

# Aukosh S. Jagannath

## Curriculum Vitae

Department of Mathematics  
Harvard University  
Science Center, Rm 233  
1 Oxford Street  
Cambridge, MA, USA, 02138  
**E-mail:** aukosh@math.harvard.edu  
**Homepage:** <http://math.harvard.edu/~aukosh>

## Education

Ph. D. in Mathematics, New York University, May 2016  
Title: Variational and structural methods in mean field spin glasses  
Advisor: Gérard Ben Arous

B.A. in Mathematics and Physics, New York University, May 2011  
*Summa Cum Laude* with highest honors in Mathematics and highest honors in Physics

## Employment

*Harvard University*

Benjamin Pierce Fellow, Harvard University Sept 2017-  
NSF MSPRF Postdoctoral Fellow Sept. 2017 -

*University of Toronto*

NSF MSRPF Postdoctoral Fellow, Sept. 2016- Sept. 2017

*New York University,*

Ph.D. Student Fellow, Research Assistant, Adjunct Instructor, Sept 2011-May 2016

## Research Interests

Spin Glasses, Probability, Analysis, Applications to Physics and Computer Science

## Awards, Grants, and Honors

NSF Mathematical Sciences Postdoctoral Research Fellowship NSF OISE-1604232 (PI status), 2016 - 2019

Wilhelm Magnus memorial prize, NYU Courant, 2015, “for significant contributions to the mathematical sciences”

Dean’s Dissertation Fellowship, NYU GSAS, 2015-2016, “for excellence and exceptional promise”

NSF Graduate Research Fellowship, NSF, 2011-2016

Henry MacCracken Fellowship, NYU GSAS, 2011-2015

College of Arts and Sciences Dean's Award for Scholarship, NYU CAS, 2011

Perley Lenwood Thorne Medal in Mathematics, NYU Courant, 2011

George Granger Brown Scholarship for Physics, NYU CAS, 2010-2011

Phi Beta Kappa

Sigma Pi Sigma (National Physics Honors Society)

## Research

### Preprints and Journal Publications

(Preprints Available at <http://cims.nyu.edu/~aukosh/research.html>)

15. On the unbalanced cut problem and the generalized Sherrington-Kirkpatrick model (with Subhabrata Sen), *submitted*, arXiv:1707.09042 (2017)
14. Spectral gap estimates for mean field spin glasses (with Gérard Ben Arous), *submitted*, arXiv:1705.04243 (2017)
13. MAX  $\kappa$ -CUT and the inhomogeneous Potts spin glass (with Justin Ko and Subhabrata Sen), *Ann. Appl. Probab.*, *to appear*, (2017)
12. Random matrices and the New York City subway system (with Tom Trogdon), *Phys. Rev. E* 96, 030101(R). (“rapid communication”), (2017)
11. Thouless-Anderson-Palmer equations for generic  $p$ -spin glasses (with Antonio Auffinger), *submitted*, arXiv:1612.06359 (2016)
10. On the Spectral Gap of Spherical Spin Glass Dynamics (with Reza Gheissari), *submitted*, arXiv:1607.02134, (2016)
9. Bounding the Complexity of Replica Symmetry Breaking for Spherical Spin Glasses (with Ian Tobasco), *Proc. Amer. Math. Soc.*, *to appear*, (2016)
8. Low Temperature Asymptotics in Spherical Mean Field Spin Glasses (with Ian Tobasco), *Comm. Math. Phys.* (2017), Volume 352, Issue 3, pp 979-1017
7. On the Overlap Distribution of Branching Random Walks, *Electron. J. Probab.* Volume 21 (2016), paper no. 50, 16 pp.
6. Some Properties of the Phase Diagram of Mixed  $p$ -Spin Glasses (with Ian Tobasco), *Probab. Theory Relat. Fields* (2017) 167: 615-672.
5. A Dynamic Programming Approach to the Parisi Functional (with Ian Tobasco), *Proc. Amer. Math. Soc.* Volume 144, Number 7, July 2016, Pages 3135-3150
4. Approximate Ultrametricity for Random Measures with Applications to Spin Glasses, *Comm. on Pure and Appl. Math* 70 (2017), 611-664.

