

# Antonio Auffinger

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## Education

Ph.D. Mathematics, New York University - USA, 2011. *Advisor:* Prof. Gerard Ben Arous.

M.S. Mathematics, Impa - Brazil, 2006. *Advisor:* Prof. Claudio Landim.

B.S. in Mathematics, Universidade Federal do Espirito Santo - Brazil, 2004.

## Employment

### *Northwestern University*

Assistant Professor, 2014-present

### *University of Chicago*

L.E. Dickson Instructor, 2011-2014

### *New York University*

Research/Teaching Assistant, 2007-2011.

## Fields of Interest

Probability Theory: Spin glasses, growth models and random matrices.

## Honors, Awards, & Fellowships

NSF Award, Grant DMS-1407554 (Jul 2014- Jun 2017): 'Complexity of Disordered Systems', \$ 144,078.

Francisco Aranda-Ordaz Prize, sponsored by the Bernoulli Society, 2012.

Wilhelm T. Magnus Memorial Prize, 2011 - "for Significant Contributions to Mathematical Sciences".

McCracken Fellowship, New York University, 2007-2011.

Summer Research Fellowship, New York University, 2008, 2009, 2010.

Bronze Medal, I Jornadas de Iniciacao Cientifica, IMPA, 2007.

Bolsa de Mestrado do CNPq, IMPA, Brazil 2004-2005.

Undergraduate Research Award, PET - UFES, 2003 and 2004.

Bolsa de Iniciacao Cientifica, CNPq, 2002-2003.

## Research

### *Preprints and Journal Publications*

15. Universality of chaos and ultrametricity in mixed p-spin glasses, with Wei-Kuo Chen. *Submitted*.
14. Rate of convergence of the mean for sub-additive ergodic sequences, with Michael Damron and Jack Hanson. *Submitted*.
13. The Parisi formula has a unique minimizer, with Wei-Kuo Chen. *To appear in Comm. in Math. Phys.*
12. Complexity and free energy of bipartite mean field spin glasses, with Wei-Kuo Chen. *To appear in Journal of Stat. Physics.*
11. On properties of Parisi Measures, with Wei-Kuo Chen. *To appear in Probab. Theory and Rel. Fields.*
10. Limiting geodesics for first-passage percolation on subsets of  $\mathbb{Z}^2$ , with Michael Damron and Jack Hanson. *To appear in Annals of Applied Probability.*
9. The universal scaling relation for polymers in a random environment and related models, with Michael Damron. *ALEA, Lat. Am. J. Probab. Math. Stat.* 10 (2), 857-880 (2013).
8. A simplified proof of the relation between scaling exponents in first-passage percolation, with Michael Damron. *Annals of Probability* 2014, Vol. 42, No. 3, 1197-1211.

7. Complexity of random smooth functions of many variables, with Gerard Ben Arous. *Annals of Probability 2013, Vol. 41, No. 6, 4214-4247*.
6. Differentiability at the edge of the limit shape and related results in first passage percolation, with Michael Damron. *Probab. Theory and Rel. Fields, Vol. 156, Issue 1-2, pp 193-227, June 2013*
5. Random matrices and complexity of spherical spin glasses, with Gerard Ben Arous, Jiri Cerny. *Comm. on Pure and Applied Mathematics, Volume 66, Issue 2, pages 165-201, February 2013*
4. Directed polymers in random environment with heavy tails, with Oren Louidor. *Comm. on Pure and Applied Mathematics, Volume 64, Issue 2, pages 183-204, February 2011*
3. Poisson convergence for the largest eigenvalues of Heavy Tailed Random Matrices. with Gerard Ben Arous and Sandrine Peche. *Annales de l'Institut Henri Poincare Volume 45 no. 3 pg. 589-610 2009.*
2. Universality for directed polymer in thin rectangles, with Jinho Baik and Ivan Corwin. *Preprint.*
1. Random Matrices, Complexity of Spin Glasses and Heavy Tailed Processes *Ph.D. thesis, May 2011.*

### *Invited Talks and Minicourses*

University of Colorado at Boulder, Probability Seminar - October 2014

Northwestern University, Analysis Seminar - September 2014

Cincinnati Symposium on Probability Theory and Applications - September 2014

Stochastic Processes and Applications, Buenos Aires, Argentina - July 2014

Spin Glasses and Related Fields, Banff, Canada - July 2014

University of Chicago, Probability Seminar - May 2014

University of Wisconsin, Probability Seminar - May 2014

University of Utah, Probability Seminar - March 2014

Indiana University, Mathematics Colloquium - January 2014

University of Arizona, Mathematics Colloquium - January 2014

UC Irvine, Mathematics Colloquium - January 2014  
University of Illinois at Urbana-Champaign, Mathematics Colloquium - January 2014  
University of Minnesota, Probability Seminar - January 2014  
University of Illinois at Chicago, Mathematics Colloquium - January 2014  
Northwestern University, Analysis Seminar - January 2014  
AMS National Meeting - Invited Section on Random Matrices and Applications - January 2014  
University of Maryland, Mathematics Colloquium - December 2013  
University of Virginia, Mathematics Colloquium - December 2013  
Carnegie Mellon, Mathematics Colloquium - December 2013  
Georgia Tech, Mathematics Colloquium - December 2013  
SUNY, Mathematics Colloquium - December 2013  
University of Illinois at Urbana-Champaign, Probability Seminar - November 2013  
University of Rochester, Probability Seminar - November 2013  
Indiana University, Probability Seminar - November 2013  
University of Alabama at Birmingham, Mathematics Colloquium - September 2013  
Courant Institute, NYU, Probability Seminar - September 2013  
Purdue University, Probability Seminar - September 2013  
Workshop on Disordered Media, CIRM, Luminy, France - June 2013  
AMS Sectional Meeting - Invited Section on Random Media - April 2013  
The University of Arizona, Mathematics Colloquium - February 2013  
IMPA, 3 week Minicourse on Random Matrices - January 2013  
Cornell University, Probability Seminar - November 2012  
Workshop on Random Polymers and Related Topics, Singapore - May 2012  
CLAPEM, Special Invited Session: Francesco Aranda Ordaz Prize talk, Chile - April 2012

