Jose Israel Rodriguez 2025-08-17

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EMPLOYMENT

Associate Professor, Department of Mathematics 2025-Present
Assistant Professor, Department of Mathematics 2020-2025
Affiliate Faculty, Department of Electrical & Computer Engineering
Affiliate Faculty, Institute for Foundations of Data Science
Van Vleck Visiting Assistant Professor, Department of Mathematics 2018-2020
University of Wisconsin-Madison, WI

Provost's Postdoctoral Scholar, Department of Statistics 2016-2018
NSF Postdoctoral Fellow, Department of Statistics 2015-2016
University of Chicago, Chicago, IL
Mentor: Lek-Heng Lim

NSF Postdoctoral Fellow, Applied & Computational Mathematics and Statistics 2014-2015
University of Notre Dame, Notre Dame, IN
Mentor: Jonathan Hauenstein

EDUCATION

Doctor of Philosophy, Mathematics
University of California, Berkeley May 2014
Thesis: Numerical algebraic geometry for maximum likelihood estimation
Advisor: Bernd Sturmfels

Bachelor of Science, Mathematics
University of Texas at Austin May 2010
Thesis: Bounding the degree of Belyi polynomials
Advisor: Eric Katz

ACCEPTED FOR PUBLICATION

1. B. Finkel, J. I. Rodriguez, C. Wu, and T. Yahl, *Activation degree thresholds and expressiveness of polynomial neural networks*, 2025. `arXiv: 2408.04569`
2. O. Henriksson, C. Amendola, J. I. Rodriguez, and P. Y. Yu, *Maximum likelihood estimation of log-affine models using detailed-balanced reaction networks*, Journal of Mathematical Biology *(To appear)*, (2024). `arXiv: 2411.07986`
3. H. C. Kottler, J. Lindberg, and J. I. Rodriguez, *Method of moments for Gaussian mixtures: Implementation and benchmarks*, 2025. `arXiv: 2502.07648`
4. C. Amendola and J. I. Rodriguez, *A primer in likelihood geometry*, (To appear). `URL`

5. C. Amendola, J. Lindberg, and J. I. Rodriguez, *Solving systems of polynomial equations with decomposable projections*, Proceedings of *Varieties, Polyhedra, Computation*, (To appear)

PEER REVIEWED JOURNAL PUBLICATIONS

6. J. Lindberg, C. Améndola, and J. I. Rodriguez, *Estimating Gaussian mixtures using sparse polynomial moment systems*, SIAM J. Math. Data Sci., 7 (2025), pp. 224–252. DOI
7. L. t. G. Maxim, J. I. Rodriguez, and B. Wang, *Applications of singularity theory in applied algebraic geometry and algebraic statistics*, in Handbook of geometry and topology of singularities VII, Springer, Cham, [2025] ©2025, pp. 767–818. DOI
8. Y. Alexandr, M. Bakenhus, M. Curiel, S. K. Deshpande, E. Gross, Y. Gu, M. Hill, J. Johnson, B. Kagy, V. Karwa, J. Li, H. Lyu, S. Petrović, and J. I. Rodriguez, *New directions in algebraic statistics: three challenges from 2023*, Algebr. Stat., 15 (2024), pp. 357–382. DOI
9. M. Hill, S. Roch, and J. I. Rodriguez, *Maximum Likelihood Estimation for Unrooted 3-Leaf Trees: An Analytic Solution for the CFN Model*, Bull. Math. Biol., 86 (2024), p. Paper No. 106. DOI
10. K. Lee, J. Lindberg, and J. I. Rodriguez, *Implementing real polyhedral homotopy*, J. Softw. Algebra Geom., 14 (2024), pp. 59–71. DOI
11. L. G. Maxim, J. I. Rodriguez, B. Wang, and L. Wu, *Linear optimization on varieties and Chern-Mather classes*, Adv. Math., 437 (2024), pp. Paper No. 109443, 22. DOI
12. L. t. G. Maxim, J. I. Rodriguez, B. Wang, and L. Wu, *Logarithmic cotangent bundles, Chern-Mather classes, and the Huh-Sturmfels involution conjecture*, Comm. Pure Appl. Math., 77 (2024), pp. 1486–1508. DOI
13. T. Duff, A. Leykin, and J. I. Rodriguez, *u-generation: solving systems of polynomials equation-by-equation*, Numer. Algorithms, 95 (2024), pp. 813–838. DOI
14. J. Lindberg and J. I. Rodriguez, *Invariants of SDP exactness in quadratic programming*, J. Symbolic Comput., 122 (2024), pp. Paper No. 102258, 18. DOI
15. L. G. Maxim, J. I. Rodriguez, and B. Wang, *Euclidean distance degree of projective varieties*, Int. Math. Res. Not. IMRN, (2021), pp. 15788–15802. DOI
16. J. Lindberg, N. Nicholson, J. I. Rodriguez, and Z. Wang, *The maximum likelihood degree of sparse polynomial systems*, SIAM J. Appl. Algebra Geom., 7 (2023), pp. 159–171. DOI
17. P. Milenkovic, Z. Wang, and J. I. Rodriguez, *Encountering singularities of a serial robot along continuous paths at high precision*, Mechanism and Machine Theory, 181 (2023), p. 105224. DOI
18. E. Horobeţ and J. I. Rodriguez, *Data loci in algebraic optimization*, J. Pure Appl. Algebra, 226 (2022), pp. Paper No. 107144, 15. DOI
19. L. G. Maxim, J. I. Rodriguez, and B. Wang, *A Morse theoretic approach to non-isolated singularities and applications to optimization*, J. Pure Appl. Algebra, 226 (2022), p. Paper No. 106865. DOI
20. J. I. Rodriguez, J.-H. Du, Y. You, and L.-H. Lim, *Fiber product homotopy method for multiparameter eigenvalue problems*, Numer. Math., 148 (2021), pp. 853–888. DOI
21. T. Brysiewicz, J. I. Rodriguez, F. Sottile, and T. Yahl, *Solving decomposable sparse systems*, Numer. Algorithms, 88 (2021), pp. 453–474. DOI