3. Solution of the propeller conjecture in  $\mathbf{R}^3$  (with Steven Heilman and Assaf Naor). Discrete and Computational Geometry: Volume 50, Issue 2 (2013), Pages 263-305. an extended abstract appeared at STOC 2012.
2. Charged particle motion in electromagnetic fields varying moderately slowly in space (with Harold Weitzner) Physics of Plasmas 18, 104510 (2011).
1. Variational and structural methods in mean field spin glasses, Ph. D. Thesis, May 2016

## Presentations

15. First Joint Meeting of CRM-IMPA, CRM, July 2017 (Invited)
14. Workshop on Phase Transitions, AIM, June 2017 (Invited)
13. Analysis Seminar, University of Toronto, March 2017 (Invited)
12. Probability Seminar, Stanford University, February 2017 (Invited)
11. Analysis and Probability Seminar, University of Michigan, February 2017 (Invited)
10. Random Matrix Theory and Probability Seminar, Harvard University, February 2016 (Invited)
9. Probability Seminar, Northwestern University, February 2016 (Invited)
8. Probability and Statistical Physics Seminar, University of Chicago, January 2016 (Invited)
7. Northeast Probability Seminar, November 2014, November 2015
6. Probability Seminar, Cornell University, September 2015 (Invited)
5. CRM-PIMS Probability Summer School, June 2015
4. Analysis Seminar, Northwestern University, June 2015 (Invited)
3. Doctoral Student Working Group seminar of LPMA (Paris VI and VII), April 2015 (Invited)
2. Poster session, Spin Glasses: an old tool for new problems, August 2014
1. Spin Glasses and Related Topics, Banff International Research Station, July 2014 (Invited)

## Workshops/Conferences Attended

First Joint Meeting of CRM-IMPA, CRM, 2017  
 Workshop on phase transitions in random computational problems, AIM, 2017  
 Joint Mathematics Meeting 2017  
 Workshop on Percolation, Spin Glasses and Random Media, Northwestern University, 2016  
 Northeast Probability Seminar 2013, 2014, 2015  
 CRM-PIMS Probability Summer School 2015  
 IHP Disordered Systems Trimester 2015  
 Spin Glasses: an old tool for new problems (IESC) 2014  
 Spin Glasses and Related Topics (BIRS) 2014  
 Cornell Probability Summer School 2012, 2014  
 Random Matrices and Random Systems (IAS) 2014  
 Beg Rohu Summer School in Disordered Systems 2013

Columbia Princeton Probability day 2013  
Symposium on the Theory of Computing (STOC) 2012

## **Academic Experiences and Synergistic Activities**

### **Teaching**

*Harvard University*

Instructor: Math 21a (Undergraduate) Fall 2017

*New York University*

Recitation Leader: Theory of Probability (Undergraduate), Spring 2014; Honors Analysis 1 (Undergraduate), Fall 2014, Fall 2015

Grader: Adv. Topics in Probab: Random Graphs (Graduate), Spring 2016

### **Committees**

*Harvard University*

Colloquium Committee Fall 2017-Spring 2018

### **Seminar and Conference Organization**

Co-Organizer, Brandeis-Harvard-MIT-Northeastern Colloquium, Fall 2017 - Spring 2018

Co-Organizer, Harvard CMSA Random Matrix and Probability Theory Seminar, Fall 2017 -

Co-Organizer, Toronto Probability Seminar, Fall 2016- Spring 2017

Co-Organizer, Special Session on Spin Glasses and Disordered Media, Joint Mathematics Meetings (AMS), Jan. 2017

Co-Organizer, Courant Graduate Student Post-Doc Seminar (NYU) Spring 2014-Fall 2015

Co-Organizer, Student Probability Seminar (NYU) Fall 2013-Fall 2016

### **Refereeing**

Refereed for several journals. List provided upon request.

### **Extended Professional Travel**

Northwestern University, Evanston, IL., USA, Jan.-Feb. 2016

NYU Paris GRI Institute, Paris, France, Feb.-Apr. 2015

Last updated: September 24, 2017