September 2025

EDUCATION

0 0-1-10-1	
Ph.D., University of Michigan	2011
Mathematics Department Nominee, Distinguished Dissertation Award	
B.S., University of Chicago	2005
Honors in Mathematics, Specialization in Computer Science	
PROFESSIONAL APPOINTMENTS	
Professor, University of Kansas	2025-
Program Director, Division of Mathematical Sciences, National Science Foundation	2024-
Affiliate Faculty, Institute for Information Sciences, University of Kansas	2020-
Associate Professor, University of Kansas	2020-25
Research Professor, Simons Laufer Mathematical Sciences Institute/Mathematical Sciences Research Institute	2024
Ruth I. Michler Faculty Scholar, Cornell University	2022
Keeler Intra-University Professor, University of Kansas	2021–22
Assistant Professor, University of Kansas	2015–20
Research Assistant Professor, University of Utah	2014–15
Dunham Jackson Assistant Professor, University of Minnesota	2011–14
Postdoctoral Fellow, Mathematical Sciences Research Institute	2013
AWARDS AND HONORS	
NATIONAL AND INTERNATIONAL	
Ruth I. Michler Memorial Prize, Association for Women in Mathematics	2022-23
Sigma Xi, the Scientific Research Honor Society	2005
First Place, American Computer Science League Programming Competition	2001
UNIVERSITY OF KANSAS	
W. W. Keeler Family Intra-University Professorship	2021-22
Don and Pat Morrison Foundation Award for Excellence in Teaching	2019
J. Michael Young Academic Advisor Award, Student Nominated	
Research Excellence Award	2018
Graduate Research Consultant Award	2017
UNIVERSITY OF MICHIGAN	
Rackham Graduate School Distinguished Dissertation Award, Departmental Nominee	2011

Alumni Award Recognizing One Outstanding Ph.D. Student	2008
GRANTS AND FELLOWSHIPS	
NSF CAREER Award DMS-1945611: New frontiers for Frobenius, singularity theory, differential operators, and local cohomology (\$400,000)	2020-25
Collaboration@ICERM Award, Institute for Computational and Experimental Research in Mathematics	2024
Simons Foundation Collaboration Grant 582574: Local cohomology and numerical invariants in commutative algebra (\$42,000)	2018-21
Course Transformation Grant, University of Kansas (\$1,400)	2019-20
Structured Quartet Research Ensemble (SQuaRE) Collaboration Award, American Institute of Mathematics	2017–20
Research Grant Opportunity Award, University of Kansas (\$12,400)	2018 – 19
NSF Standard Grant DMS-1501404/1623035: Local cohomology, the Frobenius endomorphism, D -module theory, and invariant theory (\$127,000)	2015–19
NSF Conference Grant DMS-1645050, KUMUNU (Kansas-Missouri-Nebraska) Algebra Conference (\$12,000)	2016–17
New Faculty Research Fund Grant, University of Kansas (\$8,000)	
NSA-AMS Young Investigator Award (\$40,000, declined)	2015–16
AMS–Simons Travel Grant (\$4,000)	2014-15
AMS Travel Grant, International Congress of Mathematicians, Seoul (\$1,200)	2014
Collaboration Grant, AMS Mathematical Research Communities	2012
Algebraic Geometry Research Training Grant Fellowship, University of Michigan, NSF DMS-0502170	2008, '10
Focused Research Group Assistantship, University of Michigan, NSF DMS-0602191	2007
Mathematics Departmental Scholarship, University of Michigan	2006-07
PUBLICATIONS	
On cutoff exponents and the Bernstein-Sato polynomial associated to an augmented algebroid plane curve, with D. J. Hernández, submitted (41 pages)	l diagonal
Local cohomology of subspace arrangements and relative simplicial homology with A. Pascoe, submitted (33 pages)	
Formalizing Commutative Algebra in Coq: Nakayama's Lemma, with D. Cousin Alexander, submitted (12 pages)	no and P.
Jumping numbers of F-pure submodules, with A. De Stefani, D. J. Hernández, and Betancourt, submitted (26 pages)	L. Núñez–