22. T. Brysiewicz, J. I. Rodriguez, F. Sottile, and T. Yahl, *Decomposable sparse polynomial systems*, J. Softw. Algebra Geom., 11 (2021), pp. 53–59. DOI

23. J. D. Hauenstein, A. Leykin, J. I. Rodriguez, and F. Sottile, *A numerical toolkit for multiprojective varieties*, Math. Comp., 90 (2021), pp. 413–440. DOI

24. J. I. Rodriguez and B. Wang, *Computing Euler Obstruction Functions Using Maximum Likelihood Degrees*, Int. Math. Res. Not. IMRN, (2020), pp. 6699–6712. DOI

25. L. G. Maxim, J. I. Rodriguez, and B. Wang, *Defect of Euclidean distance degree*, Adv. in Appl. Math., 121 (2020), pp. 102101, 22. DOI

26. J. D. Hauenstein and J. I. Rodriguez, *Multiprojective witness sets and a trace test*, Adv. Geom., 20 (2020), pp. 297–318. DOI

27. D. I. Bernstein, C. Farnsworth, and J. I. Rodriguez, *The algebraic matroid of the finite unit norm tight frame (funtf) variety*, J. Pure Appl. Algebra, 224 (2020), pp. 106351, 15. DOI

28. L. G. Maxim, J. I. Rodriguez, and B. Wang, *Euclidean distance degree of the multiview variety*, SIAM J. Appl. Algebra Geom., 4 (2020), pp. 28–48. DOI

29. C. Améndola, N. Bliss, I. Burke, C. R. Gibbons, M. Helmer, S. Hoşten, E. D. Nash, J. I. Rodriguez, and D. Smolkin, *The maximum likelihood degree of toric varieties*, J. Symbolic Comput., 92 (2019), pp. 222–242. DOI

30. J. I. Rodriguez, *Solving the likelihood equations to compute Euler obstruction functions*, in Mathematical software—ICMS 2018, vol. 10931 of Lecture Notes in Comput. Sci., Springer, Cham, 2018, pp. 405–413. DOI

31. J. D. Hauenstein, J. I. Rodriguez, and F. Sottile, *Numerical computation of Galois groups*, Found. Comput. Math., 18 (2018), pp. 867–890. DOI

32. A. Leykin, J. I. Rodriguez, and F. Sottile, *Trace test*, Arnold Math. J., 4 (2018), pp. 113–125. DOI

33. J. I. Rodriguez and B. Wang, *The maximum likelihood degree of mixtures of independence models*, SIAM J. Appl. Algebra Geom., 1 (2017), pp. 484–506. DOI

34. J. I. Rodriguez and X. Tang, *A probabilistic algorithm for computing data-discriminants of likelihood equations*, J. Symbolic Comput., 83 (2017), pp. 342–364. DOI

35. A. Martín del Campo and J. I. Rodriguez, *Critical points via monodromy and local methods*, J. Symbolic Comput., 79 (2017), pp. 559–574. DOI

36. E. Horobeţ and J. I. Rodriguez, *The maximum likelihood data singular locus*, J. Symbolic Comput., 79 (2017), pp. 99–107. DOI

37. J. I. Rodriguez and X. Tang, *Data-discriminants of likelihood equations*, in ISSAC'15—Proceedings of the 2015 ACM International Symposium on Symbolic and Algebraic Computation, ACM, New York, 2015, pp. 307–314. DOI

38. J. I. Rodriguez, *Combinatorial excess intersection*, J. Symbolic Comput., 68 (2015), pp. 297–307. DOI

39. J. I. Rodriguez, *Maximum likelihood for dual varieties*, in SNC 2014—Proceedings of the 2014 Symposium on Symbolic-Numeric Computation, ACM, New York, 2014, pp. 43–49. DOI

40. J. I. Rodriguez, III, *Numerical algebraic geometry for maximum likelihood estimation*, ProQuest LLC, Ann Arbor, MI, 2014. Thesis (Ph.D.)–University of California, Berkeley, URL

41. J. Hauenstein, J. I. Rodriguez, and B. Sturmfels, *Maximum likelihood for matrices with rank constraints*, J. Algebr. Stat., 5 (2014), pp. 18–38. DOI

42. J. Draisma and J. Rodriguez, *Maximum likelihood duality for determinantal varieties*, Int. Math. Res. Not. IMRN, (2014), pp. 5648–5666. DOI

43. E. Gross and J. I. Rodriguez, *Maximum likelihood geometry in the presence of data zeros*, in ISSAC 2014—Proceedings of the 39th International Symposium on Symbolic and Algebraic Computation, ACM, New York, 2014, pp. 232–239. DOI

