

ANNE SHIU

annejls@tamu.edu

<http://people.tamu.edu/~annejls>

University Address

Department of Mathematics
Mailstop 3368
Texas A&M University
College Station TX 77843-3368

EMPLOYMENT

Professor, Dept. of Mathematics, Texas A&M University (since Fall 2021).
Associate Professor, Dept. of Mathematics, Texas A&M University (2019–2021).
Assistant Professor, Dept. of Mathematics, Texas A&M University (2014–2019).
L.E. Dickson Instructor/ NSF Postdoctoral Fellow, University of Chicago (2011–2014).
Mentors: Mathias Drton and Lek-Heng Lim
NSF Postdoctoral Fellow, Duke University (2010–2011).
Mentor: Ezra Miller

EDUCATION

University of California, Berkeley **Ph.D.**, May 2010
Mathematics with Designated Emphasis in Genomic and Computational Biology
Advisors: Lior Pachter and Bernd Sturmfels
University of Chicago, Chicago IL **B.S.**, June 2005
Major: Mathematics

RESEARCH INTERESTS

Algebraic, geometric, and combinatorial approaches to mathematical biology; biochemical dynamical systems; neural coding; parameter identifiability; algebraic statistics; genomics.

PREPRINTS

In Mathematics, authors are listed alphabetically, with the exception of some applied-math papers. Texas A&M graduate-student, postdoc**, and undergraduate*** co-authors are indicated, as are non-TAMU undergraduate**** co-authors.*

53. *Convexity of Neural Codes with Four Maximal Codewords*, Saber Ahmed, Natasha Crepeau*, Gisel Flores****, Osiano Isekenegbe****, Deanna Perez****, and Anne Shiu. Available from [arXiv:2510.20323](https://arxiv.org/abs/2510.20323). Submitted.

52. *Identifiability of linear compartmental models: The impact of removing leaks and edges*, Patrick Chan****, Katherine Johnston****, Anne Shiu, Aleksandra Sobieska*, and Clare Spinner****. Available from [arXiv:2102.04417](https://arxiv.org/abs/2102.04417). Submitted.

PEER-REVIEWED ARTICLES

51. *Parameter identifiability of linear-compartmental mammillary models*, Katherine Clemens****, Jonathan Martinez****, Anne Shiu, Michaela Thompson****, and Benjamin Warren*. *B. Math. Biol.*, special collection on “Approaches for assessing parameter identifiability in mathematical biology”, 88, article 12, (2026).

50. *Structural identifiability of compartmental models: Recent progress and future directions*, Nicolette Meshkat and Anne Shiu. *Curr. Opin. Syst. Biol.*, 42, 100559 (2025).

49. *Identifiability of catenary and directed-cycle linear compartmental models*, Saber Ahmed, Natasha Crepeau, Paul R. Dessauer Jr.*, Alexis Edozie****, Odalys Garcia-Lopez****, Tanisha Grimsley****, Jordy Lopez Garcia*, Viridiana Neri****, and Anne Shiu. *SIAM J. Appl. Dyn. Syst.*, 25:1, pp. 304–350 (2026).

