

Victor Reiner

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School of Mathematics
University of Minnesota
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4813 Lakeview Dr.
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Research Interests

Algebraic, geometric, and topological combinatorics

Education

Massachusetts Institute of Technology

Ph.D. in Mathematics

Thesis Advisor : Richard Stanley

Thesis title : Quotients of Coxeter complexes and P-partitions

September 1986–June 1990

Princeton University

A.B. in Mathematics

September 1982–June 1986

Experience

Professor, University of Minnesota

Fall 2001–present

Associate Professor, University of Minnesota

Fall 1997–Fall 2001

Assistant Professor, University of Minnesota

Fall 1993–Fall 1997

Dunham Jackson Assistant Professor, University of Minnesota

Fall 1990–Spring 1993

Honors and awards

NSF Postdoc Fellowship (Mentor: D. Stanton)

September 1992–August 1995

Alfred P. Sloan Research Fellow

September 1996–August 1998

Univ. of Minnesota McKnight Land Grant Professor

July 1996–June 1998

Univ. of Minnesota Taylor Career Development Award

June 1997

Univ. of Minnesota Distinguished McKnight Professor

July 2003–present

Fellow of the AMS

September 2012 – present

Member-at-Large of the AMS Council

February 2018 – present

Editorships

Editor-in-Chief of Journal of Algebraic Combinatorics

2000–2005

Member of Editorial Board of ORDER

1998–2007

Associate Editor of Journal of the AMS

2004–2009

Member of Editorial Board of Algebra and Number Theory

2007–present

Member of Editorial Board of Journal of Combinatorial Theory Ser. A

2015–present

Interim Editor-in-Chief of Algebraic Combinatorics

2017

Grants

PI on NSF RTG grant in Combinatorics at Minnesota

2012–2017

Traditional NSF grants

1999–2002, 2003–2006, 2007–2009, 2010–2015

Co-PI on Israeli BSF US-Israel Binational grant

2004–2006

Publications

Appeared:

1. “Free modules of relative invariants of finite groups”, *Stud. in Appl. Math.*, **81**(1989), 181–184.
2. “Quotients of Coxeter complexes and P-partitions”, *Mem. AMS. 460*, **95**(1992), 1–134.
3. “Signed posets”, *J. Comb. Theory, Ser. A*, **62**(1993), 324–360.
4. (with M. Hawrylycz) “The lattice of closure relations of a poset”, *Alg. Universalis*, **30** (1993), 301–310.
5. (with P. H. Edelman) “Free hyperplane arrangements between A_{n-1} and B_n ”, *Math. Zeit.*, **215**(1994), 347–365.
6. “Signed permutation statistics”, *Eur. J. Comb.*, **14**(1993), 553–567.
7. “Signed permutation statistics and cycle type”, *Eur. J. Comb.*, **14**(1993), 569–579.
8. “Upper binomial posets and signed permutation statistics”, *Eur. J. Comb.*, **14**(1993), 581–588.
9. (with P. H. Edelman) “A counterexample to Orlik’s conjecture”, *Proc. AMS*, **118**(1993), 927–929.
10. (with P. H. Edelman) “H-shellings and h-complexes”, *Adv. Math*, **106**(1994), 36–62.
11. (with G. Ziegler) “Coxeter-associahedra”, *Mathematika*, **41**(1994), 364–393.
12. (with P. H. Edelman) “Not all free arrangements are $K(\pi, 1)$ ”, *Bull. AMS*, **32** (1995), 61–65.
13. (with M. Shimozono) “Key polynomials and a flagged Littlewood-Richardson rule”, *J. Comb. Theory, Ser. A*, **70** (1995), 107–143.
14. “Descents and one-dimensional characters for classical Weyl groups”, *Disc. Math*, **140**(1995), 129–140.
15. (with M. Shimozono) “Specht series for column-convex diagrams”, *J. Algebra*, **174** (1995), 489–522.
16. (with M. Shimozono) “Plactification”, *J. Algebraic Comb.* **4** (1995), 331–351
17. “On Göbel’s bound for invariants of permutation groups”, *Archiv der Math.*, **65** (1995), 475–480.
18. “The distribution of descents and length in a Coxeter group”, *Elec. J. Comb.*, **2** (1995), R25, 20pp.
19. (with P. H. Edelman) “Free arrangements and rhombic tilings”, *Disc. and Computational Geom.*, **15** (1996), 307–340.
20. (with P. H. Edelman) “The higher Stasheff-Tamari posets”, *Mathematika*, **43** (1996), 127–154.

