformal block divisors on $\overline{M}_{0,n}$." *J. Softw. Algebra Geom.* **8** (2018), no. 1, 81–86.

(5) Swinarski, D. "Equations of Riemann surfaces with automorphisms." *Higher genus curves in mathematical physics and arithmetic geometry*, 33–46, *Contemp. Math.*, **703**, Amer. Math. Soc., Providence, RI, 2018.
(6) Morrison, I. and D. Swinarski. "Can you play a fair game of craps with a loaded pair of dice?" *Amer. Math. Monthly* **123** (2016), no. 2, 136–148.
(7) Deopurkar, A., Fedorchuk, M., and D. Swinarski. "Toward GIT stability of syzygies of canonical curves." *Alg. Geom.* **3**, no. 1 (2016), 1-22.
(8) Barker, A., Swinarski, D., Vogelstein, L., and J. Wu. "A new proof of a formula for the type A_2 fusion rules." *J. Math. Phys.* **56** (2015)
(9) Moon, H.B. and D. Swinarski. "Effective curves on $\overline{M}_{0,n}$ from group actions." *Manuscripta Math.* 2014.
(10) Deopurkar, A., Fedorchuk, M., and D. Swinarski. "Gröbner techniques and ribbons." *Albanian J. Math.* **8** (2014), 55-70.
(11) Alexeev, V.; Gibney, A.; and D. Swinarski. "Higher level $\mathfrak{sl}_2$ conformal block divisors on $\bar{M}_{0,n}$." *Proc. Edinburgh Math. Soc.* **57** (2014), 7-30.
(12) Gibney, A.; Jensen, D.; Moon, H.; and D. Swinarski. "Veronese quotient models of $\bar{M}_{0,n}$ and conformal blocks." *Michigan Math. J.* **62** (2013), 721-751.
(13) Alexeev, V. and D. Swinarski. "Nef divisors on $\overline{M}_{0,n}$ from GIT." *Geometry and Arithmetic,* EMS Series of Congress Reports. Eur. Math. Soc., Zürich, 2012.
(14) Mei, B.; Swinarski, D.; Clutter, M.; and T. Harris. "Investment Decisions of a New Linerboard Mill under Market Uncertainty." *Journal of Forest Products Business Research* **8** (2011), 1-7.
(15) Swinarski, D. "GIT stability of weighted pointed curves." *Trans. Am. Math. Soc.* **364** no. 4 (2012), 1737-1770.
(16) Morrison, I. and D. Swinarski. "Gröbner techniques for low degree Hilbert stability." *Exp. Math.* **20** no. 1 (2011), 34-56. DOI:10.1080/10586458.2011.544577
(17) Arap, M.; Gibney, A.; Stankewicz, J.; and D. Swinarski. "$\mathfrak{sl}_n$ level 1 conformal block divisors on $\overline{\mathcal{M}}_{0,n}$." *Int. Math. Res. Notices.* **2011**, 2011. DOI:10.1093/imrn/rnr064
(18) Baldwin, E. and D. Swinarski. "A geometric invariant theory construction of moduli spaces of stable maps." *Int. Math. Res. Pap.* **2008**, 2008. doi:10.1093/imrp/rpn003.
(19) Swinarski, D. and O. Wiest. "Substituent Effects in Pericyclic Reactions of Radical Cations: The Ring Opening of 3-Substituted Cyclobutene Radical Cations." *Journal of Organic Chemistry* **2000**; 65(20); 6708–6714.

Preprints

(1) Jackson, J. and D. Swinarski. "The worst destabilizing 1-parameter subgroup for toric rational curves with one unibranch singularity." arXiv:2502.00458
(2) Gallardo, P., Martinez-Garcia, J., Moon, H.B., and D. Swinarski. "Computation of GIT quotients of semisimple groups." arXiv: 2308.08049.
(3) Swinarski, D. "Some singular curves in Mukai's model of $\overline{M}_7$." arXiv: 2304.12936.
(4) Swinarski, D. "sl_2 conformal block divisors and the nef cone of $\bar{M}_{0,n}$." arXiv:1107.5331.