44. J. Rodriguez, *Bounding the degree of Belyi polynomials*, J. Number Theory, 133 (2013), pp. 2892–2900. DOI

45. J. Rodriguez and M. Ruggiu, *A novel method for the solution of the forward displacement problem of spherical parallel manipulators*, ZAMM Z. Angew. Math. Mech., 93 (2013), pp. 73–82. DOI

PUBLISHED EXTENDED ABSTRACTS AND SHORT COMMUNICATIONS

46. M. Hill and J. I. Rodriguez, *A maximum likelihood estimator for quartets under the Cavender-Farris-Neyman model*, ACM Commun. Comput. Algebra, 58 (2024), pp. 35–38. DOI

47. A. K. Englander and J. I. Rodriguez, *Towards learning the positive real discriminant of the Wnt signaling pathway shuttle model*, ACM Commun. Comput. Algebra, 58 (2024), pp. 85–88. DOI

48. J. I. Rodriguez, *Maximum likelihood degrees, Euclidean distance degrees, and the topology underneath.* Oberwolfach Rep. 19, No. 4, 3121-3170 (2022)., 2022. DOI

49. L.-H. Lim, J. I. Rodriguez, and Y. You., *Numerical homotopy methods for multiparameter eigenvalue problems*, XXI Householder Symposium on Numerical Linear Algebra, (2020), pp. 344–346

50. X. Li, J. I. Rodriguez, and B. Wang, *A numerical approach for computing euler characteristics of affine varieties*, in Mathematical Software – ICMS 2020, A. M. Bigatti, J. Carette, J. H. Davenport, M. Joswig, and T. de Wolff, eds., Cham, 2020, Springer International Publishing, pp. 51–60. URL

51. C. Crowley, J. I. Rodriguez, J. Weiker, and J. Zoromski, *MultiRegeneration for polynomial system solving*, ACM Commun. Comput. Algebra, 54 (2020), pp. 39–43. DOI ****Awarded Distinguished Software Presentation at ISSAC*

52. M. Härkönen, B. Hollering, F. T. Kashani, and J. I. Rodriguez, *Algebraic optimization degree*, ACM Commun. Comput. Algebra, 54 (2020), pp. 44–48. DOI

53. C. Farnsworth and J. I. Rodriguez, *Homogenized funtf varieties and algebraic frame completion*, ACM Commun. Comput. Algebra, 52 (2018), pp. 108–111. DOI

54. J. I. Rodriguez, *Testing membership of the likelihood correspondence*. Oberwolfach Rep. 14, No. 2, 1207-1279 (2017)., 2017. DOI

PREPRINTS AND IN REVISION

55. P. Milenkovic, J. I. Rodriguez, and Z. Wang, *Encircling singularities of a serial robot to find alternative inverse-kinematic solutions*, Doi:10.2139/ssrn.4946800, (2024). DOI

56. C. Amendola and J. I. Rodriguez, *A primer in likelihood geometry*, (To appear). URL

57. D. J. Bates, E. Gross, A. Leykin, and J. I. Rodriguez, *Bertini for Macaulay2*, 2013. arXiv: 1310.3297

58. Y. You, J. I. Rodriguez, and L.-H. Lim, *Accurate solutions of polynomial eigenvalue problems*, 2017. `arXiv: 1711.01301`

59. J. I. Rodriguez and B. Wang, *Numerical computation of braid groups*, 2017. `arXiv: 1711.07947`

TRAINING STUDENTS AND MENTORING POSTDOCS

Doctoral students advised

1. Cheng Chen (UW Madison Mathematics) 2025-Current
   Specialty: *Phase transitions and singular learning theory*
2. Bella Finkel (UW Madison Mathematics) 2024-Current
   Specialty: *Applied algebra for physics*
3. Caitlin Davis (UW Madison Mathematics) 2023-Current
   Specialty: *Homological properties of nonstandard graded rings*
4. Boyana Martinova (UW Madison Mathematics) 2023-Current
   Specialty: *Veronese subrings in the non-standard graded setting*
5. Aviva Englander (UW Madison Mathematics) 2023-Current
   Specialty: *Phylogenetic invariants for level-k networks*
6. Zinan Wang (Ph.D., UW Madison Mathematics) 2020-2024
   Applied algebra in kinematics of a spatial serial robot
7. Julia Lindberg (Ph.D., UW Madison ECE) 2020-2022
   Applications of convex algebraic geometry to power systems, statistics, and optimization

Masters students mentored

8. Nikou Lei (M.A., UW Madison Mathematics) 2024-2025
   Noetherian operators and linear PDEs with constant coefficients
9. Emma Thomas (M.A., UW Madison Mathematics) 2022-2023
   Invitation to Nonlinear Algebra
10. Yiling You (M.A., University of Chicago Statistics) 2016-2018
    Polynomial eigenvalue problems

Undergraduate research supervised

11. Noah Blum, Moulik Mehta, and Yutaro Yokoyama 2023
    Madison Experimental Mathematics Lab
    Algebra in Systems Biology: The Hunt for Positive Real Solutions
12. Mengwei Sun (Undergraduate, UW Madison) 2022-2023
    Beyond linear algebra
13. Lina Liu (Undergraduate **McNair Scholar**, UW Madison) 2020-2022
    Galois groups
14. Xinyang Hu (Undergraduate, UW Madison) 2020-2021
    Algebraic statistics: Maximum likelihood degrees of log-linear models
15. Joel Steinberg (Undergraduate, UW Madison) 2020
    Algebraic kinematics
16. Xiaxin Li (Undergraduate, UW Madison) 2019-2020
    Numerically computing Euler characteristics

