

**Curriculum Vitae**

Douglas Rizzolo

May 29, 2019

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**Employment**

- 2015 – University of Delaware, Department of Mathematical Sciences  
Assistant Professor
- 2012 – 2015 University of Washington, Department of Mathematics  
Research Associate and NSF Postdoctoral fellow

**Education**

- 2008 – 2012 University of California, Berkeley, Ph.D. in Mathematics  
Advisor: Jim Pitman
- 2004 – 2008 Harvey Mudd College, B.S. in Mathematics  
(high distinction, honors in mathematics)
- 2001 – 2004 Cheshire Academy

**Research Interests**

Random trees, diffusion processes, invariance principles, excursion theory, random permutations, Poisson-Dirichlet distributions, integrable probability

**Mathematics Funding History**

- 2019 – 2022 National Science Foundation Grant DMS-1855568 (PI)
- 2016 – 2019 University of Delaware Research Foundation Grant (PI)
- 2012 – 2015 National Science Foundation Postdoctoral Research Fellowship, DMS-1204840 (PI)
- 2010 – 2012 National Science Foundation Graduate Research Fellowship

**Education Funding History**

- 2019 – 2021 Spencer Foundation Grant 201900214 (Co-PI)

**Publications/Accepted Papers**

1. *Determinants of Seidel matrices and a conjecture of Ghorbani*, to appear, Linear Algebra and Applications.
2. (with Christopher Hoffman and Erik Slivken) *Fixed points of 321-avoiding permutations*, Proc. Amer. Math. Soc., 147, 861–872, 2019.

3. (with Noah Forman, Soumik Pal, and Matthias Winkel) *Uniform control of local times of spectrally positive stable processes*. *Annals of Applied Probability*, 28 no 4, 2592–2634, 2018.
4. (with Krzysztof Burdzy) *A random flight process associated to a Lorentz gas with variable density in a gravitational field*, *Stochastic Processes and Their Applications*, 12(1):79–107, 2018.
5. (with Erik Slivken and Samuel Miner) *Asymptotic distribution of fixed points of pattern-avoiding involutions*, *Discrete Mathematics and Theoretical Computer Science* 19 no 2, 2017.
6. (with Christopher Hoffman and Erik Slivken) *Pattern avoiding-permutations and Brownian excursion, Part II: Fixed points*, *Probability Theory and Related Fields* 69(1):377–424, 2017.
7. (with Christopher Hoffman and Erik Slivken) *Pattern avoiding-permutations and Brownian excursion Part I: Shapes and fluctuations*, *Random Structures & Algorithms*, 50(3):394–419, 2017.
8. (with Alexandru Hening and Eric S. Wayman) *The free path in a high velocity random flight process associated to a Lorentz gas in an external field*, *Trans. Amer. Math. Soc. Ser. B*, 3(2):27–62, 2016.
9. *Scaling limits of Markov branching trees and Galton-Watson trees conditioned on the number of vertices with out-degree in a given set*, *Ann. Inst. Henri Poincaré Probab. Stat.*, 51(2):512–532, 2015.
10. (with Jim Pitman) *Schröder’s problems and scaling limits of random trees*, *Trans. Amer. Math. Soc.* 367(10):6943–6969, 2015.
11. (with Jim Pitman and Matthias Winkel) *Regenerative tree growth: structural results and convergence*, *Electron. J. Probab.* 19(70), 2014.
12. (with Andrew Niedermaier and Francis Edward Su) *A tree Sperner lemma*, *Contemporary Mathematics*, Volume 635, 2014.
13. (with Francis Edward Su) *A fixed point theorem for the infinite-dimensional simplex*, *Journal of Mathematical Analysis and Applications*, Volume 332, Number 2, 2007.

### Preprints

Author order on all preprints is alphabetical. Preprints posted while I have been an Assistant Professor are marked with an asterisk.

1. (with Noah Forman, Soumik Pal, and Matthias Winkel) *Aldous diffusion I: A projective system of continuum  $k$ -tree evolutions*, arXiv:1809.07756, 2018.
2. (with Noah Forman, Soumik Pal, and Matthias Winkel) *Interval partition evolutions with emigration related to the Aldous diffusion*, arXiv:1804.01205, 2018.