48. *Deficiency of chemical reaction networks: The effect of operations that preserve multistationarity and periodic orbits*, Awildo Gutierrez****, Elijah Leake****, Caelyn Rivas-Sobie****, Jordy Lopez Garcia*, and Anne Shiu. *DCDS-B*, 30:5, pp. 1745–1761 (2025).
47. *Absolute concentration robustness: Algebra and geometry*, Luis David García Puente, Elizabeth Gross, Heather A. Harrington, Matthew Johnston, Nicolette Meshkat, Mercedes Pérez Millán, and Anne Shiu. *J. Symb. Comput.*, special issue in memory of Agnes Szanto, 128, article 102398 (2025).
46. *On the connectedness of multistationarity regions of small reaction networks*, Allison McClure*** and Anne Shiu. *J. Symb. Comput.*, special issue in memory of Agnes Szanto, 125, article 102323 (2024).
45. *Absolute concentration robustness and multistationarity in reaction networks: Conditions for coexistence*, Nidhi Kaihnsa, Tung Nguyen**, and Anne Shiu. *Eur. J. Appl. Math.*, 35:4, pp. 566–600 (2024).
44. *Prevalence of multistationarity and absolute concentration robustness in reaction networks*, Badal Joshi, Nidhi Kaihnsa, Tung Nguyen**, and Anne Shiu. *SIAM J. Appl. Math.*, 83:6, pp. 2260–2283 (2023).
43. *Wheels: A new criterion for non-convexity of neural codes*, Alexander Ruys de Perez*, Laura Matusевич, and Anne Shiu. *Adv. Appl. Math.*, 150, Article 102567 (2023).
42. *Identifiability of linear compartmental tree models and a general formula for input-output equations*, Cashous Bortner, Elizabeth Gross, Nicolette Meshkat, Anne Shiu, and Seth Sullivant. *Adv. Appl. Math.*, 146, Article 102490 (2023).
41. *Nondegenerate neural codes and obstructions to closed-convexity*, Patrick Chan****, Katherine Johnston****, Joseph Lent****, Alexander Ruys de Perez*, and Anne Shiu. *SIAM J. Discrete Math.*, 37:1, pp. 114–145 (2023).
40. *Neural codes with three maximal codewords: Convexity and minimal embedding dimension*, Katherine Johnson****, Anne Shiu, and Clare Spinner****. *Involve, a Journal of Mathematics*, 15:2, pp. 333–343 (2022).
39. *Identifiability of linear compartment models: The singular locus*, Elizabeth Gross, Nicolette Meshkat, and Anne Shiu. *Adv. Appl. Math.*, 133, Article 102268 (2022).
38. *Absolute concentration robustness in networks with low-dimensional stoichiometric subspace*, Nicolette Meshkat, Anne Shiu, and Angélica Torres. *Vietnam J. Math.*, special issue in honor of Bernd Sturmfels, 50, 623–651 (2022).
37. *Non-monotonicity of closed convexity in neural codes*, Brianna Gambacini****, R. Amzi Jeffs, Sam Macdonald****, and Anne Shiu. *Vietnam J. Math.*, special issue in honor of Bernd Sturmfels, 50, 359–373 (2022).
36. *Identifiability of linear compartmental models: The effect of moving inputs, outputs, and leaks*, Seth Gerberding****, Nida Obatake*, Anne Shiu. *Linear and Multilinear Algebra*, 70:14, pp. 2782–2803 (2022).
35. *Dynamics of ERK regulation in the processive limit*, Carsten Conradi, Nida Obatake*, Anne Shiu, and Xiaoxian Tang**. *J. Math. Biol.*, 82, article 32 (2021).
34. *Mixed volume of small reaction networks*, Nida Obatake*, Anne Shiu, and Dilruba Sofia****. *Involve, a Journal of Mathematics*, 13:5, pp. 845–860 (2020).

33. *Joining and decomposing reaction networks*, Elizabeth Gross, Heather A. Harrington, Nicolette Meshkat, and Anne Shiu. *J. Math. Biol.*, 80, pp. 1683–1731 (2020).
32. *Neural codes and the factor complex*, Alexander Ruys de Perez*, Laura Matusевич, and Anne Shiu. *Adv. Appl. Math.*, 114, Article 101977 (2020).
31. *Oscillations and bistability in a model of ERK regulation*, Nida Obatake*, Anne Shiu, Xiaoxian Tang**, and Angelica Torres. *J. Math. Biol.*, 79:4, pp. 1515–1549 (2019).
30. *Linear compartmental models: input-output equations and operations that preserve identifiability*, Elizabeth Gross, Heather A. Harrington, Nicolette Meshkat, and Anne Shiu. *SIAM J. Appl. Math.*, 79:4, pp. 1423–1447 (2019).
29. *Multistationarity in structured reaction networks*, Alicia Dickenstein, Mercedes Pérez Millán, Anne Shiu, and Xiaoxian Tang**. *B. Math. Biol.*, 81:5, pp. 1527–1581 (2019).
28. *Emergence of oscillations in a mixed-mechanism phosphorylation system*, Carsten Conradi, Maya Mincheva, and Anne Shiu. *B. Math. Biol.*, 81:6, pp. 1829–1852 (2019).
27. *Revisiting a synthetic intracellular regulatory network that exhibits oscillations*, Jonathan Tyler*, Anne Shiu, and Jay Walton. *J. Math. Biol.*, 78:7, pp. 2341–2368 (2019).
26. *Algebraic signatures of convex and non-convex codes*, Carina Curto, Elizabeth Gross, Jack Jeffries, Katherine Morrison, Zvi Rosen, Anne Shiu, and Nora Youngs. *J. Pure Appl. Algebra*, 223:9, pp. 3919–3940 (2019).
25. *Neural codes, decidability, and a new local obstruction to convexity*, Aaron Chen****, Florian Frick, and Anne Shiu. *SIAM Journal on Applied Algebra and Geometry*, 3:1, pp. 44–66 (2019).
24. *Nondegenerate multistationarity in small reaction networks*, Anne Shiu and Timo de Wolff**. *Discrete Cont. Dyn.-B.*, 24:6, pp. 2683–2700 (2019).
23. *Gröbner bases of neural ideals*, Rebecca Garcia, Luis García Puente, Ryan Kruse, Jessica Liu****, Dane Miyata, Ethan Petersen, Kaitlyn Phillipson*, and Anne Shiu. *Int. J. Algebr. Comput.*, 28:4, pp. 553–571 (2018).
22. *Dynamics of post-translational modification systems: recent progress and future directions*, Carsten Conradi and Anne Shiu. *Biophys. J.*, 114:3, pp. 507–515 (2018).
21. *An all-encompassing global convergence result for processive multisite phosphorylation systems*, Mitchell Eithun**** and Anne Shiu. *Math. Biosci.*, vol. 291, pp. 1–9 (2017).
20. *Which small reaction networks are multistationary?*, Badal Joshi and Anne Shiu. *SIAM J. Appl. Dyn. Syst.*, vol. 16, pp. 802–833 (2017).
19. *What makes a neural code convex?*, Carina Curto, Elizabeth Gross, Jack Jeffries, Katherine Morrison, Mohamed Omar, Zvi Rosen, Anne Shiu, and Nora Youngs. *SIAM Journal on Applied Algebra and Geometry*, 1:1, pp. 222–238 (2017).
18. *Obstructions to convexity in neural codes*, Caitlin Lienkaemper****, Anne Shiu, and Zev Woodstock****. *Adv. Appl. Math.*, vol. 85, pp. 31–59 (2017).
17. *Analyzing multistationarity in chemical reaction networks using the determinant optimization method*, Bryan Félix****, Anne Shiu, and Zev Woodstock****. *Appl. Math. Comput.*, volumes 287–288, pp. 60–73 (2016).