Additional Research Assistants

17. Haley Colgate Kottler 2022 - 2023
18. Max Hill 2022 - 2023

Postdocs mentored

19. Thomas Yahl 2023-2026
Van Vleck Visiting Assistant Professor

TEACHING

Topics courses developed

- MATH/STAT/ECE 888: Topics in Mathematical Data Science 2025
  Algebraic foundations of data science
- MATH/ECE 842: Topics in Applied Algebra 2024
  Varieties, applications and polynomial systems
- MATH/ECE 842: Topics in Applied Algebra 2022
  Algebraic Statistics
- MATH/ECE 842: Topics in Applied Algebra 2020
  Polynomial system solving

Additional courses taught at UW Madison

- MATH 340 Elementary Matrix and Linear Algebra 2024
- MATH 234 Calculus—Functions of Several Variables 2021
- MATH 341 Linear Algebra 2021
- MATH 443 Applied Linear Algebra 2021
- MATH 2490 Undergraduate seminar (Collaborative Undergraduate Research Lab) 2020
- MATH 443 Applied Linear Algebra 2019
- MATH 421 Theory of Single Variable Calculus 2019
- MATH 421 Theory of Single Variable Calculus (Two sections) 2018

FUNDING, HONORS, AND AWARDS

- Institute for Computational and Experimental Research in Mathematics Spring 2027
  Metric Algebraic Geometry
- NSF Applied Math *Applied algebraic geometry: polynomial neural networks* (Recommended)
- *Alfred P. Sloan Fellow*, Sloan Foundation 2023-2025
- *Nellie McKay Fellow*, University of Wisconsin — Madison 2022-2023
- NSF Award 2408333 *Conference: GAeL XXXI (Geometrie Algebrique en Liberte)* 2024
- Fall Research Competition (PI) 2024
  Nonlinear Algebra for Unbalanced Procrustes Problems
- Institute for Mathematical and Statistical Innovation (Long Program) Fall 2023
  Algebraic statistics and our changing world: New methods for new challenges
- Fall Research Competition (PI) 2022
  Algebraic Degree of Polynomial Optimization
- ICERM Hot Topics Workshop 2020
  Galois Groups in applications and Enumerative geometry
- *US Junior Oberwolfach Fellow* 2020
- *Resident Honored Instructor* 2019
- *Lathisms Feature* 2017
- *Chancellor's Fellowship, University of California, Berkeley* 2010
- *Williams Scholar, University of Texas at Austin* 2010
- *Ronald E. McNair Scholar, University of Texas at Austin* 2008

SERVICE AND ORGANIZATION

Conferences

- *New Directions in Algebraic Statistics*, IMSI, Chicago — July 2025
- *SIAM Applied Algebra and Geometry (AG25), lead local organizer* — July 2025
- *ISSAC Tutorial Chair* — July 2024
- *ICERM Hot Topics: Galois Groups in applications and Enumerative geometry* — Fall 2020

NSF IMSI Long program: Algebraic Statistics and Our Changing World — Fall 2023

- *Questions and Consulting Seminar Organizer*
- *Spotlights and Treats Organizer*
- *Daily Debrief Organizer*
- *An invitation to Algebraic Statistics Workshop (5 days) Organizer*

Seminar series organized

- *Applied Algebra Seminar* — 2018-Current
- *SIAM Seminar in Applied Geometry and Algebra (SAGA)* — 2020-2022
- *Algebraic Geometry Seminar* (University of Chicago) — 2016-2017

Local events

- Algebra + AI (2AI) Discussion Series — Fall 2024
- Algebraic Statistics Afternoon Impromptu (ASAI) — August 2022
- Algebraic Statistics and Computation Seminar (Online) — 2020-2023
- Junior Math Faculty Virtual Meet-and-Greet — 2020-2021
- UW Madison Mathematics Colloquium Organizer — 2020-2021
- Postdoc panel: Discussing job applications, CVs, and research statements. — 2019
- Matroids Seminar Organizer: Graduate student seminar and reading group — 2019

Short meetings organized

- *Applied Algebra Day (University of Wisconsin, Madison, WI)* — 2025
- *Matroids day 2 (University of Wisconsin, Madison, WI)* — 2022
- *Numerical algebraic geometry day (Georgia Tech School of Math, Atlanta, GA)* — 2019
- *Matroids day (University of Wisconsin, Madison, WI)* — 2019

Networking and mentoring activities

- *How to AG25?* — 2025
- *Community, Career, and Communication* at IMSI — 2023
- *Meet the algebra speakers (Marina Garrota and Teresa Yu)* — 2023
- *Meet the algebra speaker (Colby Long) and applying to liberal arts colleges* — 2022
- *How to AG21? (Virtual)* — 2021
- *Meet and greet with treats (Pre-AMS Sectional Event)* — 2019

Special sessions and minisymposia organized

- *Joint Mathematics Meetings*
  1. Algebraic Statistics In Our Changing World, Seattle, Washington — 2025
  2. Theory and Applications of Numerical Algebraic Geometry, Boston, MA — 2017
- *AMS Sectional Special Sessions*
  3. Applications of Algebra and Geometry, University of Wisconsin — Milwaukee — 2024
  4. Applications of Algebra and Geometry, University of Wisconsin — Madison — 2019
- *SIAM Mathematics of Data Science*
  5. Algebraic Geometry and Machine Learning, Atlanta, Georgia — 2024
- *SIAM Annual Meeting Minisymposia*
  6. Numerical Differential Geometry Meets Numerical AG, Portland, Oregon — 2018