Research publications where I contributed as statistician

(1) Sung, S., Crapanzano, J., DiBardino, D., Swinarski, D., Bulman, W., and A. Saqi. "Molecular testing on endobronchial ultrasound (EBUS) fine needle aspirates (FNA): Impact of triage." *Diagnostic Cytopathology* **46** no. 2 (2018), 122–130.
(2) Heymann, J., Bulman, W., Swinarski, D., Pagan, C., Crapanzano, J., Haghighi, M., Falollahi, L., Stoopler, M., Sonett, J., Sacher, A., Shu, C., Rizvi, N., and A. Saqi. "PD-L1 expression in non-small cell lung carcinoma: Comparison among cytology, small biopsy, and surgical resection specimens." *Cancer Cytopathology* **125** no. 12 (2017), 896–907.

Other publications

(1) Swinarski, D. "Modeling Elevator Traffic With Social Distancing." *Inside Higher Ed* December 14, 2020.

Software

(1) GIT package for SageMath (Version 1.0). Available at `https://jesusmartinezgarcia.net/git/`.
(2) `StatePolytope`, a `Macaulay2` package to compute the state polytope of a homogeneous ideal in a polynomial ring. Distributed on the `Macaulay2` website.
(3) `LieTypes`, a `Macaulay2` package for calculations involving combinatorics of root systems (e.g. Littlewood-Richardson coefficients). Used by the `ConformalBlocks` package. Distributed on the `Macaulay2` website.
(4) `ConformalBlocks`, a `Macaulay2` package for computing first Chern classes of vector bundles of conformal blocks on the moduli space of curves $\overline{M}_{0,n}$. Distributed on the `Macaulay2` website.
(5) `M0nbar`, a `Macaulay2` package for computing intersections of curve classes and divisor classes on the moduli spaces of curves $\overline{M}_{0,n}$. Distributed on the `Macaulay2` website.
(6) code in `Magma` to compute equations of canonically embedded Riemann surfaces with automorphisms. Distributed on my Fordham webpage.

Presentations

- Some singular curves in Mukai's model of $\overline{M}_7$. University of Notre Dame, October 11, 2024.
- The worst 1-parameter subgroup for toric curve singularities. AMS Central Sectional Meeting, University of Texas San Antonio, September 14, 2024.
- The worst 1-parameter subgroup for toric curve singularities. $\mathrm{Spec}(\overline{\mathbb{Q}}(2\pi i))$. Fields Institute, University of Toronto, Canada. June 18, 2024.
- A series of graph curves with automorphisms. AMS Central Sectional Meeting, University of Wisconsin-Milwaukee, April 21, 2024.
- Some singular curves in Mukai's model of $\overline{M}_7$. AG@PUI online seminar, February 6, 2024.
- Singular curves in Mukai's model of $\overline{M}_7$. University of California, Berkeley. February 28, 2023.
- Singular curves in Mukai's model of $\overline{M}_7$. $\mathrm{Spec}(\overline{\mathbb{Q}})$. Fields Institute, University of Toronto, Canada. July 6, 2022.
- The Mukai model of M_7. Zoom Algebraic Geometry Marathon. University of Edinburgh, UK. September 1, 2020.
- Vector partition functions for conformal blocks. Combinatorial Algebraic Geometry Retrospective Workshop, Fields Institute, Toronto, Canada, June 20, 2018.
- Optoelectronic Plethysmography used to capture improvements in exercise ventilatory mechanics following 3D printed sternal implant. American Thoracic Society Annual Meeting, San Diego, May 22, 2018.
- On the S_n-invariant F-conjecture. SIAM conference on Applied Algebraic Geometry, Georgia Tech, August 4, 2017.
- A journey from moduli spaces to free resolutions. Stillman's Conjecture and Other Progress on Free Resolutions. University of California, Berkeley, July 17, 2017.
- Use of principal component analysis in conjunction with optoelectronic plethysmography to isolate respiratory motion during exercise. American Thoracic Society Annual Meeting, Washington, D.C, May 21, 2017.
- Vector partition functions for conformal blocks. COMB V (Conference on Moduli and Birational Geometry), Jeju, Korea, December 15, 2016.