16. *Sign conditions for injectivity of generalized polynomial maps with applications to chemical reaction networks and real algebraic geometry*, Stefan Muller, Elisenda Feliu, Georg Regensburger, Carsten Conradi, Anne Shiu, and Alicia Dickenstein. *Found. Comput. Math.*, 16:1, pp. 69–97 (2016).
15. *A survey of methods for deciding whether a reaction network is multistationary*, Badal Joshi and Anne Shiu. *Math. Model. Nat. Phenom.* special issue on “Chemical dynamics”, 10:5, pp. 47–67 (2015).
14. *A global convergence result for processive multisite phosphorylation systems*, Carsten Conradi and Anne Shiu. *B. Math. Biol.*, 77:1, pp. 126–155 (2015).
13. *A geometric approach to the global attractor conjecture*, Manoj Gopalkrishnan, Ezra Miller, and Anne Shiu. *SIAM J. Appl. Dyn. Syst.*, 13:2, pp. 758–797 (2014).
12. *A projection argument for differential inclusions, with applications to persistence of mass-action kinetics*, Manoj Gopalkrishnan, Ezra Miller, and Anne Shiu. *SIGMA*, 9 (2013), 025, 25 pages.
11. *Atoms of multistationarity in chemical reaction networks*, Badal Joshi and Anne Shiu. *J. Math. Chem.*, 51:1, pp. 153–178 (2013).
10. *Simplifying the Jacobian Criterion for precluding multistationarity in chemical reaction networks*, Badal Joshi and Anne Shiu. *SIAM J. Appl. Math.*, 72:3, pp. 857–876 (2012).
9. *Chemical reaction systems with toric steady states*, Mercedes Pérez Millán, Alicia Dickenstein, Anne Shiu, and Carsten Conradi. *B. Math. Biol.*, 74:5, pp. 1027–1065 (2012).
8. *Siphons in chemical reaction networks*, Anne Shiu and Bernd Sturmfels. *B. Math. Biol.*, 72:6, pp. 1448–1463 (2010).
7. *The dynamics of weakly reversible population processes near facets*, David F. Anderson and Anne Shiu. *SIAM J. Appl. Math.*, 68:5, pp. 1464–1476 (2010).
6. *Toric dynamical systems*, Gheorghe Craciun, Alicia Dickenstein, Anne Shiu, and Bernd Sturmfels. *J. Symb. Comput.*, 44, pp. 1551–1565 (2009).
5. *Convex rank tests and semigraphoids*, Jason Morton, Lior Pachter, Anne Shiu, Bernd Sturmfels, and Oliver Wienand. *SIAM J. Discrete Math*, 23:3, pp. 1117–1134 (2009).
4. *The smallest multistationary chemical reaction network*, Anne Shiu. *Lect. Notes Comput. Sc.*, “Algebraic Biology,” K. Hiromoto, G. Regensburger, M. Rosenkranz, H. Yoshida (Eds.), 5147, pp. 172–184 (2008).
3. *Comparing pattern detection methods in microarray time series of the segmentation clock*, M. Dequéant, S. Ahnert, H. Edelsbrunner, T. Fink, E. Glynn, G. Hattem, A. Kudlicki, Y. Mileyko, J. Morton, A. Mushegian, L. Pachter, M. Rowicka, A. Shiu, B. Sturmfels, and O. Pourquié. *PLoS ONE*, 3:8, e2856 (2008).
2. *Three counterexamples on semigraphoids*, Raymond Hemmecke, Jason Morton, Anne Shiu, Bernd Sturmfels, and Oliver Wienand. *Comb. Probab. Comput.*, 17:02, pp. 239–257 (2008).
1. *The cyclohedron test for finding periodic genes in time course expression studies*, Jason Morton, Lior Pachter, Anne Shiu, and Bernd Sturmfels. *Stat. Appl. Genet. Mo. B.*, 6:1, Article 21 (2007).