7. Algebraic Statistics: Data Analysis, Portland Oregon 2018
8. Algebraic Statistics, Daejeon, South Korea 2016

- *SIAM Applied Algebraic Geometry Minisymposia*
  9. Numerical methods in algebraic geometry, Eindhoven, Netherlands 2023
  10. Algebraic Statistics Bern, Switzerland 2019
  11. Numerical Methods in Algebraic Geometry, Bern, Switzerland 2019
  12. Likelihood Geometry, Atlanta, Georgia 2017
  13. Maximum Likelihood Degrees and Critical Points, Daejeon, South Korea 2015
- *Latinx in the Mathematical Sciences Conference*
  14. Algebra and combinatorics session, IPAM 2022
- *Joint Statistics Meetings*
  15. Algebraic Statistics Contributed Session 2018

Referee

- SIAGA: SIAM Journal on Applied Algebra and Geometry
- SIMAX: SIAM Journal on Matrix Analysis and Applications
- IMA Journal of Numerical Analysis
- Journal of Symbolic Computation
- Journal of Applied Algebra
- Journal of Algebraic Statistics
- The American Statistician
- Pacific Journal of Mathematics
- Advances in Mathematics
- Linear Algebra and its Applications
- Advances in Geometry
- MACIS: International Conference on Mathematical Aspects of Computer and Information Sciences
- ISSAC: International symposium on symbolic and algebraic computation
- MEGA: Methods in effective algebraic geometry

INVITED TALKS AND SEMINARS

Sep 2025-Present

1. Algebra for invertible neural networks
   Metric Algebraic Geometry, Institut Mittag-Leffler.
2. Hidden convexity for Unbalanced Procrustes problems
   SS87A AMS Special Session on Numerical Algebraic Geometry and Its Applications, Washington D.C. ⋄.
3. Activation degree thresholds for polynomial neural networks
   Applied and Computational Algebra, Saint Louis University, St. Louis, MO ⋄ .
4. Activation degree thresholds for polynomial neural networks
   Codes and Expansions (CodEx) Seminar, Virtual.
5. Activation degree thresholds for polynomial neural networks
   Algebraic Methods in Mathematical Machine Learning, 5th Biennial Meeting of the Pacific Northwest Section of SIAM, University of Washington ⋄.

Sep 2024-August 2025

6. Activation degree thresholds for polynomial neural networks
   Algebraic Geometry and Machine Learning Special Session, SIAM 2025 Applied Algebraic Geometry, Madison, WI.

7. Activation degree thresholds for polynomial neural networks
   Algebraic Geometry Seminar, Northwestern University.
8. Activation degree thresholds for polynomial neural networks
   Algebraic Statistics 2025, Munich, Germany.
9. Curves, surfaces, and applied algebraic geometry
   Commutative Algebra +, Iowa State, Ames, Iowa.
10. The geometry of economic fragility and supply chain shocks
    Math and Data Seminar, University of Missouri, Columbia, Missouri.
11. The geometry of economic fragility and supply chain shocks
    JMM 2025 Special Session, Seattle, Washington.
12. The geometry of economic fragility and supply chain shocks
    AMS Special Session: Applications of Algebraic Geometry, San Antonio, Texas.

Sep 2023-Aug 2024

13. A numerical toolkit for the likelihood correspondence
    Workshop on Computational and Applied Enumerative Geometry, Fields Institute, Toronto, Canada.
14. Geometry of economic fragility and supply network shocks
    BIRS: Positive Solutions of Polynomial Systems Arising from Real-life Applications, Granada, Spain.
15. Algebraic Optimization: From triangulation for multiview varieties to Procrustes problems
    Joint Mathematics Meetings: AMS Special Session on Mathematics of Computer Vision, San Francisco, CA.
16. Algebraic Optimization: From triangulation for multiview varieties to Procrustes problems
    Joint Mathematics Meetings: AMS Special Session on Mathematics of Computer Vision, San Francisco, CA.
17. New directions in Algebraic Statistics
    IMSI Daily Debrief Seminar, IMSI University of Chicago.
18. An introduction to algebraic economics
    IMSI Daily Debrief Seminar, IMSI University of Chicago.
19. Curves, Surfaces, and Applied Algebraic Geometry
    Modern Math Workshop, Portland, Oregon.
20. Lo and behold, polar and linear optimization degrees
    IMSI Spotlight Seminar, IMSI University of Chicago.

Sep 2022-Aug 2023

21. Curves, Surfaces, and Applied Algebraic Geometry
    PRIMES Colloquium, Pomona College.
22. Numerical Algebraic Geometry for the Method of Moments and Beyond
    Optimization-Conscious Econometrics Conference II, University of Chicago.
23. Curves, Surfaces, and Applied Algebraic Geometry
    Colloquium, University of Hawaii at Manoa, Honolulu, HI.
24. Maximum likelihood degree: Statistics, topology and algebra
    AMS Short Course: Polynomial systems, homotopy continuation and applications, JMM Boston, MA.