- Software for vector partition functions. Macaulay2 workshop. University of Utah, May 10, 2016.
- Equations of Riemann surfaces with automorphisms via partial flattening stratifications. AMS Joint Meetings, Seattle, January 8, 2016.
- Equations of Riemann surfaces with automorphisms. Dartmouth College, November 19, 2015.
- Vector partition functions for conformal blocks. University of North Carolina, November 13, 2015.
- Equations of Riemann surfaces with automorphisms. University of Georgia, November 11, 2015.
- Vector partition functions for conformal blocks. University of Illinois at Chicago, November 4, 2015.
- Equations of Riemann surfaces with automorphisms. Clemson University, November 10, 2015.
- Algorithms for geometric invariant theory. Johns Hopkins University, October 27, 2015.
- GIT calculations from the state polytope point of view. SIAM conference on Applied Algebraic Geometry, National Institute for Mathematical Sciences, Daejeon, South Korea, August 7, 2015.
- Flattening stratifications and curves with automorphisms. SIAM conference on Applied Algebraic Geometry, National Institute for Mathematical Sciences, Daejeon, South Korea, August 4, 2015.
- Vector partition functions for conformal blocks. AMS Summer Institute in Algebraic Geometry, University of Utah, July 23, 2015.
- Piecewise polynomial methods for conformal blocks. University of Georgia, November 5, 2014.
- Gröbner techniques and ribbons. NATO Advanced Study Institute on Hyperelliptic Curves, Ohrid, Macedonia, August 27, 2014.
- State polytopes and geometric invariant theory. Macaulay2 Summer School and Conference, University of Illinois Urbana-Champaign, June 20, 2014.
- Equations of curves with automorphisms. Special session on Arithmetic of Algebraic Curves, AMS Southeastern Sectional Meeting, University of Tennessee, March 23, 2014.
- Hunting for equations of Riemann surfaces with automorphisms. Mathematics department colloquium, Oakland University, January 21, 2014.
- Gröbner techniques for ribbons. Colorado State University, October 31, 2013.
- Graded Betti numbers of Beauville-Polishchuk rings. Special session on the Geometry of Algebraic Varieties, AMS Eastern Sectional Meeting, Temple University, October 12, 2013.
- Gröbner techniques for ideals of ribbons. New York University, October 8, 2013.
- Gröbner techniques for ideals of ribbons. COMB IV (Conference on Moduli and Birational Geometry). POSTECH, Pohang, Korea. August 15, 2013.
- State polytopes of ideals and syzygies and geometric invariant theory for moduli of curves. SIAM Conference on Applied Algebraic Geometry. Colorado State University. August 1, 2013.
- GIT stability of syzygies of canonical ribbons. Special session on Moduli Spaces in Algebraic Geometry, AMS Eastern Sectional Meeting, Boston College, April 7, 2013.
- Implementation of fusion rules in Macaulay2. Wake Forest University, August 6, 2012.
- Equations of curves with automorphisms. [Poster] AGNES (Algebraic Geometry, Northeast Series), University of Massachusetts - Amherst, March 31, 2012.
- Conformal blocks and the birational geometry of $\overline{M}_{0,n}$. Stony Brook University, November 9, 2011.