- OTHER WRITING** *From chemical reaction networks to algebraic and polyhedral geometry – and back again*, Elisenda Feliu and Anne Shiu. Chapter in the book, *Combinatorial, Computational, and Applied Algebraic Geometry: A Tribute to Bernd Sturmfels*, Proceedings of Symposia in Pure Mathematics, volume 111 (Serkan Hosten, Diane Maclagan, and Frank Sottile, eds.), published by the American Mathematical Society (2025). Abbreviated version available at [arXiv:2501.06354](https://arxiv.org/abs/2501.06354).
- RESEARCH GRANTS** AIM SQuaRE (research ensemble), “Algebraic Geometry of Chemical Reaction Networks”, 3/2021+ (with Luis Garcia-Puente, Elizabeth Gross, Heather Harrington, and Nicolette Meshkat).
NSF CAREER, 6/2018–5/2025, including no-cost extensions (DMS-1752672), \$415,322.
Simons Foundation Collaboration Grant for Mathematicians, 9/2017–8/2018, \$8,400.
AIM SQuaRE (research ensemble), “Ideals in algebraic systems biology”, 9/2015–2018 (with Luis Garcia-Puente, Elizabeth Gross, Heather Harrington, and Nicolette Meshkat).
NSF individual grant, 8/2013–7/2017, including one-year no-cost extension (DMS-1312473, transferred to DMS-1513364), \$129,690.
NSF Postdoctoral Fellowship, 2010–2013 (DMS-1004380).
- OTHER GRANTS** NSF REU grant, “REU Site Grant: Undergraduate Research in the Mathematical Sciences and their Applications”, 5/2022–4/2025 (DMS-2150094), \$388,556 (PI: Anne Shiu, co-PI: J. Maurice Rojas).
Diversity and Equity mini-grant, “Individualized Development Plan and Salary Negotiation Workshops”, 2021–2022, Texas A&M College of Science, \$1900 (co-I’s: Shiu, Manaswinee Bezbaruah, and Priyanga Ganesan).
DRP Network mini-grants (in support of the Directed Reading Program in the Texas A&M math department), 2018–2020, \$4,500.
Montague-CTE (Center for Teaching Excellence) Scholar grant, 2018–2019, Texas A&M, \$6,500 (PI: Anne Shiu).
NSF REU grant, “REU Site Grant: Undergraduate Research in the Mathematical Sciences and their Applications”, 6/2018–5/2021 (DMS-1757872), \$350,000 (PI: J. Maurice Rojas, co-PI and current PI: Anne Shiu).
NSF REU grant, “REU Site Grant: Undergraduate Research in the Mathematical Sciences and their Applications”, 6/2015–5/2018 (DMS-1460766), \$343,408 (PI: J. Maurice Rojas, co-PI: Anne Shiu).
NSF conference grant, “Texas Algebraic Geometry Seminar (TAGS) 2015”, 3/2015–2/2016 (DMS-1450510), \$14,960 (PI: Gregory Pearlstein, co-PIs: Laura Matusevich, Anne Shiu, and Frank Sottile).
- AWARDS** Association of Former Students Distinguished Achievement Award in teaching, college level, Texas A&M University, 2019
Outstanding Teaching Award, Department of Mathematics, Texas A&M University, 2017
Bernard Friedman Memorial Prize, UC Berkeley, top thesis in applied mathematics, 2010
Lucent Technologies Bell Labs Graduate Research Fellowship
University of California, Berkeley Chancellor’s Fellowship
- POSTDOC MENTORING** Mentor for Xiaoxian Tang (Jan. 2017 to Jul. 2019), now faculty at Beihang University
Mentor for Tung Nguyen (2021–2024), now postdoc at UCLA
Mentor for Andrea Welsh (since Fall 2024)