21. (with S. V. Fomin, C. Greene, and M. Shimozono) “Balanced Diagrams, reduced decompositions, Schur functions, and Schubert polynomials”, *Europ. J. Comb.*, **18** (1997), 373–389.
22. “Non-crossing partitions for classical reflection groups”, *Discrete Math.*, **177** (1997), 195–222.
23. (with P. H. Edelman) “Catalan triangulations of the Möbius band”, *Graphs and Combinatorics*, **13** (1997), 231–243.
24. (with M. Shimozono) “Straightening for standard monomials on Schubert varieties”, *J. Algebra*, **195** (1997), 130–140.
25. (with D. Stanton) “Unimodality of differences of specialized Schur functions”, *J. Algebraic Comb.*, **7** (1998), 91–107.
26. (with P. H. Edelman) “Visibility complexes and the Baues problem for triangulations in the plane”, *Disc. and Computational Geom.*, **20** (1998), 35–59
27. (with J. A. Eagon) “Resolutions of Stanley-Reisner rings and Alexander duality”, *J. Pure and Appl. Algebra*, **130** (1998), 265–275.
28. (with Irena Peeva and Bernd Sturmfels) “How to shell a monoid”, *Math. Annalen*, **310** (1998), 379–393.
29. (with M. Shimozono) “Percent-avoiding, northwest shapes and peelable tableaux”, *J. Comb. Thy. Ser. A*, **82** (1998), 1–73
30. (with H. Burgiel) “Two signed associahedra”, *New York J. Math*, **4** (1998), 83–95.
31. (with I. Peeva and V. Welker) “Cohomology of real diagonal subspace arrangements via resolutions”, *Compositio Mathematica*, **117** (1999), 99–115.
32. (with J. Herzog and V. Welker) “The Koszul property in affine semigroup rings”, *Pacific J. Math.*, **186** (1998), 39–65.
33. “An interpretation for the Tutte polynomial”, *Europ. J. Combin.*, **20** (1999), 149–161.
34. (with A. Duval), “Perron-Frobenius type results and discrete versions of nodal domain theorems”, *Lin. Algebra. Appl.*, **294** (1999), 259–268.
35. (with W. Kook and D. Stanton) “A convolution formula for the Tutte polynomial”, *J. Comb. Theory Ser. B*, **76** (1999), 297–300.
36. “The generalized Baues problem”, in *New perspectives in algebraic combinatorics* (Billera, Björner, Greene, Simion, Stanley, eds.), MSRI publications **38**, Cambridge Univ. Press, 1999.
37. (with J. Herzog and V. Welker) “Componentwise linear ideals and Golod rings”, *Michigan J. Math.* **46** (1999), 211–223.
38. (with M. Shimozono) “Flagged Weyl modules for two-column shapes”, *J. Pure Appl. Algebra* **141** (1999), 59–100.
39. (with W. Kook and D. Stanton) “Combinatorial Laplacians of matroid complexes”, *Journal of the Amer. Math. Soc.* **13** (2000), 129–148.
40. (with V. Welker) “A homological lower bound for order dimension of lattices”, *Order* **16** (1999), 165–170.