Mathematics Research Notices (34 pages)

Bernstein's inequality and holonomicity for certain singular rings, with J. Àlvarez Montaner, J. Jeffries, D. J. Hernández, L. Núñez–Betancourt, and P. Teixeira, to appear in *International*

- Lower bounds on the F-pure threshold and extremal singularities, with Z. Kadyrsizova, J. Kenkel, J. Page, J. Singh, K. E. Smith, and A. Vraciu, *Transactions of the American Mathematical Society* 9 (2022), 977–1005
- Bernstein-Sato functional equations, V-filtrations, and multiplier ideals of direct summands, with J. Alvarez Montaner, J. Jeffries, D. J. Hernández, L. Núñez-Betancourt, and P. Teixeira, Communications in Contemporary Mathematics 24 (2022), no. 10, Paper No. 2150083, 47 pp.
- Cubic surfaces of characteristic two, with Z. Kadyrsizova, J. Kenkel, J. Page, J. Singh, K. E. Smith, and A. Vraciu, *Transactions of the American Mathematical Society* 374 (2021), 6251–6267
- Classification of Frobenius forms in dimension five, with Z. Kadyrsizova, J. Kenkel, J. Page, J. Singh, K. E. Smith, and A. Vraciu, *Women in Commutative Algebra, Springer*, AWM Series 29 (2021), 353–367
- The Frobenius Thresholds package for Macaulay 2, with D. J. Hernández, K. Schwede, and P. Teixeira, Journal of Software for Algebra and Geometry 11–1 (2021), 25–39
- Frobenius powers, with D. J. Hernández and P. Teixeira, *Mathematische Zeitschrift* 296 (2020), no. 1–2, 541–572
- Frobenius powers of some monomial ideals, with D. J. Hernández and P. Teixeira, *Journal of Pure and Applied Algebra* 224 (2020) no. 1, 66–8
- Connectedness and Lyubeznik numbers, with L. Núñez-Betancourt and S. Spiroff, *International Mathematics Research Notices* 2019 (2019), no. 13, 4233–4259
- Lyubeznik numbers and the injective dimension of local cohomology in mixed characteristic, with D. J. Hernández, L. Núñez-Betancourt, and F. Pérez, *Transactions of the American Mathematical Society* 371 (2019) no. 11, 7533-7557
- The TestIdeals package for Macaulay2, with A. Boix, D. J. Hernández, Z. Kadyrizova, M. Katzman, S. Malec, M. Robinson, K. Schwede, D. Smolkin, and P. Teixeira, *Journal of Software for Algebra and Geometry* 9 (2019), no. 2, 89–110
- Cohomological dimension, Lyubeznik numbers, and connectedness in mixed characteristic, with D. J. Hernández, L. Núñez–Betancourt, and F. Pérez, *Journal of Algebra* 514 (2018), 442–467
- Local m-adic constancy of F-pure thresholds and test ideals, with D. J. Hernández and L. Núñez-Betancourt, Mathematical Proceedings of the Cambridge Philosophical Society 164 (2018) no. 2, 285–295
- On the behavior of singularities at the F-pure threshold, with E. Canton, D. J. Hernández, and K. Schwede, *Illinois Journal of Mathematics* 60 (2016) no. 3–4, 669–685
- F-pure thresholds of homogeneous polynomials, with D. J. Hernández, L. Núñez-Betancourt, and W. Zhang, Michigan Mathematical Journal 65 (2016), 57–87
- A survey on the Lyubeznik numbers, with L. Núñez-Betancourt and W. Zhang, *Contemporary Mathematics* 657 (2016)
- Generalized Lyubeznik numbers, with L. Núñez-Betancourt, Nagoya Mathematical Journal

