

## JAMES G. PROPP

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### EMPLOYMENT

University of Massachusetts Lowell, Professor, 2006 to present  
Mathematical Sciences Research Institute, Einsenbud Visiting Scholar, Spring 2012;  
Research Professor, Fall 1996; Visiting Postdoctoral Fellow, Fall 1992  
University of California Berkeley, Chancellor's Visiting Professor, Spring 2012;  
Adjunct Assistant Professor, 1988 to 1990  
Microsoft Research Laboratories, Consulting Researcher, Summer 2011  
University of Wisconsin at Madison, Associate Professor, 1999 to 2006;  
Assistant Professor, 1998 to 1999  
Brandeis University, Visiting Associate Professor, Fall 2002 to Spring 2003  
Harvard University, Visiting Associate Professor, Fall 2001 to Spring 2002  
Olin College, Visiting Associate Professor, Fall 2000  
Massachusetts Institute of Technology, Visiting Scholar, 1998 to 1999 and Fall 2000;  
Associate Professor, 1996 to 1998; Assistant Professor, 1990 to 1996;  
AT&T Bell Laboratories, consultant, summers of 1991 and 1992  
University of Maryland, Visiting Professor, 1987 to 1988

### EDUCATION

Ph.D., Mathematics, 1987, University of California at Berkeley  
(research in ergodic theory supervised by Jacob Feldman;  
thesis entitled *Coding from the Past*)  
Certificate of Advanced Study, 1983, Cambridge University  
(Part III Maths Tripos)  
A.B., Mathematics, 1982, Harvard College  
(Magna cum laude, Phi Beta Kappa)

### SCHOLARSHIPS, AWARDS, AND GRANTS

National Science Foundation Grant for Research in Mathematics,  
1992-1995, 1995-1998, 1999-2002, 2006-2009, and 2010-2013  
NSF Supplementary Grant for Research Experiences for Undergraduates,  
1995-1996 and 1997-1998  
National Security Agency Grant for Research in Mathematics,  
1992-1995, 1995-1998, 1999-2001, and 2004-2006

**SCHOLARSHIPS, AWARDS, AND GRANTS (continued)**

UMass Lowell Department of Mathematical Sciences Teaching Excellence Award,  
2007–2008

Institute for Operations Research and the Management Sciences (INFORMS)  
College on Simulation's Outstanding Simulation Publication Award, 2000  
(awarded jointly to David Wilson)

MIT Class of 1922 Career Development Professorship, 1995–1998

Phi Beta Kappa of Northern California Award for Excellence in Teaching, 1990

NSF Postdoctoral Research Fellowship in Mathematics, 1987–1990

**PUBLICATIONS** (available through my homepage)

Real analysis in reverse, *American Mathematical Monthly* **120** (2013), 392–408

Equivalence classes of permutations under various relations generated by constrained  
transpositions (with S. Linton, T. Roby, and J. West),  
*Journal of Integer Sequences*, **15** (2012), Article 12.9.1

Local-to-global principles for the hitting sequence of a rotor walk (with G.P. Giacaglia, L. Levine, and  
*Electronic Journal of Combinatorics*, **19(1)** (2012), Article P5

A Galois connection in the social network, *Mathematics Magazine*, **85(1)** (2012), 34–36

Tiling lattices with sublattices, I (with D. Feldman and S. Robins),  
*Discrete and Computational Geometry* **46** (2011), 184–186

What is ... a sandpile? (with L. Levine), *Notices of the AMS*, **57(8)** (2010), 976–979

Rotor walks and Markov chains (with A. Holroyd),  
*Algorithmic Probability and Combinatorics*; American Mathematical Society (2010), 105–126

Discrete analog computing with rotor-routers, *Chaos* **20(3)** (2010)

A counterexample to integration by parts (with A. Kheifets),  
*Mathematics Magazine* **83(3)** (2010), 222–225

Perfect matchings for the three-term Gale-Robinson sequences  
(with M. Bousquet-Melou and J. West),  
*Electronic Journal of Combinatorics* **16(1)** (2009), R125

Coupling from the past (with D. Wilson), published as Chapter 22 (pp. 287–297) in  
book “Markov Chains and Mixing Times” by D. Levin, Y. Peres, and E. Wilmer,  
American Mathematical Society (2008)

Chip-firing and rotor-routing on directed graphs  
(with A. E. Holroyd, L. Levine, K. Meszaros, Y. Peres, and D. B. Wilson)  
“In and out of Equilibrium II”, eds. V. Sidoravicius and M. E. Vares,  
*Progress in Probability* **60** (2008), 331–364

Topological entropy for nonuniformly continuous maps  
(with B. Hasselblatt and Z. Nitecki),  
*Discrete and Continuous Dynamical Systems* **22**, 201–213 (2008)

Degree-growth of monomial maps (with B. Hasselblatt)  
*Ergodic Theory and Dynamical Systems* **27**, 1375–1397 (2007)

PUBLICATIONS (continued)