41. (with C. Athanasiadis, J. deLoera and F. Santos) “Fiber polytopes for the maps between cyclic polytopes”, *Europ. J. Combin.* **21** (2000), 19–47.
42. (with P. H. Edelman and J. Rambau) “On subdivision posets of cyclic polytopes”, *Europ. J. Combin.* **21** (2000), 85–101.
43. (with J. Roberts) “Minimal resolutions and the homology of chessboard and matching complexes”, *J. Algebraic Combinatorics* **11**(2000), 135–154.
44. (with P. H. Edelman), “Counting the interior points of a point configuration”, *Disc. and Comput. Geometry* **23** (2000), 1–13.
45. (with C. Athanasiadis and P. H. Edelman) “Monotone paths in polytopes”, *Math. Zeit.* **235** (2000), 315–334.
46. (with V. Welker and K. Yanagawa) “Local cohomology modules of Stanley-Reisner rings with supports in general monomial ideals”, *J. Algebra* **244** (2001), 706–736.
47. (with V. Welker) “Linear syzygies of Stanley-Reisner ideals”, *Math. Scand.* **89** (2001), 117–132.
48. (with P.H. Edelman and V. Welker) “Convex, pointed and free sets of an oriented matroid”, *Discrete Comput. Geom.* **27** (2002), 99–116.
49. (with D. Karaguezian and M. Wachs) “Matching complexes, bounded degree graph complexes and weight spaces of GL_n -Complexes”, *J. Algebra* **239** (2001), 77–92.
50. (with N.C. Leung) “The signature of a toric variety”, *Duke J. Math.*, **111**(2002), 253–286.
51. (with P. Orlik and A. Shepler) “The sign representation for Shephard groups” *Math. Annalen* **322** (2002), 477–492.
52. (with H. Christianson) “The critical group of a threshold graph”, *Lin. Alg. Appl.* **349**, (2002), 233–244.
53. “Equivariant fiber polytopes”, *Documenta Mathematica* **7** (2002), 113–132.
54. (with A. Duval), “Shifted simplicial complexes are Laplacian integral”, *Trans. Amer. Math. Soc.* **354** (2002), 4313–4344
55. “Note on a theorem of Eng”, *Ann. Comb.***6** (2002), 117–118.
56. (with V. Gasharov) “Cohomology of smooth Schubert varieties in partial flag manifolds”, *J. London Math. Soc.***66** (2002), 550–562.
57. (with B. Jacobson and A. Niedermaier) “Critical groups for complete multipartite graphs and Cartesian products of complete graphs”, *J. Graph Theory***44** (2003), 231–250.
58. (with P.H. Edelman, S. Peterson, J. Stout) “Geochemical phase diagrams and Gale diagrams”, *SIAM J. Appl. Math.* **64**, 231–259
59. (with D. Stanton and V. Welker) “The Charney-Davis quantity for certain graded posets”, *Séminaire Lotharingien de Combinatoire***50**(2003), 13pp.
60. (with J. Martin) “Factorization of some weighted spanning tree enumerators”, *J. Combin. Theory Ser. A***104** (2003), 287–300.

61. (with P. Webb) “The combinatorics of the bar resolution in group cohomology”, *J. Pure Appl. Algebra* **190** (2004), 291–327.
62. (with S. Hirschman) “Note on the Pfaffian matrix-tree theorem”, *Graphs Combin.***20** (2004), 59–63.
63. (with D. Stanton and D. White) “The cyclic sieving phenomenon”, *J. Combin. Theory Ser. A* **108** (2004), 17–50.
64. (with C. Athanasiadis) “Noncrossing partitions for the group D_n ”, *SIAM J. Discrete Math.* **18** (2004), 397–417
65. (with E. Babson) “Coxeter-like complexes”, *Disc. Math. and Theor. Comp. Sci.* **6** (2004), 223–251.
66. (with V. Welker) “On the Charney-Davis and Neggers-Stanley conjectures”, *J. Combin. Theory Ser. A* **109** (2005), 247–280.
67. (with E.N. Miller) “Reciprocal domains and Cohen-Macaulay d -complexes in \mathbf{R}^d ”, *Elec. J. Combin.* **11(2)** (2004-2005),#N1.
68. “Note on the expected number of Yang-Baxter moves applicable to reduced decompositions”, *Europ. J. Combin.* **26**(2005), 1019–1021.
69. (with J. Martin) “Cyclotomic and simplicial matroids”, *Israel J. Math.* **150** (2005), 229–240.
70. (with D. Stanton and P. Webb) “Springer’s regular elements over arbitrary fields”, *Math. Proc. Camb. Phil. Soc.* **141** (2006), 209–229.
71. (with E.N. Miller) “Stanley’s simplicial poset conjecture, after Masuda”, *Comm. in Algebra* **34** (2006), 1049–1053
72. (with F. Ardila and L. Williams) “Bergman complexes, Coxeter arrangements, and graph associahedra”, to appear in *Sem. Lothar. Combin.* **54Aj** (2006),25 pp.
73. (with M. Develin and J. Martin) “Rigidity theory for matroids”, *Comm. Math. Helv.* **82** (2007), no. 1, 197–233.
74. (with M. Develin and J. Martin) “Classification of Ding’s Schubert varieties: finer rook equivalence”, *Canad. J. Math.* **59** (2007), no. 1, 36–62.
75. (with K. Shaw and S. van Willigenburg) “Coincidences among skew Schur functions”, *Adv. Math.* **216** (2007), 118–152. (with corrigendum, *Adv. Math.* **220** (2009), no. 5, 1655–1656.)
76. (with A. Galambos) “Acyclic sets of linear orders via the Bruhat orders”, *Social Choice and Welfare* **30** (2008), 245–264.
77. (with C. Klivans) “Shifted set families, degree sequences, and plethysm”, *Elec. J. Combin.* **15 (1)** (2008), paper R14, 35 pp.
78. (with H. Barcelo and D. Stanton) “Bimahonian distributions”, *J. London Math. Soc.* **77** (2008), 627–646.
79. (with F. Brenti and Y. Roichman) “Alternating subgroups of Coxeter groups”, *J. Comb. Theory Ser. A*, **115** (2008), 845–877.
80. (with A. Postnikov and L. Williams) “Faces of simple generalized permutohedra”, *Doc. Math.* **13** (2008), 207–273.