215 (2014), 167–202	215 ((2014)), 167-	-202
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- Local cohomology with support in ideals of maximal minors and sub-maximal Pfaffians, with C. Raicu and J. Weyman, Advances in Mathematics 250 (2014), 596–610
- Lyubeznik numbers in mixed characteristic, with L. Núñez-Betancourt, Mathematical Research Letters 20 (2013) no. 6, 1–19
- Local cohomology with support in ideals of maximal minors, Advances in Mathematics 231 (2012) 1998-2012
- Local cohomology and group actions, Ph.D. Thesis-University of Michigan (2011), ProQuest LLC

SOFTWARE

Formalization of Local Cohomology in Lean, with S. van Gool, J. Levinson, and	2023
S. Morrison	
Frobenius Thresholds Package for Macaulay2 (Current version: 2.0), with J. Bruce, et. al.	2019
TestIdeals Package for Macaulay2 (Current version: 1.01), with E. Bela, et. al.	2018

INVITED RESEARCH TALKS

NATIONAL AND INTERNATIONAL CONFERENCES	
Singularities and Symmetries in Texas, Texas A&M University	2025
The 56th Congress of the Mexican Mathematical Society, San Luis Potosí, Mexico	2023
Macaulay2: Expanded Functionality and Improved Efficiency, American Institute of Mathematics, Pasadena, CA	
Formalization of Cohomology Theories, Banff International Research Station, Banff, Alberta, Canada	
Conference in Honor of Craig Huneke and Melvin Hochster, International Centre for Theoretical Physics, Trieste, Italy ¹	
D-modules, Group Actions, and Frobenius: Computing on Singularities, Institute for Computational and Experimental Research in Mathematics, Providence, RI	2021

- Singularities in Positive Characteristic, Centre International de Rencontres Mathématiques, Luminy, Marseilles, France
- Morgantown Algebra Days, West Virginia University¹
- Escuela de Otoño de Álgebra Conmutativa (Fall School in Commutative Algebra), Centro 2017 de Investigación en Matemáticas, Guanajuato, Mexico
- Local Cohomology in Commutative Algebra and Algebraic Geometry, a Conference in Honor of Gennady Lyubeznik, University of Minnesota
- Conference on Geometric Methods in Representation Theory, University of Missouri 2016

¹Canceled due to COVID-19.

Commutative Algebra and its Interactions with Algebraic Geometry: A Conference Honoring Craig Huneke, University of Michigan	
Conference on D -modules in Commutative Algebra, Centro de Investigación en Matemáticas, Guanajuato, Mexico	
International Conference on Representation Theory and Commutative Algebra in Honor of Jerzy Weyman, University of Connecticut	
Workshop on the Commutative Algebra of Singularities in Birational Geometry, Mathematical Sciences Research Institute, Berkeley, CA	2013
REGIONAL CONFERENCES	
Texas Algebraic Geometry Symposium, Rice University ¹	2020
Midwest Women in Mathematics Symposium, University of Iowa	2019
Texas Algebraic Geometry Symposium Fall Program, Texas A&M University	2018
CA+ Conference on Commutative Algebra and Related Fields, University of Minnesota	
KUMUNU (Kansas-Missouri-Nebraska) Algebra Conference, University of Missouri	2015
Bi-annual Algebraic and Tropical Meetings of Brown and Yale, Yale University	2014
KUMUNUjr Algebra Conference, University of Nebraska, Lincoln	
Route 81 Conference, Syracuse University	2010
SEMINARS AND COLLOQUIA	
Special Colloquium, Harvard University	2025
Colloquium, Commutative Algebra Program, SLMath/MSRI	2024
Ruth I. Michler Lecture, Cornell University	2022
Joint Northwestern University / University of Illinois at Chicago / University of Chicago Algebra & Geometry Seminar ¹	2020
Algebraic Geometry Seminar, Duke University ¹	
Colloquium; University of California, Irvine	
Colloquium, University of Minnesota	
Colloquium, Texas A&M University	2019
Algebra and Combinatorics Seminar, Texas A&M University	2018
Colloquium, Georgia State University	2017
Combinatorial Commutative Algebra Seminar, Centro de Investigación en Matemáticas, Guanajuato, Mexico	
Colloquium, Syracuse University	2016
Commutative Algebra Seminar, University of Illinois at Chicago	
Commutative Algebra Seminar, University of Virginia	2015
Commutative Algebra Seminar, University of Michigan	
Colloquium, University of New Mexico	2014

