

## Curriculum Vitae

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### EDUCATION

- Brown University Ph.D., 1986.
  - Thesis: On Ample Vector Bundles and Negative Curvature
  - Advisor: William Fulton
- University of Texas, B.A. in Philosophy with Highest Honors, 1981
- University of Texas, B.S. in Mathematics with Highest Honors, 1981

### Professional Appointments

- 2016-2017: Scientifique Chercheur, Institut de Recherche en Informatique Fondamentale, Université Paris Diderot
- 2016- Present: Webster Atwell Class of 1921 Professor of Mathematics, Williams
- 2012-2013: Visiting Scholar, University of Michigan
- 2005-2016: William R. Kenan Jr. Professor of Mathematics, Williams
- 2005-2013: Director of Williams College Project for Effective Teaching
- 2006-2008 and 2009-2010: Chair, Department of Mathematics and Statistics, Williams College
- 2000-2005: Professor of Mathematics, Williams College
- 2000-2001: Visiting Professor, University of Michigan
- 1995-2000: Associate Professor, Williams College

- 1992-1993: Visiting Assistant Professor, University of Washington
- 1989-1995: Assistant Professor, Williams College
- 1986-1989: G.C. Evans Instructor, Rice University

### **Awards and Honors**

- Professor of the Year, Williams College College Council, 2004
- Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching, Mathematical Association of America, 2004
- Nicolas Salgo Outstanding Teacher Award, Rice University, 1989
- National Science Foundation Graduate Fellowship, 1981-1984

### **Papers and Other Scholarly Work**

1. On Computing the Intersection of a Pair of Algebraic Surfaces (with J. Warren), *Computer Aided Geometric Design*, (1989), Vol. 6, pp. 137-154.
2. Factoring Rational Polynomials Over the Complexes (with C. Bajaj, J. Canny and J. Warren), *Proc. 1989 Intl. Symp. Symbolic Algebraic Comput.*, ACM (1989), pp. 81-90.
3. Geometric Continuity (with J. Warren), *Computer Aided Geometric Design*, (1991), Vol. 8, pp. 51-66.
4. Factoring Rational Polynomials Over the Complex Numbers (with C. Bajaj, J. Canny and J. Warren), *SIAM J. of Computation*, (1993) v. 22, n. 2, pp. 318 - 342.
5. Invariants of Vector-Valued Bilinear and Sesquilinear Forms (with R. Mizner), *Linear Algebra and its Applications*, (1995), v. 218, pp. 225-237.
6. The Equivalence Problem for Higher-Codimensional CR Structures (with R. Mizner), *Pacific J. of Math.*, (1997), v. 177, no. 2, pp. 211-235.

7. Vector-Valued Forms and CR Geometry (with R. Mizner), *Advanced Studies in Pure Mathematics*, (1997), vol. 25: CR-Geometry and Overdetermined Systems, pp.110-121.
8. Intersection Forms and the Adjunction Formula for Four-manifolds via CR Geometry (with M. Chkhenkeli), (1999), preprint available at: <http://xxx.lanl.gov/abs/math.DG/9904007>.
9. Global Structures on CR-Manifolds via Nash Blow-ups, *Michigan Journal of Mathematics*, (2001), Vol. 48, pp. 281-294.
10. On periodic sequences for algebraic numbers, *J. of Number Theory*, (2001), Vol. 88, pp. 86-103.
11. *All the Mathematics You Missed: But Need to Know for Graduate School*, Cambridge University Press, January 2002, 347 pages plus xvii.
12. Texts in Algebraic and Differential Geometry, chapter in *Using the Mathematics Literature*, edited by Kristine Fowler, Marcel Dekker, 2004.
13. On Relations of Invariants for Vector-Valued Forms (with Z. Grossman), *Electronic Journal of Linear Algebra*, (2004), Vol. 11, pp. 24-40.
14. A Two-Dimensional Minkowski  $\zeta(x)$  Function (with O. Beaver), *Journal of Number Theory*, (2004), Vol. 107 no. 1, 105–134.
15. A Dual Approach to Triangle Sequences: A Multidimensional Continued Fraction Algorithm (with S. Assaf, L. Chen, T. Cheslack-Postava, B. Cooper, A. Diesl, M. Lepinski and A. Schuyler), *Integers*, (2005), Vol. 5 no. 1, A8, 39 pp.
16. Review of John Adam's Mathematics in Nature: Modeling Patterns in the Natural World, *Mathematical Intelligencer*, (2005); Vol. 27 (2), p. 81.
17. THE GREAT Pi/e DEBATE (DVD), (with C. Adams and E. Burger), MAA, 2007.
18. Teaching Tips, with Frank Morgan, [www.ams.org/profession](http://www.ams.org/profession), (as of Sept. 2008)