- PH.D. STUDENT ADVISING** Co-advisor (with Jay Walton) of Jonathan Tyler (Mathematics, Ph.D. 2019), postdoc at University of Michigan (2019–2021), now Data Scientist at Sema4.
Co-advisor (with Laura Matusevich) of Alexander Ruys de Perez (Mathematics, Ph.D. 2021), postdoc at Georgia Tech, now postdoc at Cal Poly.
Advisor of Nida Obatake (Mathematics, Ph.D. 2021), IDA postdoctoral fellow and now research staff member at Center for Communications Research (La Jolla CA).
Advisor of Paul Dessauer (Mathematics, ongoing).
- UNDERGRAD MENTORING** Research mentor for Angelique Morvant, Texas A&M (2017). Resulted in the following paper: Angelique Morvant, *Strengthening relationships between neural ideals and receptive fields*, Rose-Hulman Undergraduate Mathematics Journal, 20:1 (2019), Article 8.
Research mentor for Allison McClure née Dennis, Texas A&M (2023).
Research mentor for Christian De Los Santos, Texas A&M (2024).
- REU MENTORING** Mentor for 3 REU students, Dept. of Math, Texas A&M University (Summer 2025).
Mentor for 3 REU students, Dept. of Math, Texas A&M University (Summer 2023).
Mentor for 18 REU students, MSRI Undergraduate Program (MSRI-UP), Berkeley CA (Summer 2022).
Mentor for 4 REU students, Dept. of Math, Texas A&M University (Summer 2020).
Mentor for 4 REU students, Dept. of Math, Texas A&M University (Summer 2019).
Mentor for 5 REU students, Dept. of Math, Texas A&M University (Summer 2017).
Mentor for 5 REU students, Dept. of Math, Texas A&M University (Summer 2016). Resulted in papers listed earlier, and the following paper: Luna Bozeman and Adriana Morales, *No oscillations in the Michaelis-Menten approximation of the dual futile cycle under a sequential and distributive mechanism*, SIAM Undergraduate Research Online, 10 (2017), pp. 21–28.
Mentor for 4 REU students and co-mentor (with Jay Walton) for 4 UBM (undergraduate biology and mathematics) students, Dept. of Math, Texas A&M University (Summer 2015).
Mentor and thesis co-supervisor for Daniel Thielman, Program for Research for Undergraduates, Dept. of Math, Duke University (Summer 2011). Thesis title: *Complex-balanced steady states of chemical reaction networks that contain an Eulerian cycle* (Apr. 2012).
- DIRECTED READING PROGRAM** Organizer (with graduate students Taylor Brysiewicz, Kari Eifler, Jordy Lopez Garcia, Angelique Morvant, Pablo Sanchez Ocal, and Eric Tovar), Directed Reading Program, Texas A&M University (since Fall 2018).
<https://artsci.tamu.edu/mathematics/academics/undergraduate/drpf/index.html>
- TEACHING AT TEXAS A&M** (Graduate level) Seminar on Mathematical Biology (Math 669), Texas A&M (Spring 2022).
(Graduate level) Algebra I (Math 653), Texas A&M (Fall 2019).
Foundations of Mathematics (Math 220 a.k.a. Math 300), Texas A&M (Fall 2018, Fall 2021, Fall 2022, Spring 2025, Fall 2025).
Modern Algebra II (Math 416), Texas A&M (Spring 2017).
Discrete Mathematics (Math 302), Texas A&M (Fall 2016).
Introduction to Mathematical Biology (Math 469), Texas A&M (Spring 2016, Spring 2019, Spring 2024).
Modern Algebra I (Math 415), Texas A&M (Fall 2015).
Calculus I for Biological Sciences (Math 147), Texas A&M (Fall 2014, Spring 2015, Fall 2017, Fall 2023).

