

CURRICULUM VITAE

Janko Gravner

Department of Mathematics
University of California, Davis Davis, CA 95616
Telephone: (916)-752-0825
Electronic mail: gravner@math.ucdavis.edu
Web page: <http://math.ucdavis.edu/~gravner>

Education:

Ph.D., Mathematics, University of Wisconsin, Madison, 1991
M.S., Mathematics, University of Ljubljana, Slovenia, 1985
B.S., Applied Mathematics, University of Ljubljana, Slovenia, 1983

Employment:

2002–present, University of California, Davis, USA: Professor, Department of Mathematics.
1998–2002, University of California, Davis, USA: Associate Professor, Department of Mathematics.
1992–1998, University of California, Davis, USA: Assistant Professor, Department of Mathematics.
1991–1992, Cornell University, Ithaca, USA: Postdoctoral Associate, Institute for Mathematical Sciences.
1986–1991, University of Wisconsin, Madison, USA: Teaching and Research Assistant at the Department of Mathematics.
1983–1985, University of Ljubljana, Slovenia: Teaching Assistant at the Mechanical Engineering Department and Department of Mathematics.

Professional Service:

2000–2006: Associate Editor, *Annals of Probability*.
2003–2007: Panel member, NSF.
2018–2021: Member of program committee for Automata conference.
2023: Coorganizer of BIRS workshop *Bootstrap Percolation and its Applications*.

Research papers:

1. J. Gravner, *A note on elementary operators on the Calkin algebra*. Proc. Amer. Math. Soc. 97 (1986), 79–86.
2. R. Fisch, J. Gravner, D. Griffeath, *Cyclic cellular automata in two dimensions*. In “Spatial Stochastic Processes. A Festschrift in honor of Ted Harris.” Birkhäuser, 1990, 171–185.
3. R. Fisch, J. Gravner, D. Griffeath, *Threshold-range scaling for the excitable cellular automata*. Statistic and Computing 1 (1991), 23–39.
4. J. Gravner, D. Griffeath, *Threshold growth dynamics*. Trans. Amer. Math. Soc. 340 (1993), 837–870.
5. R. Fisch, J. Gravner, D. Griffeath, *Metastability in the Greenberg-Hastings model*. Ann. Appl. Prob. 3 (1993), 935–967. (Special Invited Paper.)
6. R. Fisch, J. Gravner, *One-dimensional deterministic Greenberg-Hastings models*. Complex Systems 9 (1995), 329–348.
7. K. L. Verosub, E. G. Puckett, I. Aleinov, D. J. Barsky, J. Gravner, J. Quastel, *An Ising model approach to the behavior of Earth’s magnetic field: a progress report*. Surveys in Geophysics 17 (1996), 225–228.
8. J. Gravner, *The boundary of iterates in Euclidean growth models*. Trans. Amer. Math. Soc. 348 (1996), 4549–4559.
9. J. Gravner, D. Griffeath, *First passage times for the threshold growth dynamics on $\mathbb{Z}^2$* . Ann. Prob. 24 (1996), 1752–1778.
10. J. Gravner, *Percolation times in two-dimensional models for excitable media*. Electronic Journal of Probability 1 (1996), paper no. 12, pages 1–19.
<http://www.math.washington.edu/~ejpecp/EjpVol11/paper12.abs.html>
11. J. Gravner, *Cellular automata models of ring dynamics*. International Journal of Modern Physics C 6 (1996), 863–871.
12. S. Gavrillets, J. Gravner, *Percolation on the fitness hypercube and the evolution of reproductive isolation*. Journal of Theoretical Biology 184 (1997), 51–64.
13. J. Gravner, E. McDonald, *Bootstrap percolation in a polluted environment*. J. Stat. Phys. 87 (1997), 915–927.
14. J. Gravner, D. Griffeath, *Multitype threshold voter model and convergence to Poisson-Voronoi tessellation*. Ann. Appl. Prob. 7 (1997), 615–647.
15. J. Gravner, D. Griffeath, *Nucleation parameters in discrete threshold growth dynamics*. Experimental Math. 6 (1997), 207–220.
16. J. Gravner, D. Griffeath, *Cellular automaton growth on $\mathbb{Z}^2$: theorems, examples and problems*. Advances in Applied Mathematics 21 (1998), 241–304.
17. J. Gravner, *Recurrent ring dynamics in two-dimensional excitable cellular automata*. J. Appl. Prob. 36 (1999), 492–511.
18. J. Gravner, D. Griffeath, *Reverse shapes in first-passage percolation and related growth models*. In “Perplexing Problems in Probability. Festschrift in Honor of Harry Kesten,” (M. Bramson and R. Durrett, eds.) Birkhäuser, 1999. Pgs. 121–142.

