

CURRICULUM VITAE

TYLER J. JARVIS

EDUCATION

- Ph.D: 1994.** Princeton University, mathematics
- M.A: 1992.** Princeton University, mathematics
- M.S: 1990.** Brigham Young University, mathematics
- B.S: 1989.** Brigham Young University, mathematics, summa cum laude

ACADEMIC EXPERIENCE

- 2006–present:** Professor, Brigham Young University
- 2012–2013:** Visiting Scholar, University of Utah
- 2010:** Visiting Scholar, Max-Planck-Institut für Mathematik, Bonn, Germany
- 2007:** Visiting Scholar, Mittag-Leffler Institute, Djursholm, Sweden
- 2001–2006:** Associate Professor, Brigham Young University
- 2001–2002:** Visiting Scholar, Boston University
- 1996–2001:** Assistant Professor, Brigham Young University
- 1994–1996:** Assistant Professor, Mississippi State University

ADMINISTRATIVE EXPERIENCE

- 2013–Present:** Cofounder and Director, *Applied and Computational Mathematics Program (ACME)*, Brigham Young University
- 2024–2026:** Chair, *AI and Data Science Committee*, Brigham Young University College of Computing, Math, and Science
- 2006–2017:** Cofounder and Codirector, *BYU–NSF Center for Undergraduate Research in Mathematics*
- 2006–2012:** Department Chair, Brigham Young University *Department of Mathematics*
- 2008–2009:** Member, *Mathematics Steering Committee*, Utah State Office of Education
- 1996–2007:** Member, Board of Directors, *Meyer and Liechty Corporation*
- 2005–2006:** Chair, *Rock Canyon School Community Council* (elected office)
- 1999–2006:** Director of *Graduate Studies, Department of Mathematics*, Brigham Young University

AWARDS AND RECOGNITIONS RECEIVED

- 2026:** Niven Lecture, University of Oregon.
- 2025:** Helen Barton Lecture, University of North Carolina Greensboro.
- 2025:** Technology Transfer Award, Brigham Young University.
- 2024:** Award for an Exemplary Program or Achievement in a Mathematics Department, American Mathematical Society, awarded to the BYU Applied and Computational Mathematics Emphasis (ACME) Program, which I cofounded and direct. This is awarded to one program per year, nationally.
- 2022:** American Mathematical Society Annual Lecture on Education, Inaugural Speaker.
- 2019:** Award for Distinguished Service. College of Physical and Mathematical Sciences, Brigham Young University
- 2016:** Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics, Mathematical Association of America (Each year three recipients are chosen from approximately 20,000 members nationally)
- 2016:** Karl G. Maeser Excellence in Teaching Award. Brigham Young University
- 2015:** Mathematics Program that Makes a Difference, American Mathematical Society, award for the BYU–NSF Center for Undergraduate Research in Mathematics, which I codirected. (At most two programs are selected nationally each year.)
- 2014:** Distinguished Mentoring Award, BYU, Department of Mathematics.

- 2013:** Award for Distinguished Teaching of Mathematics, Kenneth C. Savage Fdn.
- 2012:** Distinguished Scholarship Award, BYU, Department of Mathematics
- 2006:** Award for Outstanding Teaching, College of Physical and Mathematical Sciences, Brigham Young University
- 1995:** Faculty Early Career Development Award (NSF CAREER), National Science Foundation (the National Science Foundation's most prestigious awards in support of early-career faculty.)

EXTERNAL FUNDING RECEIVED

- 2021–2025:** Tula Health, “Noninvasive health sensing.”
- 2016–2020:** National Science Foundation DMS-1564502, “Focused Research Group: Crossing the Walls in Enumerative Geometry.” Collaborative project with the University of Michigan, Columbia, MIT, and Stanford.
- 2013–2017:** National Science Foundation DUE-1323785, “TUES: A New Curriculum in Applied and Computational Mathematics.”
- 2012–2017:** National Science Foundation DMS-1148695: “Center for Mentoring Undergraduate Research in Mathematics.”
- 2010–2012:** National Security Agency H98230-10-1-0181: “Group Actions, Orbicurves, and Topological Field Theory.”
- 2006–2010:** National Science Foundation DMS-0636648: “Center for Mentoring Undergraduate Research in Mathematics.”
- 2006–2009:** National Science Foundation DMS-0605155: “Stringy Invariants, Orbicurves, and Topological Field Theory.”
- 2001–2005:** National Science Foundation DMS-0105788: “Higher Spin Curves and Cohomological Field Theories.”
- 1998–2000:** National Security Agency MDA904-99-1-0039: “Moduli of Higher Spin Curves.”
- 1995–1998:** National Science Foundation, Early Career Development Award (NSF CAREER) DMS-9501617: “Moduli of Generalized Spin Curves; Class Size and Calculus Learning.”