Michigan State University, Probability Seminar - March 2012  
Northwestern University, Probability Seminar - January 2012  
MIT, Probability Seminar - December 2011  
University of Illinois at Urbana-Champaign, Probability Seminar - November 2011  
University of Michigan, Random Matrix Seminar - October 2011  
University of Chicago, Probability Seminar - September 2011  
University of Wisconsin, Probability Seminar - September 2011  
University of Chicago, Probability Seminar - June 2011  
Harvard University, Random Matrix Seminar - April 2011  
Columbia-Princeton Probability Day - April 2011  
Courant Institute, NYU, Probability Seminar - March 2011  
Oberwolfach Workshop on Large Scale Stochastic Dynamics - November 2010  
University of Colorado at Boulder, Probability Seminar - November 2010  
4th Annual Graduate Student Probability Conference, Duke University - May 2010  
Toronto University, Probability Seminar - April 2010  
Arizona School of Analysis with Applications - March 2010  
Courant Institute, NYU, Probability Seminar - January 2010  
IMPA, Probability Seminar - January 2010  
MSRI, Summer Workshop on Random matrices - July 2009

*Organized Conferences, workshops, seminars and Academic Visits*

Workshop on First passage percolation and related models, AIM - August 2015. (co-organizer with M. Damron and Jack T. Hanson)  
36th Midwest Probability Colloquium - October 2014 (co-organizer, local committee).  
35th Midwest Probability Colloquium - October 2013 (co-organizer, scientific committee).  
Probability Seminar at Univ. of Chicago, co-organizer, 2011-2014.

IMPA, as the lecturer of a Summer Minicourse on Random Matrices - January 2013

Princeton University, to collaborate with M. Damron - June/July 2012

NYU Abu Dhabi, to collaborate with G. Ben Arous - March 2011

IMPA, to collaborate with Vladas Sidoravicius - January 2011

Member of the Random Matrix Theory, Interacting Particle Systems and Integrable Systems Program, MSRI, Fall 2010

NSF Junior Student at Oberwolfach Workshop on Large Scale Stochastic Dynamics, Oberwolfach, Germany November 06–13, 2010

Clay Mathematics Institute 2010 Summer School, Probability and Statistical Physics in Two and more Dimensions, Buzios- Brazil, July 11 – August 7, 2010

Teaching Assistant during the Random Matrix Theory Workshop, MSRI - Berkeley, July 06–17, 2009.

Arizona School of Analysis with Applications. University of Arizona, Tucson, March 15–19 2010.

VII Northeast Probability Seminar, CUNY University, November 17–19, 2009.

[http://www.econ.duke.edu/NASM/100th Statistical Mechanics Conference/DIMACS Workshop](http://www.econ.duke.edu/NASM/100th%20Statistical%20Mechanics%20Conference/DIMACS%20Workshop), Rutgers University, December 13–18, 2008.

6th Northeast Probability Seminar, City University of New York, November 2007

Spin glasses: statics and dynamics, Summer School IHP, Paris July 2007

Academic visit to the Stochastic Modelation Group at EPFL, Switzerland - Fall 2006 to Spring 2007

IMS Annual Meeting and X Brazilian School of Probability, Impa - Brazil, August 2006

## Editorial Service

Refereed journal articles for:

Comm. in Pure and Applied Mathematics, Duke Mathematical Journal, Probability Theory and Related Fields, Communication in Mathematical Physics, Annals of Probability, Annals of Applied Probability, ALEA, SPA, Electronic Journal of Probability, Statistics and Probability Letters, Journal of Statistical Physics.

Reviewed articles for Mathscinet

## Academic Experience and Synergetic Activities

### *University of Chicago, Chicago, USA*

Instructor: Honors Calculus (2012/2013/2014), Real Analysis (2012), Financial Mathematics Prep. Course (2012/2013).

Instructor: REU Summer program (2012/2013/2014)

Mentor: 4 undergraduate students in the REU Program.

Organizer of the Probability Seminar.

### *New York University, New York, USA*

Instructor: Graduate Linear Algebra II (Summer 2011), Calculus I (Fall 2008), Calculus III (Summer 2008, 2011).

Teaching Assistant: Stochastic Calculus (Spring 2010), Limit Theorems in Probability (Fall 2009), Analysis II (Spring 2009), Algebra I (Spring 2008), Calculus for Social Sciences (Fall 2007).

Organizer of the Student Probability Seminar.

### *MSRI, Berkeley, USA*

Teaching Assistant, Random Matrix Summer Workshop 2009.

### *Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland*

Teaching Assistant: Probability I and II (Spring 2006–2007).

## Languages Spoken

English, French and Portuguese - Fluent.