- Combinatorial interpretations for rank-two cluster algebras of affine type  
(with G. Musiker),  
Electronic Journal of Combinatorics **14** (2007), R15
- In search of Robbins stability (with K. Kedlaya),  
Advances in Applied Mathematics **34**, 659–668 (2005)
- Lambda-determinants and domino-tilings,  
Advances in Applied Mathematics **34**, 871–879 (2005)
- Generalized domino-shuffling, Theoretical Computer Science **303**, 267–301 (2003)
- Exponentiation and Euler measure, Algebra Universalis **49**, 459–471 (2003)
- Generating a random sink-free orientation in quadratic time  
(with H. Cohn and R. Pemantle),  
Electronic Journal of Combinatorics, **9(1)** (2002), R10
- The many faces of alternating-sign matrices,  
Discrete Mathematics and Theoretical Computer Science Proceedings **AA  
(DM-CCG)**, 43–58 (2001)
- A reciprocity theorem for domino tilings,  
Electronic Journal of Combinatorics, 8(1) (2001), R18
- A variational principle for domino tilings (with H. Cohn and R. Kenyon),  
Journal of the American Mathematical Society **14**, 297–346 (2001)
- Trees and matchings (with R. Kenyon and D. Wilson),  
Electronic Journal of Combinatorics, **7(1)** (2000), R25
- Three-player impartial games, Theoretical Computer Science **233**, 263–278 (2000)
- How the alternating-sign matrix conjecture was solved (with D. Bressoud),  
Notices of the American Mathematical Society **46**, 637–646 (1999)
- Combinatorial games under auction play (with A. Lazarus, D. Loeb,  
W. Stromquist, and D. Ullman),  
Games and Economic Behavior **27**, 229–264 (1999)
- Domino tiling with barriers (with R. Stanley),  
Journal of Combinatorial Theory, Series A **87**, 347–356 (1999)
- Enumeration of matchings: problems and progress, in:  
New perspectives in geometric combinatorics, L. Billera et al. eds., Mathematical  
Sciences Research Institute series, vol. 38, Cambridge University Press, 1999
- Microsurveys in Discrete Probability* (book), edited with D. Aldous,  
DIMACS Series in Discrete Mathematics and Theoretical Computer Science **41**,  
American Mathematical Society, 1998
- How to get a perfectly random sample from a generic Markov chain and generate  
a random spanning tree of a directed graph (with D. Wilson),  
Journal of Algorithms **27**, 170–217 (1998)
- Coupling from the past: a user’s guide (with D. Wilson), in:  
*Microsurveys in Discrete Probability* (see above), 181–192

PUBLICATIONS (continued)

- The shape of a typical boxed plane partition (with H. Cohn and M. Larsen),  
New York Journal of Mathematics **4**, 137–165 (1998)
- A pedestrian approach to a method of Conway, or, a tale of two cities,  
Mathematics Magazine **70**, 327–340 (1997)
- Boundary-dependent local behavior for 2-D dimer models,  
International Journal of Modern Physics B **11**, 183–187 (1997)
- Generating random elements of finite distributive lattices,  
Electronic Journal of Combinatorics **4(2)** (1997), R15
- Richman games (with A. Lazarus, D. Loeb, and D. Ullman), in  
*Games of No Chance*, R. Nowakowski, ed.,  
Mathematical Sciences Research Institute Publications no. 29,  
Cambridge University Press, 1996
- Exact sampling with coupled Markov chains and applications to statistical mechanics  
(with D. Wilson),  
Random Structures and Algorithms **9**, 223–252 (1996)
- Local statistics for random domino tilings of the Aztec diamond (with H. Cohn and  
N. Elkies),  
Duke Mathematical Journal **85**, 117–166 (1996)
- The fundamental group of a  $Z^2$  shift (with W. Geller),  
Ergodic Theory and Dynamical Systems **15**, 1091–1118 (1995)
- The fractional chromatic number of Mycielski’s graphs (with M. Larsen and D. Ullman),  
Journal of Graph Theory **19**, 411–416 (1995)
- A new take-away game, in  
*The Lighter Side of Mathematics*, R. Guy and R. Woodrow, eds.,  
Mathematical Association of America, 1994
- Producing new bijections from old (with D. Feldman),  
Advances in Mathematics **113**, 1–44 (1995)
- Further travels with my ant (with D. Gale, S. Sutherland, and S. Troubetzkoy),  
Mathematical Entertainments column,  
Mathematical Intelligencer **17**, #3, 48–56 (1995)
- Further ant-ics,  
Mathematical Entertainments column,  
Mathematical Intelligencer **16**, #1, 37–42 (1994)
- A linear Ramsey theorem (with D. Feldman),  
Advances in Mathematics **95**, 1–7 (1992)
- Alternating sign matrices and domino tilings (with N. Elkies, G. Kuperberg, and  
M. Larsen),  
Journal of Algebraic Combinatorics **1**, 111–132, 219–234 (1992)
- On the cookie game (with D. Ullman),  
International Journal of Game Theory **20**, 313–324 (1992)

**PUBLICATIONS (continued)**

- On tensor powers of integer programs (with R. Pemantle and D. Ullman),  
SIAM Journal of Discrete Mathematics **5**, 127–143 (1992)
- Coding Markov chains from the past,  
Israel Journal of Mathematics **75**, 289–328 (1991)
- A Shannon-McMillan theorem for motley names,  
Israel Journal of Mathematics **69**, 225–234 (1990)
- What are the laws of greed?,  
American Mathematical Monthly **96**, 334–336 (1989)
- Some variants of Ferrers diagrams,  
Journal of Combinatorial Theory Ser. A **52**, 98–128 (1989)
- Kepler's spheres and Rubik's cube,  
Mathematics Magazine **61**, 231–239 (1988)
- Greedily partitioning the natural numbers into sets free of arithmetic progressions  
(with J. Gerver and J. Simpson),  
Proceedings of the American Mathematical Society **102**, 765–772 (1988)
- Nim for three: an overview and an offer of alcohol,  
Eureka No. 43, Easter 1983, 41–46