- Conformal blocks and the birational geometry of $\overline{M}_{0,n}$. University of Missouri, October 25, 2011.
- GIT Constructions of moduli spaces with applications to their birational geometry. Lecture series with Ian Morrison. Summer School in Algorithmic Mathematics. Freie Universität, Berlin. October 10-14, 2011.
- Conformal blocks and the birational geometry of $\overline{M}_{0,n}$. Johns Hopkins University, September 20, 2011.
- Introduction to conformal blocks. Three lectures, POSTECH, Pohang, Korea. July 2011.
- Cones of $\mathfrak{sl}_2$ conformal blocks on $\overline{M}_{0,n}$. Gyeongju, Korea, July 2011
- Low degree Hilbert stability and curves with automorphisms. University of Sydney, June 2011.
- The S_n action on $\mathrm{Pic}(\overline{M}_{0,n})$. Special session on algebraic geometry, AMS Southeastern Sectional Meeting, March 13, 2011.
- Conformal blocks for sl_n level 1. University of Utah, December 11, 2010.
- Conformal blocks for sl_n level 1. Colorado State University, November 11, 2010.
- Conformal blocks for sl_n level 1. POSTECH, Pohang, Korea, August 5, 2010.
- State polytopes and GIT. Georgia Tech, February 15, 2010.
- Equations of curves with automorphisms. Special session on arithmetic geometry, AMS Joint Meetings, San Francisco, January 14, 2010.
- Nef line bundles on $\overline{M}_{0,n}$ from GIT. Brown University, November 13, 2009.
- Nef line bundles on $\overline{M}_{0,n}$ from GIT. Sogang University, Seoul, Korea, June 23, 2009.
- Nef line bundles on $\overline{M}_{0,n}$ from GIT. POSTECH, Pohang, Korea, June 19, 2009.
- State polytopes and GIT. Sogang University, Seoul, Korea, June 18, 2009.
- Geometric invariant theory and moduli spaces of pointed curves. Harvard University, October 14, 2008.
- Geometric invariant theory and moduli spaces of pointed curves. University of Michigan, February 13, 2008.
- Graph curves. Special session on combinatorial algebraic geometry, AMS Eastern Sectional Meeting, Hoboken, April 14, 2007.
- GIT stability of pointed curves. Rice University, September 5, 2006.
- GIT constructions of moduli spaces. University of Notre Dame, April 20, 2006.

Conferences attended

- AGNES (Algebraic Geometry, Northeast Series). Boston College. March 15-17, 2024.
- Arithmetic, Birational Geometry, and Moduli Spaces. Brown University, June 16-20, 2023.
- AGNES (Algebraic Geometry, Northeast Series). Stony Brook University. April 29-30, 2023.
- Workshop on Developments in moduli problems, American Institute of Mathematics. San Jose, CA, Feb 27-March 3, 2023.
- AGNES (Algebraic Geometry, Northeast Series). University of Massachusetts, Amherst, November 18-20, 2022.
- AIM Square on Computational Geometric Invariant Theory. American Institute of Mathematics. Online. June 14-25, 2021.
- Workshop on Moduli Problems Beyond Geometric Invariant Theory, American Institute of Mathematics. Online, January 25-29, 2021.
- AIM Square on Computational Geometric Invariant Theory. American Institute of Mathematics, San Jose, CA, June 24-28, 2019.
- AGNES (Algebraic Geometry, Northeast Series). Brown University, September 21-23, 2017.
- AIM Square on Computational Geometric Invariant Theory. American Institute of Mathematics, San Jose, CA, June 4-8, 2018.
- Macaulay2 workshop. University of Wisconsin-Madison, April 14-17, 2018.