81. (with U. Nagel) “Betti numbers of monomial ideals and shifted skew shapes”, *Electron. J. Combin.* **16** (2009), no. 2, Special volume in honor of Anders Bjorner, Research Paper 3, 59 pp.
82. (with A. Miller), “Differential posets and Smith normal forms”, *Order* **26** (2009), no. 3, 197–228.
83. (with A. Yong and A. Woo), “Presenting the cohomology of a Schubert variety”, *Trans. Amer. Math. Soc.* **363** (2011), no. 1, 521–543.
84. (with D. Stamate), “Koszul incidence algebras, affine semigroups and Stanley-Reisner ideals”, *Adv. Math.* **224** (2010), no. 6, 2312–2345.
85. (with L. Billera and N. Jia) “A quasisymmetric function for matroids”, *Europ J. Combin.* **30** (2009), no. 8, 1727–1757.
86. (with D. Stanton) “ (q, t) -analogues and $GL_n(\mathbf{F}_q)$ ”, *J. Algebraic Combin.* **31** (2010), no. 3, 411–454.
87. (with D. Bessis) “Cyclic sieving of noncrossing partitions for complex reflection groups”, *Ann. Comb.* **15** (2011), no. 2, 197–222.
88. (with A. Broer, L. Smith and P. Webb), “Extending the Coinvariant Theorems of Chevalley, Shephard-Todd, Mitchell, and Springer”, *Proc. Lond. Math. Soc.* **103** (2011) 747 – 785.
89. (with A. Berget and S.-P. Eu) “Constructions for cyclic sieving phenomena”, *SIAM J. Disc. Math.* **25** (2011), no. 3, 1297–1314.
90. (with S. Fu, D. Stanton, N. Thiem) “The negative q -binomial”, *Elec. J. Combin.* **19** (2012), P36.
91. (with A. Berget, A. Manion, M. Maxwell, and A. Potechin), “Critical groups of line graphs”, *Annals Comb.* **16** (2012), 449–488.
92. (with A. Boussicault, V. Feray, and A. Lascoux) “Linear extension sums as valuations of cones”, *J. Algebraic Combin.* **35** (2012), 573–610.
93. (with V. Feray), “ P -partitions revisited”, *J. Commut. Algebra* **4** (2012), 101–152.
94. (with J. Rambau), “A survey of the higher Stasheff-Tamari orders”, in “Associahedra, Tamari Lattices and related structures” (Tamari Memorial Festschrift), *Progress in Math.* **299**, Birkäuser, 2012.
95. (with Y. Roichman) “Diameter of graphs of reduced words and galleries”, *Trans. Amer. Math. Soc.* **365** (2013), 2779–2802.
96. (with F. Hivert), “A multivariate ‘inv’ hook formula for forests”, *Ramanujan J.* **31** (2013), 33–51.
97. (with W. Messing) “A universal coefficient theorem for Gauss’s lemma”, *J. Commut. Algebra* **5** (2013), 299–307.
98. (with G. Musiker) “The cyclotomic polynomial topologically”, to appear in *J. Reine. Angew. Math.*
99. (with F. Saliola and V. Welker), “Spectra of symmetrized shuffling operators”, *Mem. Amer. Math. Soc.* **228** (2014), No. 1072.