25. A topology toolkit for algebraic optimization
AMS Special Session on Applied Enumerative Geometry, JMM Boston, MA.
26. u-generation for affine conormal varieties
AMS Special Session on Complexity and Topology in Computational Algebraic Geometry, JMM Boston, MA.
27. Maximum likelihood degrees, Euclidean distance degrees and the topology underneath
Algebraic structures in Statistics, Oberwolfach Research Institute for Mathematics, Germany.
28. Curves, Surfaces, and Applied Algebraic Geometry
CAM Colloquium, Cornell University, Ithaca, New York.

Sep 2021-Aug 2022

29. Fiber product homotopy method for multiparameter eigenvalue problems
XXI Householder Symposium on Numerical Linear Algebra, Silvana, Selva di Fasano (Br), Italy.
30. Sparse polynomials for the method of moments
Algebraic Statistics 2022, Keynote speaker, Hawaii.
31. Maximum likelihood degrees: from statistics to singularities and the computations in between
Singularities Seminar, University of Wisconsin — Madison, Madison, WI.
32. Sparse polynomials for the method of moments
Optimization and Real Algebraic Geometry, Purdue University, West Lafayette IN.
33. u-generation: an equation by equation method for solving polynomial systems
AMS Special Session on Applicable Algebraic Geometry, Purdue.
34. Maximum likelihood degrees for sparse polynomial systems
AMS Special Session on Algebraic Statistics, Purdue.
35. Sparse polynomials for the method of moments
Applied Mathematics Colloquium, Columbia, NY.
36. u-generation: an equation by equation method for solving polynomial systems
Algebraic Geometry Seminar, Georgia Tech.

Sep 2020-Aug 2021

37. Galois groups in Statistics
JMM Special Session: Numerical methods for solving polynomial system, Virtual.
38. Galois groups in Statistics
Algebraic Statistics Online Seminar, Virtual.

August 2020 and before

39. Computing Euler characteristics
International Congress on Mathematical Software, Virtual.
40. MultiRegeneration for polynomial system solving
International Symposium on Symbolic and Algebraic Computation, Virtual.
41. Nearest point problems and Euclidean distance degrees
Einstein Workshop: Nonlinear Algebra, TU Berlin, Berlin, Germany.
42. Nearest point problems and Euclidean distance degrees
SIAM PNW Fall meeting, Seattle, WA.
43. Defect of Euclidean distance degree
AMS Special Session on Singularities, University of Wisconsin-Madison, Madison, WI.

44. Data discriminants of likelihood equations
International Congress on Industrial and Applied Mathematics (ICIAM), Valencia, Spain.
45. Witness collections and a numerical algebraic geometry toolkit
SIAM AG19: Algebraic methods for polynomial system solving solving), University of Bern, Bern, Switzerland.
46. Nearest point problems and Euclidean distance degrees
Junior Colloquium Series, University of Michigan, Ann Arbor, MI.
47. Nearest point problems and Euclidean distance degrees
AMS Special Session on Applicable Algebraic Geometry, Auburn University, Auburn, AL.
48. Nearest point problems and Euclidean distance degrees
PACM IDeAS Seminar, Princeton University.
49. Subvarieties of the likelihood correspondence
ICERM: Applications of Nonlinear algebra, ICERM, Providence, RI.
50. Multidegrees, matroids, and funtf varieties
Applied Algebra Seminar, University of Wisconsin-Madison, Madison, WI.
51. Maximum likelihood degrees: singularities and point estimation
Singularities Seminar, University of Wisconsin-Madison, Madison, WI.
52. Algebraic methods for point estimation
Statistics Seminar, University of Wisconsin-Madison, Madison, WI.
53. Galois groups in applications
Algebraic Geometry Seminar, University of Wisconsin-Madison, Madison, WI.
54. Numerical computation of Galois groups and braid groups
Algebraic Geometry Northeastern Series (AGNES), Brown University, Providence, RI.
55. Fiber product homotopy method for multiparameter eigenvalue problems
ICERM: Core Computational Methods in Nonlinear Algebra, ICERM, Providence, RI.
56. Algebraic methods for point estimation
Joint CUNY Graduate Center-Courant Seminar in Symbolic-Numeric Computing, New York City, New York.
57. Implementations of symbolic-numeric algorithms computing Euler obstruction functions using maximum likelihood degrees
ICMS 2018 Session: Computational Algebraic Geometry , University of Notre Dame, South Bend Indiana.
58. Introduction to numerical differential geometry
SIAM AN18: Numerical differential geometry meets numerical algebraic geometry, Oregon Convention Center (OCC) | Portland, Oregon, USA.
59. Factoring graphs, matrices, and polynomials
SIAM AN18: Theoretical Challenges of Tensor Decomposition, Oregon Convention Center (OCC) | Portland, Oregon, USA.
60. Macaulay2 Software Demo
NSF/CBMS Regional Conference in the Mathematical Sciences Applications of Polynomial Systems, Texas Christian University, Fort Worth, Texas.
61. Tensor products of graphs, matrices, and polynomials
AMS Eastern Sectional: Algebraic Statistics Special Session, Northeastern University, Boston, Massachusetts.