3. (with Noah Forman, Soumik Pal, and Matthias Winkel) *Projections of the Aldous chain on binary trees: Intertwining and consistency*, arXiv:1802.00862, 2018.
4. (with Noah Forman, Soumik Pal, and Matthias Winkel) *Diffusions on a space of interval partitions with Poisson-Dirichlet stationary distributions*, arXiv:1609.06706, 2016.
5. *Strange uniform random variables*, arXiv:1301.7148v1, 2013.

### Conference and Seminar Talks

- 2018 Jun. *University of Paris, Diderot Probability Seminar*, Paris, France  
From Markov on chains on trees to diffusions on the space of interval partitions
- 2017 Sept. *MIT Probability Seminar*, Cambridge, MA  
From Markov on chains on trees to diffusions on the space of interval partitions
- Feb. *University of California, San Diego Probability Seminar*, San Diego, CA  
Diffusions on a space of interval partitions with Poisson-Dirichlet stationary distributions
- Feb. *University of Virginia Probability Seminar*, Charlottesville, VA  
Diffusions on a space of interval partitions with Poisson-Dirichlet stationary distributions
- Jan. *Joint Mathematics Meetings*, Atlanta, GA  
Connections between random matrices and pattern-avoiding permutations
- 2016 Jun. *Permutation Patterns*, Washington DC  
Random permutations without long decreasing subsequences
- May *Seoul National University Probability Seminar*, Seoul, South Korea  
Random flight processes in external fields
- Mar. *DAAD Spring School on Combinatorial Stochastic Processes*, Hanoi, Vietnam  
Lecture series on Asymptotic Properties of Random Trees
- Feb. *University of Delaware Discrete Mathematics Seminar*, Newark DE  
Asymptotic properties of simply generated trees
- 2015 Dec. *Brown Probability Seminar*, Providence, RI  
Random flight processes in external fields
- Oct. *Penn/Temple Probability Seminar*, Philadelphia, PA  
Random pattern-avoiding permutations
- Sept. *University of Delaware Graduate Student Seminar*, Newark, DE  
Random trees, generating functions, and complex analysis
- University of Delaware Probability Seminar*, Newark DE  
The structure of random Young tableaux with bounded height
- Jul. *38th Conference on Stochastic Processes and their Applications*, Oxford, UK  
Pattern-avoiding permutations and Brownian excursion
- May *University of California, Davis Mathematical Physics and Probability seminar*, Davis, CA  
The structure of random Young tableaux with bounded height

- Apr. *University of Washington Probability Seminar*, Seattle, WA  
The structure of thin Young tableaux
- 2014 Nov. *University of Colorado Boulder Probability Seminar*, Boulder, CO  
A gas particle in a gravitational field
- Sept. *University of Washington Probability Seminar*, Seattle, WA  
A gas particle in a gravitational field
- Jul. *Combinatorial Stochastic Processes conference in honor of Jim Pitman*,  
San Diego, CA  
Pattern avoiding permutations and Brownian excursion
- 2013 May *Peking University Probability Seminar*, Beijing, China  
Scaling limits of Markov branching trees
- Apr. *University of Washington Probability Seminar*, Seattle, WA  
Scaling limits of Markov branching trees
- Feb. *Claremont colleges mathematics colloquium*, Claremont, CA  
Asymptotic properties of random trees
- 2012 Oct. *Northwest Probability Seminar 2012*, Microsoft Research, Redmond, WA  
Schröder's problems and random trees

### Journals refereed for

Annals of Probability; Probability Theory and Related Fields; Memoirs of the American Mathematical Society; Proceedings of the American Mathematical Society; Annales de l'Institut Henri Poincaré, Probabilités et Statistiques; Electronic Journal of Probability; Journal of Applied Probability; Random Structures and Algorithms; Probability Surveys; Online Journal of Analytic Combinatorics; ALEA Latin American Journal of Probability; Stochastics; Electronic Journal of Combinatorics

### Professional Service

- 2018 Co-organizer, Special session on Combinatorics, Probability, and Statistical Mechanics at the Fall 2018 Northeast regional AMS meeting.
- 2015 Co-organizer, Special session on Combinatorics, Probability, and Statistical Mechanics at the Fall 2015 Northeast regional AMS meeting.
- 2015 Co-organized the Seminar on Stochastic Processes (2015)