100. (with D. Tseng) “Critical groups of covering, voltage and signed graphs”, *Discrete Mathematics* **318** (2014), 10–40
101. (with D. Stanton and D. White) “What is ... cyclic sieving?”, *Notices of the Amer. Math. Soc.* **61** (2014), 169–171.
102. (with J. Lewis and D. Stanton) “Reflection factorizations of Singer cycles”, *J. Algebraic Combin.* **40** (2014), 663–691.
103. (with D. Armstrong and B. Rhoades) “Parking spaces”, *Adv. Math.* **269** (2015), 647–706.
104. (with J. Martin, M. Maxwell, and S. O. Wilson) “Pseudodeterminants and perfect square spanning tree counts”, *J. Combinatorics* **6** (2015), 295–325.
105. (with M. Develin and M. Macauley) “Toric partial orders”, *Trans. Amer. Math. Soc.* **368** (2016), 2263–2287
106. (with J. Lewis) “Circuits and Hurwitz action in finite root systems”, *New York J. Math.* **22** (2016) 1457–1486
107. (with J. Huang and J. Lewis) “Absolute order in general linear groups” *Journal of the London Mathematical Society*, **95** (2017), 223–247

To appear:

(with J. Lewis and D. Stanton) “Invariants of $GL_n(\mathbf{F}_q)$ in polynomials mod Frobenius powers”, to appear in *Proc. Royal Soc. Edinburgh*.

(with V. Ripoll and C. Stump) “On non-conjugate Coxeter elements in well-generated reflection groups”, to appear in *Math. Zeit.*.

(with P. Hersh; and appendix with S. Sam) “Representation stability for cohomology of configuration spaces in \mathbf{R}^d ”, to appear in *Intl. Math. Res. Notices*.

(with E. Sommers) “ q -analogues of Weyl group Narayana and Kreweras numbers”, to appear in *Annals of Combinatorics*.

(with B. Tenner and A. Yong) “Poset edge densities, nearly reduced words, and barely set-valued tableaux”, to appear in *J. Combin. Theory Ser. A*.

(with G. Benkart and C. Klivans) “Chip firing on Dynkin diagrams and McKay quivers”, to appear in *Math. Zeit.*

Submitted:

(with A. Shepler) “Invariant derivations and differential forms”, submitted to *J. Lond. Math. Soc.*

(with D. Grinberg and J. Huang) “Critical groups for Hopf algebra modules”, submitted to *Compositio Math.*

(with Elise delMas and Thomas Hameister) “A refined count of Coxeter element factorizations”, submitted to *Elec. J. Comb.*

In preparation:

(with R. Adin and Y. Roichman) “On cyclic descents for tableaux”.

Book editing: (with P. Hersh, T. Lam, P. Pylyavskyy) “Selected works of Richard P. Stanley”, Amer. Math. Soc., to appear in 2017.

(with P. Hersh, T. Lam, P. Pylyavskyy) “The mathematical legacy of Richard P. Stanley”, Amer. Math. Soc., 2016.

(with E. Miller and B. Sturmfels) “Geometric combinatorics: lectures from the Park City Math Institute Summer School 2004” IAS/Park City Mathematics Series **13**, Amer. Math. Soc., 2007.

Journal volumes: (with E. Koelink and M. Ismail) “A tribute to Dennis Stanton” *Adv. in Appl. Math.* **46** (2011), no. 1-4, 114.

Book chapter: (with K. Fowler) “Recommended resources in combinatorics”, in *Using the mathematics literature*, Kris Fowler, ed. Marcel-Dekker, New York, 2004.

Book reviews: Review of “Combinatorics of minuscule representations” by R.M. Green, or *Bull. Lond. Math. Soc.* **47** (2015), 370–374.

Graduate Students

Masters Level:

Past:

Debbie M. Zollinger, defended April 1994
Thesis title: Equivalence classes of reduced words.

Michelle Raymond, defended June 1998.
Thesis title: Posets of rook placements on rectangular boards.

Sam Peterson, defended June 2000
(co-advisors: Paul Edelman, and James Stout of Univ. Minnesota Geology Department).
Thesis title: Oriented matroid analysis of thermochemical reaction systems.

Ádám Galambos, defended June 2004
Thesis title: Acyclic sets of linear orders.