- AGNES (Algebraic Geometry, Northeast Series). Northeastern University, October 13-15, 2017.
- AGNES (Algebraic Geometry, Northeast Series). Yale University, April 8-10, 2016
- Macaulay2 workshop. Boise State University, May 27-30, 2015
- AGNES (Algebraic Geometry, Northeast Series). Boston College, March 20-22, 2015
- Applications of Computer Algebra (ACA) 2014. Fordham University, July 9-12, 2014
- AGNES (Algebraic Geometry, Northeast Series). Stony Brook University, April 25-27, 2014 Meeting, University of Tennessee, March 21-23, 2014
- Macaulay2 workshop. Mathematical Sciences Research Institute, Berkeley, CA, January 6-10, 2014
- AGNES (Algebraic Geometry, Northeast Series). Yale University, April 19-21, 2013
- SUMR (Seminar of Undergraduate Mathematical Research) Reunion Conference, University of Notre Dame, March 1-3, 2013
- Workshop on the Log Minimal Model Program for moduli spaces. American Institute of Mathematics, Palo Alto, CA, December 10-14, 2012
- AGNES (Algebraic Geometry, Northeast Series). Brown University, October 26-28, 2012
- Georgia Algebraic Geometry Symposium. UGA, May 26-27, 2012
- AGNES (Algebraic Geometry, Northeast Series). University of Massachusetts, Amherst, March 31-April 1, 2012
- AGNES (Algebraic Geometry, Northeast Series). Stony Brook, October 29-30, 2011
- A Celebration of Algebraic Geometry. Harvard University, August 25-28, 2011
- Moduli Spaces and Moduli Stacks. Columbia University, May 23-27, 2011
- Quantitative and Computational Finance Symposium, Georgia Tech, November 5, 2010
- Macaulay2 workshop. Colorado College, August 8-12, 2010
- Birational geometry and moduli spaces. AMS Mathematics Research Community, Snowbird, Utah, June 12-18, 2010
- SAGE Days 14. MSRI, March 10-12, 2009
- Modern Moduli Theory. MSRI, February 23-27, 2009
- Conference on geometric invariant theory. Göttingen, June 2-6, 2008.
- Macaulay 2 workshop. Cornell University, March 16-19, 2008
- AMS Eastern Sectional Meeting. New York, March 15-16, 2008
- Algorithms in algebraic geometry. IMA (University of Minnesota), September 18-22, 2006
- Algebraic geometry. Seattle, July 25–August 12, 2005
- Moduli spaces and intersection theory, ICTP (Trieste), September 9-27, 2002

Teaching

- Fordham University:

Fall 2011	MATH 1206: Calculus I
	MATH 3006: Probability
Spring 2012	MATH 1207: Calculus II
	MATH 3007: Statistics
Summer 2012	MATH 1100: Finite Mathematics
Fall 2012	MATH 1100: Finite Mathematics
	MATH 1206: Calculus I
	MATH 2006: Linear Algebra
Spring 2013	MATH 1207: Calculus II
	MATH 4006: Numerical Analysis
	Tutorial: Linear Algebra II (1 student)
Fall 2013	MATH 1100: Finite Mathematics
	MATH 1206: Calculus I
	MATH 3006: Probability
	Tutorial: Differential Equations (1 student)
Spring 2014	MATH 3007: Statistics
	MATH 3009: Mathematics of Finance
Summer 2014	MATH 1100: Finite Mathematics

- Fordham University (continued):

Fall 2014	MATH 1100: Finite Mathematics
	MATH 1206: Calculus I
	MATH 2006: Linear Algebra
	math lectures for HPLC 1603: Honors Natural Science I
Spring 2015	MATH 1207: Calculus II
	MATH 4006: Numerical Analysis
	math lectures for HPLC 1604: Honors Natural Science II
Fall 2015	math lectures for HPLC 1603: Honors Natural Science I
Spring 2016	MATH 1100: Finite Mathematics
	MATH 3007: Statistics
	MATH 3009: Mathematics of Finance
	math lectures for HPLC 1604: Honors Natural Science II
Fall 2016	MATH 1206: Calculus I
	MATH 2001: Discrete Mathematics
	MATH 2004: Multivariable Calculus I
	math lectures for HPLC 1603: Honors Natural Science I
Spring 2017	MATH 2005: Multivariable Calculus II
	MATH 4006: Numerical Analysis
	math lectures for HPLC 1604: Honors Natural Science II
	Tutorial: Topological Data Analysis (1 student)
	Tutorial: Statistics (3 students)
Fall 2017	MATH 1206: Calculus I
	MATH 2001: Discrete Mathematics
	MATH 2006: Linear Algebra
	math lectures for HPLC 1603: Honors Natural Science I
Spring 2018	MATH 1207: Calculus II
	MATH 2001: Discrete Mathematics
	math lectures for HPLC 1604: Honors Natural Science II
	Tutorial: Numerical Analysis (1 student)
Fall 2018	Tutorial: Symmetry and Dance (1 student)
Fall 2019	Tutorial: Cryptography (1 student)
Spring 2020	Tutorial: Cryptography (1 student)
Fall 2020	math portion of HPRH 1101: Interdisciplinary STEM I
Fall 2021	math portion of HPRH 1101: Interdisciplinary STEM I
	MATH 1100: Finite Mathematics
	MATH 1108: Math for Business Finite
Spring 2022	MATH 1109: Math for Business Calculus
Fall 2022	MATH 1108: Math for Business Finite (2 sections)
	two recitations for MATH 1206: Calculus I
	one recitation for MATH 1207: Calculus II
	Tutorial: Commutative Algebra (2 students)
Spring 2023	MATH 1109: Math for Business Calculus
Fall 2023	MATH 1108: Math for Business Finite
	Tutorial: Mathematical Techniques in Bioinformatics (1 student)
Spring 2024	MATH 2001: Discrete Mathematics