19. T. Bohman, J. Gravner, *Random threshold growth dynamics*. Random Structures and Algorithms 15 (1999), 93–111.
20. E. M. LaBolle, J. Quastel, G. E. Fogg, J. Gravner, *Diffusion processes in composite porous media and their numerical integration by random walks: Generalized stochastic differential equations with discontinuous coefficients*. Water Resources Research 36 (2000), 651–662.
21. J. Gravner, D. Griffeath, *Scaling laws for a class of critical cellular automaton growth rules*. In “Random Walks,” (P. Révész and B. Tóth, eds.) János Bolyai Mathematical Society, Budapest 1999. Pgs. 167–186.
22. J. Gravner, *Growth phenomena in cellular automata*. In “New Constructions in Cellular Automata,” D. Griffeath and C. Moore, eds., Oxford University Press 2003, pgs. 161–181.
23. J. Gravner, J. Quastel, *Internal DLA and the Stefan problem*. Ann. Prob. 28 (2000), 1528–1562.
24. S. Gavrillets, R. Acton, J. Gravner, *Dynamics of speciation in a metapopulation*. Evolution 54 (2000), 1493–1501.
25. J. Gravner, C. Tracy, H. Widom, *Limit theorems for height fluctuations in a class of discrete space and time growth models*. J. Stat. Phys. 102 (2001), 1085–1132 .
26. J. Gravner, C. Tracy, H. Widom, *A growth model in a random environment*. Ann. Prob. 30 (2002), 1340–1368.
27. J. Gravner, C. Tracy, H. Widom, *Fluctuations in the composite regime of a disordered growth model*. Comm. Math. Phys. 229 (2002), 433–458.
28. J. Gravner, D. Griffeath, *Random growth models with polygonal shapes*. Ann. Probab. 34 (2006), 181–218.
29. J. Gravner, D. Griffeath, *Modeling snow crystal growth. I. Rigorous results for Packard’s digital snowflakes*. Experiment. Math. 15 (2006), 421–444.
30. J. Gravner, S. Gavrillets, D. Pitman, *Percolation on fitness landscapes: effects of correlation, phenotype, and incompatibilities*. Journal of Theoretical Biology 248 (2007), 627–645.
31. J. Gravner, D. Griffeath, *Modeling Snow Crystal Growth II: A mesoscopic lattice map with plausible dynamics*. Physica D: Nonlinear Phenomena 237 (2008), 385–404.
32. J. Gravner, A. E. Holroyd, *Slow Convergence in Bootstrap Percolation*. Ann. Appl. Probab. 18 (2008), 909–928.
33. E. M. LaBolle, G. E. Fogg, J. B. Eweis, J. Gravner, D. G. Leaist *Isotopic fractionation by diffusion in groundwater*, Water Resour. Res., 44, W07405, doi:10.1029/2006WR005264, 1–15.
34. J. Gravner, *Growth phenomena in cellular automata*. In “Encyclopedia of Complexity and Systems Science,” (R. A. Meyers, ed.), Springer, 2009, 15 pages.
35. J. Gravner, D. Griffeath, *Modeling snow-crystal growth: A three-dimensional mesoscopic approach*. Physical Review E 79 (2009), 011601, 1–18.
36. J. Gravner, A. E. Holroyd, *Local Bootstrap Percolation*. Electronic Journal of Probability 14 (2009), 385–399.
37. J. Gravner, D. Griffeath, *Asymptotic Densities for Packard Box Rules* . Nonlinearity 22 (2009), 1817–1846.
38. J. Gravner, A. E. Holroyd, R. Morris, *A sharper threshold for bootstrap percolation in two dimen-*