¹Canceled due to COVID-19.

Commutative Algebra Seminar, University of Utah Invariant Theory Seminar, Mathematical Sciences Research Institute, Berkeley, CA Junior Member Seminar, Mathematical Sciences Research Institute, Berkeley, CA	2013
Commutative Algebra Seminar, University of Michigan	2012
Algebra Seminar, University of Kansas	2010
Commutative Algebra Seminar, University of Nebraska–Lincoln	
SPECIAL SESSIONS	
Commutative Algebra, AMS Fall Western Sectional, University of New Mexico	2021
Commutative Algebra, AMS Fall Central Sectional, Creighton University	
Commutative Ring Theory, AMS Spring Central Sectional, North Dakota State University	rer- 2016
Commutative Algebra, AMS Spring Western Sectional, University of Utah	
Effective Methods in <i>D</i> -modules and Singularities, SIAM Conference on Applied Algebraic Geometry, Colorado State University	
Commutative Algebra, AWM Research Symposium, Santa Clara University	
Topics in Commutative Algebra, AMS Spring Central Sectional, University of Kansa	s 2012
Commutative Algebra, AMS Fall Western Sectional, University of Utah	
Local Commutative Algebra, AMS Fall Central Sectional, University of Nebraska, L	in-
Commutative Algebra, AMS Mathematical Research Communities, JMM, New Orlea LA	ns,
Commutative Algebra, AMS–Sociedad Matemática Mexicana, Eighth Internation	nal
Meeting, University of California, Berkeley	
PROFESSIONAL SERVICE	
EDITORIAL SERVICE	
Associate Editor, Communications in Algebra	2025-
Associate Editor, Journal of Software for Algebra and Geometry	2024-
Editor, Women in Commutative Algebra, Springer Publishing	2022
ORGANIZATIONAL SERVICE	
Algebra Seminar, University of Kansas	2015-
Macaulay2: Expanded Functionality and Improved Efficiency, American Institute of Mathematics, Pasadena, CA	2023
Women in Commutative Algebra Workshop, Thematic Program in Commutative Algebra and Applications, Fields Institute, Toronto, Canada (Upcoming)	2025
JMM Special Session on Commutative Algebra in Positive Characteristic in Honor of Karen Smith's AMS Colloquium Lecture, Denver, CO	2021

Women in Commutative Algebra Workshop, Banff International Research Station,	2019
Banff, Alberta, Canada	
AWM Research Symposium, Special Session in Commutative Algebra, University of California, Los Angeles	2017
KUMUNU (Kansas-Missouri-Nebraska) Algebra Conference, University of Kansas	2016
JMM Special Session on Commutative Algebra in Honor of Karen Smith's AWM–AMS Noether Lecture, JMM, Seattle, WA	
BIKES Postdoc/Student Learning Seminar, University of Utah	2014–15
AMS Special Session on Commutative Algebra, Western Spring Sectional Meeting, University of New Mexico	2014
Postdoc Seminar, University of Minnesota	2013
Student Commutative Algebra Seminar, University of Michigan	2010-11
Frobenius Splittings in Algebraic Geometry, Commutative Algebra, and Representation Theory, University of Michigan (Local Organizer)	2010
Conference in Honor of Mel Hochster, University of Michigan (Local Organizer)	2008