- University of Georgia:

Spring 2011	MATH 2250: Calculus I for science and engineering
Fall 2010	Introduction to math research
	MATH 5003: Algebra and problem solving for elementary teachers
Spring 2010	MATH 4790/6900: Option Pricing
Fall 2009	MATH 2500: Multivariable calculus
Spring 2008	MATH 2500: Multivariable calculus
Fall 2008	MATH 2250: Calculus I for science and engineering

- Columbia University:

Summer 2007	Instructor, Calculus III
Summer 2006	Instructor, Calculus III
Summer 2005	Instructor, Calculus III
2005–2008	Teaching assistant, Master's in mathematical finance program
2004–2005	Teaching assistant, Honors Calculus III and IV
2005–2007	Director, evening hours, Barnard College math help room

Mentored Student Research

- Fordham University students mentored during the academic year:

Student	Terms
Amy Barker	Fall 2011-Spring 2013
Lauren Vogelstein	Fall 2011-Spring 2013
Muhammad Ahsan	Fall 2012-Spring 2014
Zachery Wills	Fall 2012-Spring 2013
John Wu	Fall 2012- Spring 2014
Katherine Lee	Fall 2014-Spring 2016
Jeremy Fague	Fall 2014-Spring 2016
Alexander McCauley	Summer 2016-May 2017
Tae "Sunny" Kim	Summer 2016-May 2018
Jonathan Bugbee	Fall 2017-May 2018
Phillip Kerger	Fall 2017-Summer 2018
Hongyi Chen	Summer 2018

- mentored Jack Tonkin (a high school student at the Dwight School) on modelling traffic in a high school stairway. November 2021–Summer 2023
- Summer research experience for undergraduates, Summer 2017. Title: Equations and syzygies of ribbons and K3 carpets. Participants: Carolyn Ogden and Sarah Grandinetti.
- mentored Darcy Chanin (a high school student at The Hudson School), Summer 2015-Spring 2016, on equations of Riemann surfaces with automorphisms
- Summer research experience for undergraduates, Summer 2014. Title: Representation theory of Lie algebras. Participants: Katherine Lee, Shuyao Lu, Ruiju Wang, Natalie Hobson (graduate student assistant).
- Summer research experience for undergraduates, Summer 2012. Title: Conformal blocks, representation theory of Lie algebras. Participants: Muhammad Ahsan, Amy Barker, Lauren Vogelstein, Zachery Wills, John Wu
- University of Georgia Introductory VIGRE Research Group, Fall 2010. Title: Equations of Riemann surfaces with automorphisms. Partipants: Eddie Beck, Zach Freeland, Tyler Johnson, Malik Obeidin, Jacob Rooney, Lev Tovstopyat-Nelip
- Research products of my Fordham University undergraduate research students:
  - Zak Wills, Fordham Undergraduate Research Symposium poster, Spring 2013
  - John Wu, Fordham Undergraduate Research Symposium poster, Spring 2013
  - Zak Wills, Honors Program senior thesis, Spring 2013