- sions. Probab. Theory and Related Fields 153 (2012), 1–23.
39. J. Gravner, D. Griffeath, *The one-dimensional Exactly 1 cellular automaton: replication, periodicity, and chaos from finite seeds*. J. Stat. Phys. 142 (2011), 168–200.
 40. M. Mesterton-Gibbons, S. Gavrillets, J. Gravner, E. Akçay, *Models of coalition or alliance formation*. Journal of Theoretical Biology 274 (2011), 187–204.
 41. J. Gravner, G. Gliner, M. Pelfrey, *Replication in one-dimensional cellular automata*. Physica D: Nonlinear Phenomena 240 (2011), 1460–1474.
 42. J. Gravner, D. Griffeath, *Robust periodic solutions and evolution from seeds in one-dimensional edge cellular automata*. Theoretical Computer Science 466 (2012), 64–86.
 43. J. Gravner, C. Hoffman, J. Pfeiffer, D. Sivakoff, *Bootstrap percolation on the Hamming torus*. Annals of Applied Probability 25 (2015), 287–323.
 44. J. Gravner, A. E. Holroyd, *Percolation and disorder-resistance in cellular automata*. Annals of Probability 43 (2015), 1731–1776.
 45. J. Gravner, D. Sivakoff, *Nucleation scaling in jigsaw percolation*. Annals of Applied Probability 27 (2017), 395–438.
 46. J. M. Baetens, J. Gravner, *Stability of cellular automata trajectories revisited: branching walks and Lyapunov profiles*. Journal of Nonlinear Science 26 (2016), 1329–1367.
 47. J. Gravner, D. Sivakoff, *Bootstrap percolation on products of cycles and complete graphs*. Electronic Journal of Probability 22 (2017), paper no. 29, 1–20.
 48. J. M. Baetens, J. Gravner, *Introducing Lyapunov profiles of cellular automata*. Journal of Cellular Automata 13 (2018), 267–286.
 49. J. Gravner, D. Sivakoff, E. Slivken, *Neighborhood growth dynamics on the Hamming plane*. Electronic Journal of Combinatorics, 24 (2017) #P4.29, 1–55.
 50. J. Gravner, H. Lyu, D. Sivakoff, *Limiting behavior of 3-color excitable media on arbitrary graphs*. Annals of Applied Probability 28 (2018), 3324–3357.
 51. J. Gravner, A. E. Holroyd, *Polluted bootstrap percolation with threshold two in all dimensions*. Probability Theory and Related Fields 175 (2019), 467–486.
 52. J. Gravner, A. E. Holroyd, D. Sivakoff, *Polluted bootstrap percolation in three dimensions*. Annals of Applied Probability 2021, 31 (2021), 218–246.
 53. J. Gravner, J. E. Paguyo, E. Slivken, *Maximal spanning time for neighborhood growth on the Hamming plane*, SIAM Journal on Discrete Mathematics 33 (2019), 976–993.
 54. M. Damron, J. Gravner, M. Junge, H. Lyu, D. Sivakoff, *Parking on transitive unimodular graphs*. Annals of Applied Probability 29 (2019), 2089–2113.
 55. J. Gravner, K. Johnson, *Coupled map lattices as musical instruments*. Computer Music Journal 42 (2018), 22–34.
 56. J. Gravner, D. Sivakoff, *Bootstrap percolation on the product of the two-dimensional lattice with a Hamming square*. Annals of Applied Probability 30 (2020), 145–174.
 57. J. Gravner, X. Liu, *Periodic solutions of one-dimensional cellular automata with random rules*. Electronic Journal of Combinatorics 28 (2021), #P4.51, 1–19.
 58. J. Gravner, X. Liu, *One-dimensional cellular automata with random rules: longest temporal period*

- of a periodic solution*. Electronic Journal of Probability 27 (2022), 1–23.
59. J. Gravner, X. Liu, *Maximal temporal period of a periodic solution generated by a one-dimensional cellular automaton*. Complex Systems 30(2021), 239–272.
60. J. Gravner, B. Kolesnik, *Transitive closure in a polluted environment*. Annals of Applied Probability 33 (2023), 107–126.
61. J. Gravner, X. Liu, *Weakly robust periodic solutions of one-dimensional cellular automata with random rules*. Journal of Cellular Automata 17 (2023), 251–280.
62. J. Gravner, B. Kolesnik, *Transitivity and random censorship*, Proceedings of the Conference of Slovenian Mathematicians, Bled 2003, 50–54. (In Slovenian.)
63. D. Blanquicett, J. Gravner, D. Sivakoff, L. Wilson, *Two-dimensional supercritical growth dynamics with one-dimensional nucleation*. Annals of Applied Probability 35 (2025), 3378–3411.
64. J. Gravner, D. Sivakoff, *Competing deterministic growth models in two dimensions*. To appear in Electronic Journal of Probability ([pdf](#)).
65. J. Gravner, M. Krnc, M. Milanič, J.-F. Raymond, *Young domination on Hamming rectangles*. [arXiv:2501.03788](#).
66. J. Gravner, A. Holroyd, S. Lee, D. Sivakoff, *Polluted modified bootstrap percolation*, Electronic Communications in Probability 30 (2025), 1–10.
67. Z. Fong, J. Gravner, D. Sivakoff, *Two-stage bootstrap percolation* ([pdf](#)).