SOFTWARE DEVELOPMENT LEADERSHIP

Macaulay2 Development Workshops: American Institute of Mathematics (Organizer, 2023), University of California, Berkeley (Team lead, 2017), University of Utah (Team lead, 2016), Boise State University (Team lead, 2015), Mathematical Sciences Research Institute (2014), Wake Forest University (2012)

Macaulay2 development sessions: Coding Sprint, Institute for Mathematics and its Applications (2019); Collaborative Meeting, the University of Utah (2018)

REFEREEING AND REVIEWING

Review Panelist, National Science Foundation	Various
Proposal Reviewer, Banff International Research Station Banff	Various
Reviewer, Mathematical Reviews	2015-

Referee; Archiv der Mathematik, Communications in Algebra, Compositio Mathematica, Illinois Journal of Mathematics (4), International Mathematics Research Notices (2), Journal of Algebra (4), Journal of Algebra and Its Applications (2), Journal of Commutative Algebra (3), Journal of Pure and Applied Algebra (2), Kodai Mathematical Journal, Mathematical Scandinavica, Nagoya Mathematical Journal (2), Notices of the American Mathematical Society, Pacific Journal of Mathematics, Princeton University Press (book), Proceedings of the American Mathematical Society (2), Selecta Mathematica, Transactions of the American Mathematical Society (4)

MENTORING, OUTREACH, AND COMMUNITY ENGAGEMENT

Mentor, National Alliance for Doctoral Studies in the Mathematical Sciences	2017-
Faculty Advisor, AWM Student Chapter, University of Kansas	2015-

Mentor, Ph.D. students at various institutions, AWM Mentor Network	2012 -
AWM Research Networks Committee Member	2022 - 25
Co-Director and Organizer, Cryptography Boot Camp NSF-REU professional development program funded by NSF CAREER DMS-1945611, University of Kansas	2023
Session Leader, Michigan Math Circle, University of Michigan	2021
Evaluator, Math Awareness Month K-12 Competition, University of Kansas	2016-21
Facilitator, Panel on Graduate Student Life, AWM Student Chapter, University of Kansas	2020
Sustainability Ambassador, University of Kansas	2016-20
Organizer, Women in Commutative Algebra Workshop, Banff International Research Station; first research collaboration conference for women in the field	2019
Invited Panelist, Nebraska Conference for Undergraduate Women in Mathematics	
Speaker, Undergraduate Math Club, University of Kansas	
Inaugural Committee Member, Jedel Excellence in Mathematics Education Award recognizing exemplary K-12 teaching in greater Kansas City	2018–19
Faculty Mentor for Undergraduates on Academic Probation, University of Kansas	2016–19
Organizer, Graduate Student Professional Development Sessions, University of Kansas	2018
Director and Co-Advisor, Cryptography and Number Theory Boot Camp REU Program serving students from underrepresented groups, University of Texas at El Paso, funded by NSF DMS-1623035	2017
Judge, AWM Essay Contest	2015–16
Invited Panelist, Truth Values by Gioia de Cari, Lied Center of Kansas	2015
Speaker, "What is Math?" Day, University of Utah	
Session leader, Math for America Utah Teachers' Circle	
Volunteer, Girls Excel in Math program serving Twin Cities area elementary students	2013–14
Facilitator, Institute for Mathematics and its Applications Outreach Event, Minnesota State Fair	2013
Facilitator, Mathematical Sciences Research Institute's Pi Nightlife, California Academy of Sciences	
Session Leader, Berkeley Math Circle, University of California, Berkeley	
Speaker, University of Minnesota Talented Youth Mathematics Program	
Instructor, Michigan Science, Technology, Engineering, and Mathematics Academy preparatory program serving incoming underrepresented engineering students, University of Michigan	2009–11
Instructor, Michigan Math and Science Scholars program for middle and high school students, University of Michigan	2008–11
Graduate Student Peer Mentor, University of Michigan	2006-11
Speaker, Undergraduate Research Opportunity Program, University of Michigan	2010
Invited Panelist, Women in Science and Engineering Panel, University of Michigan	