PEER REVIEWED ARTICLES

- (1) Transtrum, M. K., Hart, G. L. W., Jarvis, T. J., and Whitehead, J. P. Generalized aliasing explains double descent and informs model design. *Physical Review Research*. **7**(2025), 043268.
- (2) Parkinson, E., Wall, K., Slagle, J., Treuhaft, D., de la Bruere, X., Goldrup, S., Keith, T., Call, P., and Jarvis T. J. Chebyshev Subdivision and Reduction Methods for Solving Multivariable Systems of Equations. *Journal of Symbolic Computation*. **128** (2025), 102392.
- (3) Rogers, K., Yu, H., Cho, S., Fulda, N., Yorgason, J., and Jarvis, T. J. Decoupling the Backward Pass Using Abstracted Gradients. *Proceedings of the 16th International Conference on Agents and Artificial Intelligence: ICAART*. **3** (2024), 507–518.
- (4) Jarvis, T. J. Restoring Confidence in the Value of Mathematics by Teaching Undergraduates Math They Will Use. *Notices of the American Mathematical Society*. **70** (2023) no. 1, 105–113.
- (5) King, A., Murri, J., Callahan, J., Russell, A., & Jarvis, T. J. Mathematical Analysis of Redistricting in Utah. *Statistics and Public Policy*. **9** (2022) no. 1, 136–148.
- (6) Parkinson, S., Ringer, H., Wall, K., Parkinson, E., Ereksan, L., Christensen, D., & Jarvis, T. J. Analysis of Normal-Form Algorithms for Solving Systems of Polynomial Equations *Journal of Computational and Applied Mathematics* **411** (2022), Article 114235.
- (7) Jorgensen, J., Christensen, J., Jarvis, T. J., & Hart, G. A general algorithm for calculating the irreducible Brillouin zone. *Communications in Computational Physics*. **31** (2022) no. 2, 495–515.