19. UNITED STATES OF MATH PRESIDENTIAL DEBATE (DVD), (with C. Adams and E. Burger), MAA, 2009.
20. On a Thermodynamic Classification of Real Numbers, *Journal of Number Theory*, 2010, Vol. 130, Issue 7, pp. 1537-1559.
21. Using Mathematical Maturity to Shape our Teaching, our Careers and our Departments, *Notices of the American Mathematical Society*, December 2011, pp.1592-1593.
22. DERIVATIVE VERSUS INTEGRAL; THE FINAL SMACKDOWN (DVD), (with C. Adams and A. Falk), MAA, 2012.
23. *Algebraic Geometry: A Problem Solving Approach* (with R. Belshoff, L. Boos, R. Brown, J. Douilhet, C. Lienert, D. Murphy, J. Navarra-Madsen, P. Poitevin, S. Robinson, B. Synder, C. Werner), American Mathematical Society, Student Mathematical Library, Vol. 66, 2013.
24. A Multidimensional Continued Fraction Generalization of Stern's Diatomic Sequence, *Journal of Integer Sequences* **16** (2013), Article 13.7.7, available at <https://cs.uwaterloo.ca/journals/JIS/VOL16/Garrity/garrity4.html>
25. A thermodynamic classification of pairs of real numbers via the Triangle Multi-dimensional continued fraction, available at <http://arxiv.org/pdf/1205.5663.pdf>
26. A Generalized Family of Multidimensional Continued Fractions: TRIP Maps (with Krishna Dasaratha, Laure Flapan, Chansoo Lee, Cornelia Mihaila, Nicholas Neumann-Chun, Sarah Peluse Matt Stoffregen), *International Journal of Number Theory*, (2014), vol. 10, No. 08 , pp. 2151-2186.
27. Cubic Irrationals and Periodicity via a Family of Multi-dimensional Continued Fraction Algorithms (with Krishna Dasaratha, Laure Flapan, Chansoo Lee, Cornelia Mihaila, Nicholas Neumann-Chun, Sarah Peluse Matt Stoffregen), *Monatshefte für Mathematik*, (2014), Vol. 174, Number 4, pp. 549-566.

28. Review of *Spherical tube hypersurfaces*, by Alexander Isaev, *Bulletin of the American Mathematical Society* (2014), Vol. 51, Number 4, pp. 675-685.
29. *Electricity and Magnetism for Mathematicians: A Guided Path from Maxwell's Equations to Yang-Mills*, Cambridge University Press, 2015.
30. Review of *Differential Forms: Theory and Practice* by Steven Weintraub, *American Mathematical Monthly*, vol. 123, No. 4 (April 2016), pp. 407-412.
31. Stern Sequences for a Family of Multidimensional Continued Fractions: TRIP-Stern Sequences (with Ilya Amburg, Krishna Dasaratha, Laure Flapan, Chansoo Lee, Cornelia Mihaila, Nicholas Neumann-Chun, Sarah Peluse Matt Stoffregen), *Journal of Integer Sequences* **20** (2017), Article 17.1.7, available at <https://cs.uwaterloo.ca/journals/JIS/VOL20/Garrity/garrity6.pdf>
32. Pedersen & Tom videos. with L. Pedersen, available at [www.youtube.com/channel/UCNcvTX3a\\_jyT4U\\_G3C-Y0VQ](http://www.youtube.com/channel/UCNcvTX3a_jyT4U_G3C-Y0VQ)
33. A Framework for Multidimensional Continued Fractions, currently available at [www.irif.fr/dyna3s/Comp](http://www.irif.fr/dyna3s/Comp)
34. Generalizing the Minkowski Question Mark Function to a Family of Multidimensional Continued Fractions, with Peter McDonald, *International Journal of Number Theory*, Vol. 14, No. 09, pp. 2473-2516 (2018)
35. Functional Analysis behind a Family of Multidimensional Continued Fractions: Triangle Partition Maps I, with Ilya Amburg, *Publicationes Mathematicae Debrecen*, Vol. 98 (2021), no. 1-2, 43-63.
36. Functional Analysis behind a Family of Multidimensional Continued Fractions: Triangle Partition Maps II, with Ilya Amburg, *Publicationes Mathematicae Debrecen*, Vol. n 98 (2021), no. 3-4, 259-276.
37. *All the Math You Missed: But Need to Know for Graduate School*, Cambridge University Press, second edition (four new chapters), July 2021, 416 pages.

38. On Gauss-Kuzmin Statistics and the Transfer Operator for a Multidimensional Continued Fraction Algorithm: the Triangle Map, to appear in *Publicationes Mathematicae Debrecen*, available at <http://arxiv.org/pdf/1509.01840v1.pdf>
39. On Partition Numbers and Continued Fraction Type Algorithms, with Claudio Bonanno Alessio Del Vigna and Stefano Isola, submitted, available at <https://arxiv.org/abs/2109.08962>
40. On the linear complexity of triangle partition maps, with Daniel Jordan Alvarez, Amy Bradford, Ding Ding Dong, Konnor Herbst, Ariel Koltun-Fromm, Brian Mintz, Vaughn Osterman and Mary Stelow, in preparation.
41. On Hidden Continued Fractions in Some Multidimensional Continued Fraction Algorithms, with Daniel Jordan Alvarez, Amy Bradford, Ding Ding Dong, Konnor Herbst, Ariel Koltun-Fromm, Brian Mintz, Vaughn Osterman and Mary Stelow, in preparation.