EDITORIAL ACTIVITIES	Associate Editor, SIAM Journal on Applied Mathematics, since 2020.
REVIEW ACTIVITIES	Reviewed articles for AMS Mathematical Reviews, 2011–2013. Refereed articles for <i>Advances in Applied Mathematics</i> , <i>Applied Mathematics Letters</i> , <i>Ars Combinatoria</i> , <i>Biophysical Journal</i> , <i>Bulletin of Mathematical Biology</i> , <i>Collectanea Mathematica</i> , <i>CPAM</i> , <i>Discrete and Continuous Dynamical Systems–Series B</i> , <i>International Journal of Computer Mathematics</i> , <i>Involve</i> , <i>Journal of Algebra</i> , <i>Journal of Biological Physics</i> , <i>Journal of Symbolic Computation</i> , <i>Mathematical Biosciences</i> , <i>Mathematics in Computer Science</i> , <i>MEGA (Effective Methods in Algebraic Geometry) conference</i> , <i>PLOS ONE</i> , <i>Selecta</i> , <i>SIAM Journal on Applied Dynamical Systems</i> , <i>SIAM Journal on Applied Mathematics</i> , <i>SIAM Journal on Applied Algebra and Geometry</i> , <i>SIAM Undergraduate Research Online</i> .
DEPARTMENTAL SERVICE	Executive committee, Department of Mathematics, Texas A&M, since 2025. Communications and Fundraising committee, Department of Mathematics, Texas A&M, since 2024. Subcommittee P&T (promotions committee), Department of Mathematics, Texas A&M, Jan. 2023–Dec. 2024. Chair of committee in 2024. Endowed positions committee, Department of Mathematics, Texas A&M, 2022–2025. Strategic planning steering committee, Department of Mathematics, Texas A&M, 2021–2023.
COLLEGE-LEVEL SERVICE	Search committee for Dean of College of Science, Texas A&M, 2018–2019.
OTHER SERVICE SINCE 2015	Panelist for evaluating grant proposals, NSF Division of Mathematical Sciences, 2024. Member, AMS Committee on Committees, 2023–2024. Member, AIM (American Institute of Mathematics) Scientific Research Board, since 2022. (Elected) Member at large, AMS Council, 2021–2024 (and member of AMS Committee on Education). Selection committee, SIAM Activity Group on Algebraic Geometry Early Career Prize 2021. Panelist for evaluating grant proposals, joint panel for NSF Division of Mathematical Sciences and NIH National Institute of General Medical Sciences, 2019. Ad-hoc reviewer for 1 grant proposal, NSF Division of Mathematical Sciences and Directorate for Computer & Information Science & Engineering, 2018. Panelist, Symposium for Faculty, Staff, Graduate Students and PostDocs in the Sciences: Insight and Strategies for Professional Success, Personal Well Being and Getting Along with Others, College of Science, Texas A&M University (Feb. 24, 2017). Speaker, Applied Mathematics Undergraduate Seminar (AMUSE), Texas A&M University (Nov. 4, 2015). Panelist for evaluating grant proposals, NSF Division of Mathematical Sciences, 2015.
INVITED VISITS	Visiting Scholar in Mathematical Biology, University of Pennsylvania, April 2016 (one week)
INVITED TALKS: CONFERENCES	<i>Plenary Talk</i> , GROW Conference (for undergraduate students considering graduate school in the mathematical sciences), Columbia University (Sept. 26, 2025). Minisymposium on Algebraic Systems Biology, SIAM Conference on Applied Algebraic Geometry (AG25), University of Wisconsin, Madison (Jul. 9, 2025). <i>Plenary Talk</i> , AMS Fall Central Sectional Meeting, University of Texas, San Antonio (Sept. 14, 2024).

ILAS Special Session on Sign-Pattern Matrices and Their Applications, JMM, San Francisco CA (Jan. 5, 2024).

Plenary Talk, SIAM Conference on Applied Algebraic Geometry (AG23), Eindhoven University of Technology (Eindhoven, the Netherlands) (Jul. 11, 2023).

Encuentro de Matemática y Biología (EMyB) 2023, Universidad de Buenos Aires (Argentina) (Apr. 17, 2023)

Plenary Talk, Texas Women in Mathematics Symposium, University of Texas (Mar. 5, 2023).

AMS Special Session on Complex Systems in the Life Sciences, JMM, Boston MA (Jan. 7, 2023).

Plenary Talk, Discrete Math Day (Northeast Combinatorics Network), Colgate University (Apr. 23, 2022).

MSRI Special Session on the MSRI Undergraduate Program, JMM, held virtually (Apr. 9, 2022).

Minisymposium on Algebra and Geometry of Dynamic Models, SIAM Conference on Applied Algebraic Geometry 2021, held virtually (Aug. 18, 2021).

Minisymposium on Advances in Deterministic Models of Biochemical Interaction Networks, SMB Annual Meeting, held virtually (Jun. 15, 2021).

Special Session on Connecting Network Structure and Behavior of Biological Interaction Systems, AMS Fall Central Sectional Meeting, Madison WI (Sept. 14, 2019).

Plenary Talk, International Conference on DNA Computing and Molecular Programming (DNA 25), University of Washington, Seattle WA (Aug. 7, 2019).