Doctoral Level:

Past:

1. Guy David Bailey, defended March 1997.
Thesis title: Tilings of zonotopes- discriminantal arrangements, oriented matroids, and enumeration.
2. Xun Dong, defended June 2001.
Thesis title: The topology of bounded-degree graph complexes and finite free resolutions.
3. Nathan Reading, defended April 2002.
Thesis title: On the structure of Bruhat order.
(2002 Dept. Outstanding Thesis prize)
4. Kyle Calderhead, defended May 2002.
Thesis title: Variations on the slopes problem.
5. Muge Taskin, defended May 2006.
Thesis title: Properties of four partial orders on standard Young tableaux.
6. Sangwook Kim, defended July 2007.
Thesis title: Topology of diagonal arrangements and flag enumerations of matroid base polytopes.
7. Molly Maxwell, defended September 2007.
Thesis title: Enumerating self-dual spanning trees and self-dual matroid bases.
8. Brendon Rhoades, defended June 2008.
Thesis title: Cyclic sieving and promotion.
9. Andrew Berget, defended August 2009.
Thesis title: Symmetries of tensors.
10. Patrick Byrnes, defended November 2012.
Thesis title: Structural aspects of differential posets.
11. Alex R. Miller, defended August 2013.
Thesis title: Reflection arrangements and ribbon representations.
12. Jia Huang, defended August 2013.
Thesis title: 0-Hecke algebra actions on flags, polynomials and Stanley-Reisner rings.
13. Sebastian A. Csar, defended July 2014.
Thesis title: Root and weight semigroup rings for signed posets
14. Rob Edman, defended May 2015.
Thesis title: Diameter and coherence of monotone path graphs
15. Kevin Dilks, defended August 2015.
Thesis title: Involutions on Baxter Objects, and q-gamma nonnegativity
16. Theodosios Douvropoulos, Thesis title: Applications of geometric techniques in Coxeter-Catalan combinatorics

Current:

Elise DelMas, completed preliminary oral exam summer 2015.

Galen Dorpalen-Barry, preliminary oral exam anticipated spring 2018.

Eric Stucky, preliminary oral exam anticipated spring 2018.

Other grad student mentorship

Dumitru Stamate, Fulbright scholar from Romania, 2006-2008

Postdoctoral mentorship

Past:

Jesus de Loera, Geometry Center postdoc, 1996–1998.

Woong Kook, Univ. of Minnesota postdoc, 1997–1998.

Mark de Longueville, Minnesota Dunham Jackson asst. prof., 2000–2001.

Geanina Tudose, NSERC postdoc, 2002.

Tamon Stephen, IMA postdoc, 2003-2004.

Jeremy Martin, NSF postdoc, 2002–2004.

Michael Develin, AIM Fellow, 2004-2005.

Alex Yong, NSERC postdoc and Minnesota Dunham Jackson asst. prof., 2005-2007.

Drew Armstrong, NSF postdoc, 2006 – 2008.

Sen-Peng Eu, Taiwanese postdoctoral fellowship, 2006–2007

Ben Howard, IMA postdoc, 2006–2007.

Milena Hering, IMA postdoc, 2006–2008.

Ricky Liu, NSF postdoc, 2010–2011.

Jed Yang, NSF RTG postdoc, 2013–2016.

Zach Hamaker, IMA postdoc, 2014-2016.

Brendan Pawlowski, Univ. of Minnesota postdoc, 2014-2015.

Current:

Joel Lewis, NSF RTG postdoc, 2012–2014, NSF Postdoc, 2014-2017.

Darij Grinberg, Minnesota Dunham Jackson asst. prof., 2016-2019.

Lukas Katthän, German DFG Fellow, 2016-2017.

Research with undergraduates

Since 2000, I have mentored roughly 75 undergraduates in REU's, solo or in some cases, co-mentored with some combination of Dennis Stanton, Gregg Musiker and Pasha Pylyavksyy. See www.math.umn.edu/reiner/REU/REU.html for their reports and a summary.

In 2005, I mentored a UROP student, Michael Barany, who produced research software (see www.math.umn.edu/reiner/Tutte/TUTTE.html) that quickly computes Tutte polynomials of matroids defined over the rationals \mathbf{Q} or over a prime field \mathbf{F}_p .

Personal

Born April 30, 1965 in Utica, NY.