- (8) Jarvis, T. J., Clough, J., Cox, J., Petersen, K., Sailsbery, M., Robertson, C., Moncur, T., Palmer, K., & Lund, D. Using Survey Data and Mathematical Modeling to Prioritize Water Interventions in Developing Countries. *Water Resources Management*. **35** (2021) no. 2, 745–756.
- (9) Francis, A., Jarvis, T. J., & Priddis, N. A brief survey of FJRW theory. *Advanced Studies in Pure Mathematics*. **83** (2019), 19–53.
- (10) Fan, H. J., Jarvis, T. J., & Ruan, Y. A Mathematical Theory of the Gauged Linear Sigma Model. *Geometry and Topology*. **22** (2018), 235–303.
- (11) Fan, H. J., Jarvis, T. J., & Ruan, Y. The Moduli Space in the Gauged Linear Sigma Model. *Chinese Annals of Mathematics. Series B. Special Issue on Nonabelian Gauged Linear Sigma Models*. **38B** no. 4 (2017), 913–936.
- (12) Edidin, D., Jarvis, T. J., & Kimura, T., Chern Classes and Compatible Power Operations in Inertial K-theory. *Annals of K-Theory*. **2** no. 1 (2017), 73–130.
- (13) Fan, H. J., Francis, A., Jarvis, T. J., Merrell, E. & Ruan, Y. Proof of Witten’s D_4 Integrable Hierarchies Conjecture. *Chinese Annals of Math. series B* **37** (2016) no. 2, 175–192.
- (14) Edidin, D., Jarvis, T. J., & Kimura, T., A Plethora of Inertial Products. *Annals of K-Theory* **1** (2016) no. 1, 85–108.
- (15) Fan, H. J., Jarvis, T. J., & Ruan, Y. The Witten Equation, Mirror Symmetry, and Quantum Singularity Theory. *Annals of Mathematics* **178** (2013), 1–106.
- (16) Francis, A., Jarvis, T. J., Johnson, J. D., Suggs, R., Landau-Ginzburg Mirror Symmetry for Orbifolded Frobenius Algebras. *Proceedings of Symposia in Pure Mathematics*. **85** (2012), 333–353.
- (17) Jarvis, T. J., Lang, W. E., and Ricks, J. R. Integral Models of Extremal Rational Elliptic Surfaces. *Communications in Algebra* **40**:10 (2012), 3867–3883.
- (18) Fan, H. J., Jarvis, T. J., & Ruan, Y. Quantum Singularity Theory for A_{r-1} and r -Spin Theory. *Annales de l’Institut Fourier*. **61** no. 7 (2011), 2781–2802.
- (19) Edidin, D., Jarvis, T. J., & Kimura, T. Logarithmic Trace and Orbifold Products. *Duke Mathematical Journal*. **153** no. 3 (2010), 427–473.
- (20) Fan, H. J., Jarvis, T. J., & Ruan, Y. Geometry and Analysis of Spin Equations. *Communications on Pure and Applied Mathematics*. **61**, no. 6 (2008), 745–788.
- (21) Jarvis, T. J., Kaufmann, R., & Kimura, T. Stringy K-theory and the Chern Character. *Inventiones Mathematicae*. **168**, no. 1 (2007), 23–81.
- (22) Jarvis, T. J., Lang, W. E., Petrosyan, N., Rimmasch, G., Rogers, J., & Summers, E. D. Classification of Singular Fibres on Rational Elliptic Surfaces in Characteristic Three. *Communications in Algebra*, **33** (2005), 4533–4566.
- (23) Jarvis, T. J., Kimura, T. & Vaintrob, A. The Moduli Space of Stable r -Spin Maps and Quantum Cohomology. *Comm. in Mathematical Physics*. **259** no. 3 (2005), 511–543.
- (24) Jarvis, T. J., Kaufmann, R., & Kimura, T. Pointed Admissible G -covers and G -equivariant Cohomological Field Theories. *Compositio Mathematica*, **141** (2005), 926–978.
- (25) Jarvis, T. J. & Tanton, J. The Hairy Ball Theorem via Sperner’s Lemma. *American Mathematical Monthly*, **111** no. 7 (2004), 599–603.
- (26) Abramovich, D. & Jarvis, T. J. Moduli of Twisted Spin Curves. *Proceedings of the American Mathematical Society*, **131** no. 3 (2003), 685–699.
- (27) Jarvis, T. J. & Kimura, T. Orbifold quantum cohomology of the Classifying Space of a Finite Group. In A. Adem, J. Morava, & Y. Ruan (Eds.). *Orbifolds in Mathematics and Physics (Madison, WI, 2001)*, Contemporary Mathematics, **310** (2002), 123–134. Providence, R.I.: American Mathematical Society.
- (28) Jarvis, T. J., Kimura, T. & Vaintrob, A. Gravitational Descendants and the Moduli Space of Higher Spin Curves. In E. Previato (Ed.), *Advances in Algebraic Geometry Motivated by Physics*. Contemporary Mathematics **276** (2001), 167–177. Providence, R.I.: American Mathematical Society.
- (29) Jarvis, T. J. Picard Group of the Moduli of Higher Spin Curves. *New York Journal of Mathematics*, **7** (2001), 23–47.

- (30) Jarvis, T. J., Kimura, T. & Vaintrob, A. Moduli Spaces of Higher Spin Curves and Integrable Hierarchies. *Compositio Mathematica*, **126** no. 2 (2001), 157–212.
- (31) Jarvis, T. J., Kimura, T. & Vaintrob, A. Tensor Products of Frobenius manifolds and Moduli Spaces of Higher Spin Curves. In G. Dito & D. Sternheimer (Eds.), *Conférence de Moshé Flato 1999*, vol. 2 (2000), (145–166). Dordrecht, Netherlands: Kluwer.
- (32) Jarvis, T. J. Geometry of the Moduli of Higher Spin Curves. *International Journal of Mathematics*, **11** no. 5 (2000), 637–663.
- (33) Jarvis, T. J. Compactification of the Universal Picard over the Moduli of Stable Curves. *Mathematische Zeitschrift*, **235** (2000), 123–149.
- (34) Jarvis, T. J. Torsion-free Sheaves and Moduli of Generalized Spin Curves. *Compositio Mathematica*, **110** no. 3 (1998), 291–333.
- (35) Barrett, W. W. & Jarvis, T. J. Spectral Properties of a Matrix of Redheffer. *Linear Algebra and Its Applications*, **162–164** (1992), 673–683.
- (36) Cox, P. A., Cromar, S. & Jarvis, T. J. Underwater Pollination, Three-dimensional Search, and Pollen Morphology: Predictions from a Supercomputer Analysis. In S. Blackmore & S. H. Barnes (Eds.), *Pollen and Spores: Patterns of Diversification* (1992), 363–375. Oxford University Press.
- (37) Cox, P. A., Cromar, S. & Jarvis, T. J. Underwater pollination and Three-dimensional Search: A super computer approach. In K.R. Billingsly, H.U. Brown III, & E.S. Derohanes (Eds.), *Computer Assisted Analysis and Modeling on the IBM 3090*, Vol. 2 (1991). 569–582. MIT Press.
- (38) Jarvis, T. J. A Dominant Negative Eigenvalue of a Matrix of Redheffer. *Linear Algebra and Its Applications*, **142** (1990), 141–152.