Minisymposium on Algebraic Aspects of Biochemical Reaction Networks, SIAM Conference on Applied Algebraic Geometry, Bern, Switzerland (Jul. 12, 2019).

Nonlinear algebra in applications workshop, ICERM, Providence RI (Nov. 15, 2018).

Minisymposium on Mathematical analysis of Biological Interaction Networks, SIAM Life Sciences conference, Minneapolis MN (Aug. 8, 2018).

Minisymposium on Dynamics and Oscillations of Reaction Networks, European Conference on Mathematical and Theoretical Biology, University of Lisbon, Portugal (Jul. 23, 2018).

Kinetic and Related Models with Applications in the Natural Sciences conference, University of Wisconsin, Madison WI (May 1, 2018).

Special Session on Applicable and Computational Algebraic Geometry, AMS Fall Central Sectional Meeting, University of North Texas, Denton TX (Sept. 9, 2017).

Minisymposium on Algebraic and Topological Biology, SIAM Conference on Applied Algebraic Geometry, Georgia Tech, Atlanta GA (Aug. 4, 2017).

Workshop on Mathematical Analysis of Biological Interaction Networks, Banff International Research Station, Canada (Jun. 5, 2017).

Special session on Applied Algebraic Geometry, AMS Fall Southeastern Sectional Meeting, North Carolina State University, Raleigh NC (Nov. 12, 2016).

Thematic session on Computational Algebra and Applications of Algebra, XXI Coloquio Latinoamericano de Àlgebra, Universidad de Buenos Aires, Buenos Aires, Argentina (Jul. 29, 2016)

Special session on Algebraic Approaches for Investigating Biological Systems, SIAM Annual Meeting (AN16), Boston MA (July 15, 2016)

CombinaTexas, Texas A&M University (May 8, 2016)

Special Session on Algebraic and Combinatorial Methods in Mathematical Biology, AMS Spring Southeastern Sectional Meeting, University of Georgia, Athens GA (Mar. 5, 2016)

Workshop on Dynamics in Networks with Special Properties, MBI, Columbus OH (Jan. 26, 2016).

Special session on Nonlinear Algebra, Joint Math Meetings, Seattle WA (Jan. 9, 2016).

Minisymposium on Real Algebraic Geometry and Optimization, SIAM Conference on Applied Algebraic Geometry, Daejeon, South Korea (Aug. 5, 2015).

Texas Algebraic Geometry Symposium, Texas A&M University (Apr. 11, 2015).

Workshop on Solving Polynomial Equations (Program on Algorithms and Complexity in Algebraic Geometry), Simons Institute for the Theory of Computing, Berkeley CA (Oct. 13, 2014).

Minisymposium on Algebraic Aspects of Biochemical Reaction Networks, SIAM Conference on the Life Sciences, Charlotte NC (Aug. 4, 2014).

Workshop on Combinatorial Commutative Algebra and Applications, MSRI, Berkeley CA (Dec. 3, 2012).

Minisymposium on Understanding Multistationarity in Biochemical Reaction Networks, SIAM Conference on the Life Sciences, San Diego CA (Aug. 7, 2012).

Workshop on Algebraic Methods in Systems and Evolutionary Biology, MBI, Columbus OH (May 11, 2012).

Minisymposium on Applications in Mathematical Biology, SIAM Conference on Applied Algebraic Geometry, NC State, Raleigh NC (Oct. 7, 2011).

Workshop on Applications of Algebraic Geometry to Other Sciences, ELGA (Latin American School of Algebraic Geometry and Applications), Cordoba, Argentina (Aug. 9, 2011).

Workshop on Algebraic geometry in the Sciences, CMA, University of Oslo, Norway (Jan. 13, 2011).

Triangle Lectures in Combinatorics, Duke University, Durham NC (Sept. 25, 2010).

AMS-SIAM Special Session on Applications of Algebraic Geometry, Joint Mathematics Meetings, San Francisco CA (Jan. 16, 2010).

Connections for Women workshop: Tropical Geometry, MSRI, Berkeley CA (Aug. 23, 2009).

Transition Workshop (Algebraic Methods in Systems Biology and Statistics program), SAMSI, Durham NC (Jun. 19, 2009).

Workshop on Discrete Models in Systems Biology, SAMSI, Durham NC (Dec. 3, 2008).

Special Session on Applications of Algebraic Geometry, 2008 Fall Western AMS Section Meeting, Vancouver, Canada (Oct. 4, 2008).

Workshop on Arrangements and Configuration Spaces, MSRI, Berkeley CA (Aug. 11, 2006).