  - Zak Wills, *Fordham Undergraduate Research Journal* article, Spring 2013
  - John Wu, Fordham Undergraduate Research Symposium poster, Spring 2014
  - Muhammad Ahsan, Fordham Undergraduate Research Symposium poster, Spring 2014
  - Amy Barker, Lauren Vogelstein, John Wu, and I coauthored a paper in the *Journal of Mathematical Physics*, 2015. (See my publication list above.)
  - Katherine Lee, Shuyao Lu, Ruiju Wang, Fordham Undergraduate Research Symposium poster, Spring 2015
  - Jeremy Fague, Fordham Undergraduate Research Symposium poster, Spring 2015
  - Sunny Kim, Fordham Undergraduate Research Symposium poster, Spring 2017
  - Alexander McCauley, Fordham Undergraduate Research Symposium poster, Spring 2017
  - Alexander McCauley, poster presentation at May 2017 meeting of the American Thoracic Society
  - Carolyn Ogden and Sarah Grandinetti, Fordham Undergraduate Research Symposium poster, Spring 2018
  - Sunny Kim, Fordham Undergraduate Research Symposium poster, Spring 2018
  - Sunny Kim, Honors Program senior thesis, Spring 2018.

Service and Outreach

- Major Fordham University committees:
  - Chair, Tenure and Reappointment Appeals Committee (TRAC), October 2023–May 2024
  - Clerical Level 7 Upgrade Committee, November 2021–July 2022
  - Learning Spaces Working Group, May 2020–August 2020
  - Labor Management Committee, August 2018–June 2021
  - Task force for First Year Experience, November 2017–July 2018
  - Faculty Senate Technology Committee, Spring 2017–Spring 2018
  - Faculty Senate Wellness Committee, Spring 2015–Spring 2017
  - Faculty Senate Salaries and Benefits Committee, Fall 2014–Spring 2017
  - Institutional Research Board (IRB), Fall 2013–Spring 2018
- Participant in research study "Examining undergraduate mathematics students' experiences with programming: The case of interactive theorem provers". PIs: Dr. Athina Thoma (University of Southampton) and Dr. Paola Iannone (University of Edinburgh)
- Co-founder and organizer, AG@PUI: an online seminar for algebraic geometers at primarily undergraduate institutions. August 2023–
- Co-organizer, Special Session on "A Showcase of Algebraic Geometry at Undergraduate Institutions". AMS Central Sectional Meeting, University of Texas San Antonio, September 14-15, 2024.
- Talk given for the Fordham College Lincoln Center Math Seminar, "Modeling elevator traffic with social distancing," February 11, 2021
- Talk given for the Fordham University Math Club, "Vector partition functions for conformal blocks," November 21, 2019
- Advisor for Fordham College at Lincoln Center students in the interdisciplinary mathematics and economics major, and interdisciplinary mathematics and computer science major, Fall 2016-Spring 2018
- Advisor for Fordham College at Lincoln Center students in the combined plan ("3-2") program with Columbia University engineering, Fall 2017–Spring 2018
- Internship advisor for ten Fordham students (Summer 2015, Fall 2016, Summer 2017, Spring 2018, Summer 2018, Summer 2019)