62. The Maximum Likelihood Degree of Toric Varieties
AMS Eastern Sectional: Topics in Toric Geometry Special Session, Northeastern University, Boston, Massachusetts.
63. Numerical computation of Galois groups and braid groups
Western Algebraic Geometry Symposium (WAGS), San Francisco State University, California.
64. Tensor products of graphs, matrices, and polynomials
Latinx in the Mathematical Sciences Conference, IPAM, UCLA.
65. Accurate solutions to polynomial eigenvalue problems
Korea-China International Conference on Matrix Theory with Applications, Joint Meeting Sungkyunkwan University, Suwon, South Korea.
66. New trace tests in numerical algebraic for describing algebraic varieties to a computer
Colloquium, Yonsei University, Seoul, South Korea.
67. Trace tests in numerical algebraic geometry
Geometry Seminar, Texas A&M, College Station, Texas.
68. Numerical Algebraic Geometry in Algebraic Statistics
Random Structures Seminar, University of Texas at Austin.
69. Trace tests in numerical algebraic geometry
Seminar, Romania.
70. Trace tests in numerical algebraic geometry
Seminar on Algebra and geometry, University in Leuven, Leuven, Belgium.
71. Trace tests in numerical algebraic geometry
Seminar on Nonlinear Algebra, Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany.
72. Trace test
Algebra meets numerics: condition and complexity, TU Berlin, Berlin, Germany.
73. Trace test: Describing algebraic varieties to a computer
Seminar on Applied Algebra and Geometry, Massachusetts Institute of Technology, Cambridge, MA.
74. Trace test: Describing algebraic varieties to a computer
SILO: Systems information learning optimization seminar, Wisconsin Institute for Discovery, Madison, WI.
75. Subvarieties of the likelihood correspondence
AMS Special Session on Applicable and Computational Algebraic Geometry, University of North Texas, Denton, Texas.
76. Introduction to maximum likelihood degree
SIAM Conference on Applied Algebraic Geometry: Maximum likelihood degree special session, Georgia Institute of Technology, Atlanta, Georgia.
77. Subvarieties of the likelihood correspondence
SIAM Conference on Applied Algebraic Geometry: Applications of numerical algebraic geometry, Georgia Institute of Technology, Atlanta, Georgia.
78. Describing algebraic varieties to a computer
String Phenomenology Conference, Virginia Tech, Blacksburg, Virginia.
79. Trace test
Algebraic Statistics, Oberwolfach Research Institute for Mathematics, Germany.
80. Regenerating multidegrees
Algebraic Geometry, Ohio State University, Columbus, Ohio.

81. Local-to-Global Methods for Solving Likelihood Equations
Colloquium, Department of Statistics, University of Chicago, Illinois.
82. Introducing Homotopies for Solving Systems of Equations
Scientific and statistical computing seminar, Departments of Computer Science, Mathematics, Statistics and the Computation Institute, University of Chicago, Illinois.
83. Introducing the generalized method of moments (GMM) degree
Theory and Applications of Numerical Algebraic Geometry, Hyatt Regency Atlanta and Marriott Atlanta Marquis.
84. Introducing the generalized method of moments (GMM) degree
AMS special on Applied Algebraic Geometry, North Carolina State University in Raleigh.
85. Numerical computation of Galois groups
Fall Western Sectional Meeting: Foundations of Numerical Algebraic Geometry, University of Denver.
86. Numerical computation of Galois groups
Algebra Geometry and Combinatorics Seminar, San Francisco State University.
87. Numerical computation of Galois groups
Research Seminar, San Jose State University.
88. Numerical computation of Galois groups
XXI Coloquio Latinoamericano de Algebra, Buenos Aires, Argentina.
89. Solving the likelihood equations with Bertini.m2
SIAM Annual Meeting: Algebraic Statistics Session, Westin Boston Waterfront, Boston, Massachusetts.
90. Numerical algebraic geometry and its applications
Special series, National Institute for Mathematical Sciences Daejeon, South Korea.
91. Introducing the generalized method of moments (GMM) degree
Applications of Algebraic Methods to Statistics, Research Institute of Mathematical Science of Kyoto University, Kyoto, Japan.
92. Numerical computation of Galois groups for maximum likelihood estimation
Spring Research Conference 2016 Special Session: Algebraic and Geometric Methods in Statistics, Illinois institute of Technology.
93. Exploiting multi-homogeneous structure with linear product homotopies
Workshop on Software and Applications of Numerical Algebraic Geometry, University of Notre Dame.
94. Numerical computation of Galois groups
Special session for applied algebraic geometry, National Institute for Mathematical Sciences Daejeon, South Korea.
95. Numerical computation of Galois groups in applications
Joint Number Theory and Applied Algebra Seminar, University of Wisconsin Madison.
96. The maximum likelihood degree of rank 2 matrices via Euler characteristics
Algorithms and Complexity in Algebraic Geometry Reunion Workshop, Simons Institute, Berkeley, CA.
97. Numerical computation of Galois groups
Workshop on Algebra, Geometry and Proofs in Symbolic, The Fields Institute-Toronto, Canada.
98. Numerical computation of Galois groups
Algebraic Geometry Seminar, Stanford University.
99. Numerical computation of Galois groups
Colloquium, Santa Clara University.