**INVITED TALKS:
DEPARTMENT
COLLOQUIA**

Universidad de Buenos Aires (Argentina) (Apr. 13, 2023)

University of Texas El Paso (Nov. 30, 2018)

University of Wisconsin (Nov. 12, 2018)

Wesleyan University (Feb. 22, 2018)

Texas State University (Feb. 17, 2017)

Sam Houston State University (Apr. 29, 2015)

Southern Methodist University (Jan. 21, 2015)

Rice University (Sept. 25, 2014)

Illinois Institute of Technology, (Oct. 28, 2013)

Washington University in St. Louis (Feb. 11, 2013)

Dartmouth College (Jan. 24, 2013)
University of Illinois Chicago (Jan. 22, 2013)
Texas A&M University (Jan. 17, 2013)
Vanderbilt University (Jan. 10, 2013)
University of Minnesota (Dec. 13, 2012)
Northern Illinois University (Sept. 9, 2011)
Wake Forest University (Jan. 20, 2010)

**INVITED TALKS:
DEPARTMENT
SEMINARS**

Applied CATS (Combinatorics, Algebra, Topology, and Statistics) seminar (online), KTH Royal Institute of Technology (Nov. 30, 2021)
Mathematics of Reaction Networks online seminar, (Sept. 16, 2021)
Biostatistics seminar (online), University of California Davis (May 25, 2021)
Special seminar, North Carolina State University (Jan. 10, 2019)
Nonlinear algebra seminar, Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany (Jul. 18, 2018)
Nonlinear dynamics seminar, Free University, Berlin, Germany (Jul. 16, 2018)
Applied algebra and topology seminar, University of Oxford, England (May 18, 2018)
Kolchin seminar in differential algebra, CUNY (Mar. 2, 2018)
Center for Quantitative Medicine, University of Connecticut Health Center (Feb. 21, 2018)
Postdoc colloquium series, Texas A&M University (Nov. 29, 2017)
Junior algebra and geometry seminar, Texas A&M University (Jan. 31, 2017)
AWM student chapter seminar, Texas A&M University (Dec. 6, 2016)
Networks seminar, University of Houston (Sept. 2, 2016)
Mathematical biology seminar, University of Pennsylvania (Apr. 4, 2016)
Junior algebra and geometry seminar, Texas A&M University (Feb. 9, 2016)
Random structures seminar, University of Texas (Apr. 24, 2015).
Numerical analysis seminar, Texas A&M University (Mar. 11, 2015).
Analysis, dynamics, and applications seminar, University of Arizona (Jan. 29, 2013).
MPI fur Dynamik komplexer technischer Systeme, Magdeburg, Germany (Nov. 20, 2012).
Mathematical biology seminar, University of Iowa (Oct. 1, 2012).
Computer science seminar, University of Chicago (May 30, 2012).
Computational algebra seminar, University of California Berkeley (Mar. 14, 2012).
Mathematical biology and ecology seminar, Georgia Tech (Jan. 25, 2012)
Applied and computational math seminar, University of Wisconsin (Nov. 15, 2011).
Graduate/faculty seminar, Duke University (Mar. 18, 2011).
Algebra and discrete mathematics seminar, Clemson University (Nov. 4, 2010).
Symbolic computation seminar, North Carolina State University (Sept. 15, 2010).
Theorems on Biological Circuits Day, Harvard Medical School (Jul. 14, 2010).
Statistics seminar, University of Sydney, Australia (May 24, 2010).
BioMod Club seminar, Stanford University (Jan. 12, 2010).
Mathematical and computational biology seminar, University of California Berkeley (Nov. 26, 2009).

Discrete math seminar, University of California Berkeley (Oct. 7, 2009).
Institute Henri Poincaré, Paris, France (Jul. 2, 2009).
Duke University (Apr. 3, 2009).
Symbolic computation seminar, North Carolina State University (Apr. 1, 2009).
University of California San Diego (Aug. 26, 2008).
Stanford University (Feb. 12, 2008).
Pure and applied algebra seminar, TU Berlin (Dec. 4, 2007).
Dynamics seminar, University of California Berkeley (Oct. 16, 2007).
Algebraic statistics/Genomics seminar, University of California Berkeley (Sept. 18, 2007).
Commutative algebra and algebraic geometry seminar, University of California Berkeley (Sept. 11, 2007).
University of Wisconsin, Madison (May 24, 2007).
Combinatorics seminar, University of California Davis (Feb. 15, 2007).
Combinatorics seminar, University of Kansas (Jan. 31, 2007).

INVITED TALKS: Ethel Ashworth-Tsutsui Memorial Lecture, Texas A&M University (Nov. 26, 2018)

OTHER