- Conference and workshop co-organizer, Macaulay2 workshop, University of California, Berkeley, CA, July 17-21, 2017
- Dissertation committee member for Natalie Hobson (University of Georgia, student of Angela Gibney), May 2015-May 2017
- Talk given for the Fordham chapter of the Sigma Xi honors society, "Mathematical analysis of respiratory motion," April 3, 2017
- Co-organizer, Special Session on Computational Approach to GIT and Moduli Theory, SIAM conference on Applied Algebraic Geometry, National Institute for Mathematical Sciences, Daejeon, South Korea, August 3-7, 2015
- Talk given for the University of Georgia Math Club, "Polynomial equations for surfaces: how to see that $y^2 = x^5 - x$ is a donut with two holes," November 9, 2015
- Talk given for the University of Georgia Math Club, "Can you play a fair game of craps with a loaded pair of dice?," November 6, 2014
- Member of organizing committee and special session chair, Applications of Computer Algebra conference, Fordham University, July 9-12, 2014
- Workshop co-organizer, Macaulay2 workshop, Mathematical Sciences Research Institute, Berkeley, CA, January 6-10, 2014
- Talk given for the Colorado State University Math Club, "Heard on the Street: Brainteasers from Wall Street interviews," October 31, 2013
- Talk given for the Fordham University Math Club, "Heard on the Street: Brainteasers from Wall Street interviews," October 24 (Lincoln Center campus) and October 30 (Rose Hill campus), 2013
- Conference co-organizer, SUMR (Seminar of Undergraduate Mathematical Research) Reunion Conference, University of Notre Dame, March 1-3, 2013
- Talk given for the Fordham University Math Club, "Can you play a fair game with loaded dice?" October 10, 2012
- Talk given for the Fordham University Math Club, "Hives and symmetric polynomials," March 7, 2012
- Talk given for the UGA Quantitative Finance Society, "Modeling stock prices with Brownian motions," March 23, 2011
- Co-organizer, Special session on birational geometry and moduli spaces, AMS Joint Meetings, New Orleans, January 6-9, 2011
- Conference co-organizer, "Compact moduli and vector bundles," UGA, October 21-24, 2010
- Co-adviser, Quantitative Finance Society, UGA, 2010–2011
- Proctor, UGA High School Math Tournament, October 2010
- Talk given for the University of Georgia Math Club, "Heard on the Street: Brainteasers from Wall Street interviews," Spring 2010
- Talk given in the UGA VIGRE Grad student seminar, "Four mathematical shorts," October 2009
- Proctor, UGA High School Math Tournament, October 2009
- Co-organizer, Conformal Blocks Seminar, UGA, 2009–2010
- Talk given in the UGA VIGRE Grad student seminar, "Curves and automorphisms," Spring 2009
- Judge, Georgia State Science Fair, Spring 2009
- Papers refereed for:

Advances in Mathematics ($\times 2$)
Algebra and Number Theory
Bulletin of the Korean Mathematical Society ($\times 2$)
Bulletin of the London Mathematical Society
Compositio Mathematica
European Journal of Mathematics
Experimental Mathematics
Illinois Journal of Mathematics
International Mathematics Research Notices ($\times 4$)
Journal of Algebraic Geometry
Journal of the London Mathematical Society
Journal of Pure and Applied Algebra ($\times 2$)
Journal of Software for Algebra and Geometry ($\times 2$)
Journal of Symbolic Computation
Manuscripta Mathematica
Mathematics of Computation
Proceedings of the Edinburgh Mathematical Society
Proceedings of the American Mathematical Society
Transactions of the American Mathematical Society

- Textbook manuscript refereed for AMS Pure and Applied Undergraduate Texts series.

Grants, Fellowships, and Awards

- Fordham University Faculty of Arts and Sciences Mid-Career Faculty Microgrant, Spring 2025.
- Fordham University Faculty Fellowship, awarded for Fall 2024–Spring 2025.
- Napier Shaw Medal for Research, Chartered Institution of Building Services Engineers (CIBSE), October 2022. Awarded for the paper "Modelling elevator traffic with social distancing in a university classroom building."
- Gratias Tibi Award from the Gabelli School of Business, Fordham University, May 2018.
- Member, Sigma Xi, inducted 2017.
- NSF conference grant DMS 1701922, "Free resolutions and computations, Berkeley 2017" PI: Branden Stone. Co-PIs: David Swinarski, Sonja Szekelyhidi, Amelia Taylor. Awarded February 2017.
- AIM Square: "Computational Aspects of GIT with a view toward geometry of moduli spaces" Awarded in Fall 2016, to begin in June 2018.
- Fordham University Faculty Research Grant, April 2015-March 2016.
- Fordham University Faculty Fellowship, awarded for Fall 2015.
- AMS-Simons Travel Grant, 2011.
- Allocation of computer time TG-DMS090027, National Center for Supercomputing Applications, 2008.
- College of Science Dean's Award, University of Notre Dame, 2001.
- Member, Phi Beta Kappa, inducted 2001.
- Marshall Scholarship, 2000.
- Barry M. Goldwater Scholar, 2000.