100. Irreducible Decomposition of Multiprojective Varieties
Geometry Seminar, Texas A&M, College Station, Texas.
101. The maximum likelihood degree of rank 2 matrices via Euler characteristics
AMS Sectional Meeting: Algebraic statistics and its interactions with combinatorics, computation, and network science session, Chicago, Illinois.
102. Solving the Dual Likelihood Equations
SIAM Conference on Applied Algebraic Geometry, Mini-symposium: Maximum Likelihood Degrees and Critical Points Mini-Symposium, National Institute for Mathematical Sciences Daejeon, South Korea.
103. Galois groups via numerical algebraic geometry
SIAM Conference on Applied Algebraic Geometry, Mini-symposium: Group actions in algebraic geometry and commutative algebra, National Institute for Mathematical Sciences -Daejeon, South Korea.
104. Maximum Likelihood Estimation for Matrices with Rank Constraints
Algebra, Geometry, and Combinatorics Seminar, University of Illinois at Urbana-Champaign.
105. Numerical Irreducible Decomposition of Multiprojective Varieties
Algebraic Geometry Seminar, University of Wisconsin-Madison.
106. Numerical Irreducible Decomposition of Multiprojective Varieties
Algebraic Geometry/Commutative Algebra Seminar, University of Notre Dame.
107. Numerical Irreducible Decomposition of Multiprojective Varieties
Algebraic Geometry and Number Theory Seminar, Rice University.
108. The Maximum Likelihood Degree and Data Discriminants
Topology and Combinatorics Seminar, Freie Universität Berlin.
109. Numerical Algebraic Geometry for Maximum Likelihood Estimation
Mathematics Colloquium, University of Texas at Dallas.
110. Solving the Dual Likelihood Equations
Algebraic Statistics Special Section, AMS Fall Western Sectional Meeting.
111. Data Discriminants of Likelihood Equations
Computational Algebraic Geometry and Applications in Science and Engineering Special Section, AMS Fall Western Sectional Meeting.
112. Solving the Dual Likelihood Equations
Solving Polynomial Equations, Simons Institute for the Theory of Computing.
113. Bertini for Macaulay2
ICMS 2014: Session: Software for Numerical Algebraic Geometry, Hanyang University, Seoul, Korea.
114. Maximum Likelihood for Dual Varieties
Symbolic Numeric Computation, East China Normal University, Shanghai, China.
115. Maximum Likelihood Geometry in the Presence of Data Zeros
International Symposium on Symbolic and Algebraic Computation, Kobe, Japan.
116. Numerical Algebraic Geometry for Maximum Likelihood Estimation
Algebraic Geometry Seminar, Korea Institute for Advanced Study, Seoul, Korea.
117. Numerical Algebraic Geometry for Maximum Likelihood Estimation
Optimization and Algebraic Geometry, NIMS at Daejeon, South Korea.
118. Numerical Algebraic Geometry for Maximum Likelihood Estimation
Applied Algebra Days 2, University of Madison at Wisconsin.

119. Numerical Algebraic Geometry for Maximum Likelihood Estimation
Algebraic Statistics Seminar, Illinois Institute of Technology.
120. Maximum Likelihood Estimation Using Bertini
Algebraic Statistics Seminar, University of California at Berkeley.
121. Maximum Likelihood Estimation for Data with Zeros
Symbolic Computation Seminar, North Carolina State University.
122. Maximum Likelihood Estimation for Data with Zeros
Algebra Seminar, Georgia Institute of Technology, Georgia Tech.
123. Numerical Algebraic Geometry in Algebraic Statistics
SIAM Conference of Applied Algebraic Geometry, Colorado State University.
124. Maximum Likelihood Duality of Determinantal Varieties
Computational Algebra Seminar, Max Planck Institute for Mathematics, Bonn.
125. Maximum Likelihood Duality of Determinantal Varieties
Algebra Seminar, Universitat des Saarlandes.
126. Numerical Algebraic Geometry: An Introduction and Applications
Discrete Mathematics Seminar, Goethe-Universitat.
127. Numerical Algebraic Geometry in Algebraic Statistics
Algebra Seminar, Universitat Konstanz.
128. Combinatorial Excess Intersection
MEGA, Goethe-Universitat.
129. Combinatorial Excess Intersection
Graduate Student Combinatorics Conference, University of Minnesota, Twin Cities.
130. Numerical Algebraic Geometry in Algebraic Statistics
Math/ICES Center of Numerical Analysis Seminar, University of Texas at Austin.
131. Numerical Algebraic Geometry: An Introduction and Applications
Colloquium, Sam Houston State University.
132. Numerical Algebraic Geometry in Algebraic Statistics
SIAM Student Chapter Seminar, Texas Tech University.
133. Numerical Algebraic Geometry: An Introduction and Applications
Colloquium, Southern Methodist University.
134. Maximum Likelihood for Matrices with Zero Structures
Algebraic Statistics Workshop, University of California at Berkeley.
135. Numerical Algebraic Geometry: Introduction and Applications
Algebra Geometry and Combinatorics Seminar, San Francisco State University.
136. Numerical Algebraic Geometry in Algebraic Statistics
Algebra and Discrete Mathematics, University of California at Davis.
137. Numerical Algebraic Geometry: An Introduction and Applications
SIAM Student Chapter Seminar, University of California at Berkeley.
138. Numerical Algebraic Geometry in Algebraic Statistics
FRAGMENT Seminar, Colorado State University.
139. Numerical Algebraic Geometry: An Introduction and Applications
Colloquium, University of Colorado at Boulder.
140. Maximum Likelihood for Matrices with Rank Constraints
Commutative Algebra Seminar, University of California at Berkeley.
141. Homotopies for Maximum Likelihood Estimation
Algebraic Statistics in the Alleghenies, Pennsylvania State University.