Speaker, Undergraduate Math Club, University of Michigan	2009
Instructor, Professionals in Training Program serving incoming underrepresented engineering students, University of Michigan	2008
Departmental Delegate, Graduate Student Forum, University of Michigan	2006-07
Course Assistant, Seminars for Elementary Specialists and Mathematics Educators program serving Chicago Public Schools teachers, University of Chicago	2003-05
Counselor, Young Scholars Program for secondary students, University of Chicago	
ADVISING	
Ph.D. Advisor, Ryan Hunter, University of Kansas	2023-
Postdoctoral Mentor, Jonah Tarasova, SLMath	2024
Ph.D. Advisor, Abraham Pascoe, University of Kansas	2019–24
Undergraduate Research Award Project, Apurva Rai, University of Kansas	2021
Honors Thesis Advisor, Nicole Johnson, University of Kansas	2018–19
Honors Thesis Advisor, University of Kansas, Ransheng Guan	2016–17
Senior Thesis Advisor, Lorenzo David, University of Minnesota	2014
Honors Thesis Advisor, Ana Liard-Blanco, University of Minnesota	2013
Honors Contract Advisor, Ana Liard-Blanco, University of Minnesota	2012
REU Co-Advisor, Joseph Billian and Sifat Rahman, University of Michigan	2011 2008
Math Placement Advisor, New Student Orientation, University of Michigan	2006
TEACHING	
UNIVERSITY OF KANSAS	
Multivariable Calculus (Math 127; Fall 2023)	
Intermediate Analysis (MATH 500; Fall 2023, Spring 2017)	
Directed Reading: Local Cohomology (MATH 993; Fall 2023/2021)	
Commutative Algebra (MATH 831; Spring 2022)	
Introductory Modern Algebra (MATH 558; Fall 2020/2016/2015, Spring 2018)	
Directed Reading: Gröbner Bases (MATH 993; Spring 2020)	
Algebraic Topics in Computing: Cryptography (Course designer) (MATH 601; Sprin	g 2020)
Directed Reading: Commutative Algebra (MATH 993; Fall 2019/2020, Spring 2021)	
Honors Integral Calculus (MATH 146; Fall 2019, Spring 2016)	
Modern Algebra (Graduate) (MATH 791; Spring 2019)	
Directed Reading: Monomial Ideals (MATH 699; Spring 2019)	
Elementary Linear Algebra (MATH 290; Fall 2018)	
Directed Reading: Topology (MATH 699; Fall 2018)	

Directed Reading: Algebraic Geometry (MATH 699; Spring 2018)

Honors Differential Calculus (MATH 145; Fall 2017)

Directed Reading: Elliptic Curves and Cryptography (MATH 699; Spring 2017)

Directed Reading: Galois Theory (MATH 699; Fall 2016)

UNIVERSITY OF UTAH

Cryptography and Codes (MATH 5405; Spring 2015)

Integral Calculus (MATH 1220; Fall 2014)

UNIVERSITY OF MINNESOTA

Introduction to Modern Algebra (MATH 4281; Spring 2014)

Differential Calculus (MATH 1371; Fall 2013)

First Year Experience, College of Science and Engineering (CSE 1001; Fall 2013)

Cryptology and Number Theory (MATH 5248; Spring 2012)

Integral Calculus (Course coordinator) (MATH 1372; Fall 2012/2011)

UNIVERSITY OF MICHIGAN (as Instructor of Record)

Integral Calculus (MATH 116; Fall 2009/2007)

Differential Calculus (MATH 115; Winter 2008/2006, Fall 2006)

Precalculus (MATH 105; Fall 2005)

PROFESSIONAL MEMBERSHIPS

Association for Women in Mathematics American Mathematical Society Sigma Xi, the Scientific Research Honor Society

2007 -

2005-