# Christopher Hoffman Curriculum Vitae

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## Employment

Associate Professor, **The University of Washington**, 2003-

Assistant Professor, **The University of Washington**, 1999- 2003

National Science Foundation Postdoctoral Fellow, **The University of Maryland**, 1997-1999

Schonbrunn Postdoctoral Fellow, **The Hebrew University**, 1996-1997

## Education

**Ph.D.** Mathematics, **Stanford University.** 1996
Donald Ornstein, Advisor
A Markov random field which is $K$ but not Bernoulli and other constructions

**M.S.** Mathematics, **Stanford University.** 1994

**B.S.** Mathematics and History, **University of Wisconsin-Madison.** 1992 with Honors

## Honors

**ARCS Fellowship** 1994-1995

**University of Washington Excellence Award** 2000

## Grants

**National Science Foundation Postdoctoral Fellowship** 1997-2000

**National Science Foundation** 2001-
Principal Investigator on grants # 62-5254 and # 61-1893

**National Security Agency** 2004-
Principal Investigator on grant #61-1262

**University of Washington Research Royalty Fund Scholar** 2005

# Publications

1. *$T$,$T^{-1}$ is not standard.* (with D. Heicklen) *Ergodic Theory and Dynamical Systems.* **18** (1998) 875-878.

2. Unpredictable nearest neighbor processes. *Annals of Probability.* **26** (1998), no. 4, 1781–1787.

3. A Markov Random Field which is $K$ but not Bernoulli. Israel Journal of Mathematics. **112** (1999), 249–270.

4. A $K$ counterexample machine. *Trans. Amer. Math. Soc.* **351** (1999), no. 10, 4263–4280.

5. The behavior of Bernoulli shifts relative to their factors. *Ergodic Theory and Dynamical Systems.* (1999), no. 5, 1255–1280.

6. A zero entropy $T$ such that the ($T$,Id) endomorphism is not standard. *Proceedings of the AMS.* (2000), no. 1, 183–188.

7. A loosely Bernoulli counterexample machine. *Israel Journal of Mathematics.* **112** (1999) 237–248.

8. Energy of flows on $\mathbb{Z}^2$ percolation clusters. *Random Structures and Algorithms.* **16** (2000), no. 2, 143–155

9. Entropy and dyadic equivalence of random walks on a random scenery. (with D. Heicklen and D. Rudolph.) *Advances in Mathematics.* **156** (2000) 157–179.

10. Energy of flows on percolation clusters. (with E. Mossel.) *Potential Analysis.* **14** (2001) 375–385.

11. Rational maps are $d$-adic Bernoulli. (with D. Heicklen.) *Annals of Math.* 156 (2002), 79–101.

12. Uniform Endomorphisms which are isomorphic to a Bernoulli shift. (with D. Rudolph.) *Annals of Math.* 156 (2002), 103–114.

13. A dyadic endomorphism which is Bernoulli but not standard. (with D. Rudolph.) *Israel J. Math.* 130 (2002), 365–379.

14. If the ($T$,Id) transformation is Bernoulli then the ($T$,Id) endomorphism is standard. (with D. Rudolph.) *Studia Mathematica.* 155 (2003), no. 3, 195–206.

15. An endomorphism whose square is Bernoulli. *Ergodic Theory and Dynamical Systems.* Ergodic Theory Dynam. Systems 24 (2004), no. 2, 477–494.

16. Return probabilities of a simple random walk on percolation clusters. (with D. Heicklen.) *Electronic Journal of Prob.* **10** (2005), no. 8, 250–302

17. A family of nonisomorphic Markov random fields. *Israel J. Math.* Israel J. Math. 142 (2004), 345–366.

18. The scenery factor of the $T, T^{-1}$ transformation is not loosely Bernoulli. *Proc. Amer. Math. Soc.* 131 (2003), no. 12, 3731–3735

19. Coexistence for Richardson type competing spatial growth models. *Annals Appl. Prob.* **15** (2005), no. 1B, 739–747.

20. Mixing times of the biased card shuffling and the asymmetric exclusion process. (with I. Benjamini, N. Berger, and E. Mossel) Trans. Amer. Math. Soc. **357** (2005), 3013-3029.

21. Phase transition in dependent percolation. *Communications in Mathematical Physics.* 254 (2005), no. 1, 1–22.

22. $\omega$-periodic graphs. (with I. Benjamini) *Electronic Journal of Combinatorics.* **12** no.1, 2005

23. Recurrence of Simple Random Walk on $\mathbb{Z}^2$ is dynamically sensitive.
ALEA **1** (2006) 35–45.

24. A Stable Marriage of Poisson and Lebesgue (with A. Holroyd and Y. Peres)
available at http://front.math.ucdavis.edu/math.PR/0505668
To appear in *Annals of Probability.*

25. Tail Bounds for the Stable Marriage of Poisson and Lebesgue (with A. Holroyd and Y. Peres)
available at http://front.math.ucdavis.edu/math.PR/0507324
To appear in *Canadian Journal of Mathematics.*

26. Anomalous heat-kernel decay for random walk among bounded random conductances. (with N. Berger, M. Biskup, and G. Kozma)
To appear in *Annales Inst. Henri Poincare.*
available at http://front.math.ucdavis.edu/math.PR/0611666

27. Endomorphisms which are measurably isomorphic to Bernoulli shifts. in Information and Randomness. edited by A. Maas et. al. Collection Travaux en Cours. Hermann Éditeurs des Sciences et des Arts Paris pp. 1-39

# Preprints

28. Nonuniqueness of specifications in $l^{2+\epsilon}$. (with N. Berger and V. Sidoravicius)
available at http://front.math.ucdavis.edu/math.PR/0312344
*submitted to Annals of Probability*

29. Geodesics in First Passage Percolation.
available at http://front.math.ucdavis.edu/math.PR/0508114
*submitted to Annals of Applied Probability.*

30. A special set of exceptional times for dynamical random walk on $\mathbb{Z}^2$ (with G. Amir)
available at http://front.math.ucdavis.edu/math.PR/0609267
*submitted to Electronic Journal of Probability.*

31. Exponential clogging time for a one dimensional DLA. (with I. Benjamini)
available at http://front.math.ucdavis.edu/0709.1276
*submitted to Journal of Statistical Physics.*

32. Simple connectivity of random 2-complexes. (with E. Babson and M. Kahle)
available at http://arxiv.org/abs/0711.2704

# Graduate Students Advised

Matthew Kahle (Ph.D. June 2007)
Nathaniel Blair-Stahn
Elisa Celis

# Lectures

I have spoken at the following universities: University of California, Berkeley (dynamical systems and probability) Hebrew University of Jerusalem, Tel Aviv University, University of Maryland (dynamical systems and probability), Penn State University, Duke University, Oregon State University, Cornell University, University of Delaware, University of Colorado, Colorado Springs, Northwestern University, Stanford University, University of Washington (combinatorics, Rainwater and probability).