Books

- (39) Jarvis, T. J. & Priddis, N. (Eds.). *Singularities, Mirror Symmetry, and the Gauged Linear Sigma Model*, Contemporary Mathematics, **763** (2021). American Mathematical Society, Providence, RI.
- (40) Humpherys, J., Jarvis, T. *Foundations of Applied Mathematics Volume 2: Algorithms, Approximation, Optimization*. Society for Industrial and Applied Mathematics. Philadelphia, PA. (2020).
- (41) Humpherys, J., Jarvis, T., & Evans, E. *Foundations of Applied Mathematics Volume 1: Mathematical Analysis*. Society for Industrial and Applied Mathematics. Philadelphia, PA. (2017).
- (42) Jarvis, T. J., Kimura, T. & Vaintrob, A. (Eds.). *Proceedings of the Conference on Gromov-Witten Theory of Spin Curves and Orbifolds*, Contemporary Mathematics, **403** (2006). American Mathematical Society, Providence, RI.

OTHER PUBLICATIONS

- (43) Charles, G.-U., et al. [including Jarvis, T. J.], Amicus Brief of Mathematicians, Law Professors, and Students. *Rucho v. Common Cause*, 588 U.S. 18–422, 18–726 (2019).
- (44) Humpherys, J., Jarvis, T.J., and Evans, E. (Eds.) *Foundations of Applied Mathematics, Lab Manuals*. foundations-of-applied-mathematics.github.io (2016–2023).
- (45) Jarvis, T. J. That’s how the light gets in. *BYU Magazine*, Fall 2013, 24–30.
- (46) Jarvis, T. J. and Jarvis, H. B. Gambling: What are the odds? *BYU Magazine*, Spring 2001, 48–52.
- (47) Jarvis, T. J. & Jarvis, H. B. Gambling. In D. Paul & G. Hatch (Eds.), *Enter to Learn*. (1999) 288–299. Brigham Young University Press.

IN REVIEW

- (48) Fan, H., Jarvis, T. J., Ruan, Y., *Quantization of Singularity Theory*. Research Monograph. American Mathematical Society.

PATENTS

- (1) Williams, A. and Jarvis, T. J. (2023) U.S. Provisional Patent Application No. 63/601,335 filed 21 Nov 2023 as *Fourier–Kalman State (FoKS): A Flexible Framework for Modeling and Prediction of Periodic Systems*. Non-provisional Docket Number JTS0003, filed 20 Nov 2024.
- (2) Williams, A., Jarvis, T. J., and Davis, R. (2023) U.S. Provisional Patent Application No. 63/601,494 filed 21 Nov 2023 as *Integrated Path Approximation: A Novel Approach to Modeling Macroscopic Photon Absorption in Highly Scattering Media*. Non-provisional Docket Number JTS0005, filed 20 Nov 2024.
- (3) Jarvis, T. J., Terry, W., Lunceford, B., Tolman, L., and Davis, M. (2023) U.S. Provisional Patent Application No. 63/612,791 filed 20 Dec 2023 as *Beer–Lambert inversion for estimating blood analytes from spectrometer signal*. Non-provisional Docket Number JTS0007, filed 20 Dec 2024.
- (4) Jarvis, T. J., King, A., and Lunceford, B. (2024) U.S. Provisional Patent Application No. 63/656,277 filed 5 June 2024 as *Phase Lock Averaging for removing noise from almost-periodic signals with non-constant frequency and irregular shape*.
- (5) Jarvis, T. J. and Lunceford, B. (2024) U.S. Provisional Patent Application No. 63/703,693 filed 4 Oct 2024 as *Optimal Wavelength Standardization*.
- (6) Jarvis, T. J. and Terry, W. (2024) U.S. Provisional Patent Application No. 63/706,426 filed 11 Oct 2024 *Dynamic Resampling of Pulsatile Signals*.