

## Tobias Lee Johnson

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### EMPLOYMENT AND EDUCATION

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- Assistant Professor**, College of Staten Island (CUNY) Fall 2017–  
**NSF Postdoctoral Fellow**  
New York University; sponsored by Gérard Ben Arous Fall 2016–Spring 2017  
University of Southern California; sponsored by Larry Goldstein Fall 2014–Spring 2016  
**Ph.D. in Mathematics**, University of Washington Fall 2008–Spring 2014  
Advised by Ioana Dumitriu and Soumik Pal  
**B.A. in Mathematics**, Yale University Fall 2003–Spring 2007

### RESEARCH

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#### Interests:

probability theory and combinatorics, with a focus on discrete random structures; random regular graphs and their spectral properties; Stein's method; interacting particle systems.

#### Papers:

16. *Random tree recursions: which fixed points correspond to tangible sets of trees?*, with Moumanti Podder and Fiona Skerman.  
Submitted. 1808.03019
15. *Cover time for the frog model on trees*, with Christopher Hoffman and Matthew Junge.  
Submitted. arXiv:1802.03428
14. *Infection spread for the frog model on trees*, with Christopher Hoffman and Matthew Junge.  
Submitted. arXiv:1710.05884
- 2018+ 13. *Stochastic orders and the frog model*, with Matthew Junge.  
To appear in *Annales de l'Institut Henri Poincaré*. arXiv:1602.04411.
- 2018 12. *Bounds to the normal for proximity region graphs*, with Larry Goldstein and Raphaël Lachièze-Rey.  
*Stochastic Process. Appl.*, 128(4):1208–1237, 2018. arXiv:1510.09188.
11. *Size biased couplings and the spectral gap for random regular graphs*, with Nicholas Cook and Larry Goldstein.  
*Ann. Probab.*, 46(1):72–125, 2018. arXiv:1510.06013.
- 2017 10. *Recurrence and transience for the frog model on trees*, with Christopher Hoffman and Matthew Junge.  
*Ann. Probab.*, 45(5):2826–2854, 2017. arXiv:1404.6238.
9. *Local limit of the fixed point forest*, with Anne Schilling and Erik Slivken.  
*Electron. J. Probab.*, 22 (2017), no. 18, 1–26. arXiv:1605.09777.
- 2016 8. *The critical density for the frog model is the degree of the tree*, with Matthew Junge.  
*Electron. Commun. Probab.*, 21 (2016), no. 82, 1–12. arXiv:1607.07914.
7. *From transience to recurrence with Poisson tree frogs*, with Christopher Hoffman and Matthew Junge.  
*Ann. Appl. Probab.*, 26(3):1620–1635, 2016. arXiv:1501.05874.
6. *The Marčenko-Pastur law for sparse random bipartite biregular graphs*, with Ioana Dumitriu.  
*Random Structures Algorithms*, 48(2):313–340, 2016. arXiv:1304.4907.
- 2015 5. *Exchangeable pairs, switchings, and random regular graphs*.  
*Electron. J. Combin.*, 22(1):P1.33, 2015. arXiv:1112.0704.
4. *Quantitative small subgraph conditioning*, with Elliot Paquette.  
Unpublished. arXiv:1307.4858.
- 2014 3. *Cycles and eigenvalues of sequentially growing random regular graphs*, with Soumik Pal.  
*Ann. Probab.*, 42(4):1396–1437, 2014. arXiv:1203.1113.
- 2013 2. *Functional limit theorems for random regular graphs*, with Ioana Dumitriu, Soumik Pal, and Elliot Paquette.  
*Probab. Theory Related Fields*, 156(3–4):921–975, 2013. arXiv:1109.4094.
- 2009 1. *On universal cycles for multisets*, with Glenn Hurlbert and Joshua Zahl.  
*Discrete Math.*, 309::5321–5327, 2009. arXiv:math/0701488.

## SELECTED TALKS

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<b>CIMPA School, Geometry and scaling of random structures</b> , Buenos Aires <i>Cover time for the frog model on trees</i>	July 2018
<b>Georgia Tech</b> , Stochastics Seminar <i>Cover time for the frog model on trees</i>	February 2018
<b>CUNY</b> , Probability Seminar <i>Size biased couplings and the spectral gap for random regular graphs</i>	October 2017
<b>Penn/Temple</b> , Probability Seminar <i>Galton-Watson fixed points, tree automata, and interpretations</i>	April 2017
<b>University of Minnesota</b> , Probability Seminar <i>Cover time for the frog model on trees</i>	March 2017
<b>NYU-ECNU (Shanghai)</b> , Probability Seminar <i>Cover time for the frog model on trees</i>	March 2017
<b>Columbia University</b> , Probability Seminar <i>Galton-Watson fixed points, tree automata, and interpretations</i>	February 2017
<b>Duke University</b> , Probability Seminar <i>Galton-Watson fixed points, tree automata, and interpretations</i>	February 2017
<b>University of Chicago</b> , Probability and Statistical Physics Seminar <i>Galton-Watson fixed points, tree automata, and interpretations</i>	February 2017
<b>Purdue University</b> , Probability Seminar <i>Galton-Watson fixed points, tree automata, and interpretations</i>	January 2017
<b>Ohio State University</b> , Combinatorics and Probability Seminar <i>Galton-Watson fixed points, tree automata, and interpretations</i>	December 2016
<b>Carnegie Mellon University</b> , Algorithms, Combinatorics and Optimization Seminar <i>Size biased couplings and the spectral gap for random regular graphs</i>	May 2016
<b>Bay Area Discrete Math Day</b> , UC Berkeley <i>The frog model on trees</i>	April 2016
<b>Simons Institute (Berkeley)</b> , Counting Program Seminar <i>Nonexistent properties of Galton-Watson trees</i>	April 2016
<b>Stanford University</b> , Probability Seminar <i>Size biased couplings and the spectral gap for random regular graphs</i>	March 2016
<b>Cornell University</b> , Oliver Club (Colloquium) <i>The frog model on trees</i>	March 2016
<b>Courant Institute</b> , Probability Seminar <i>The frog model on trees</i>	March 2016
<b>UT Austin</b> , Random Structures Seminar <i>Size biased couplings and the spectral gap for random regular graphs</i>	February 2016
<b>UC Irvine</b> , Probability Seminar <i>Size biased couplings and the spectral gap for random regular graphs</i>	January 2016
<b>Davis-Warwick Probability Workshop</b> , UC Davis <i>Size biased couplings and the spectral gap for random regular graphs</i>	December 2015
<b>UCLA</b> , Probability Seminar <i>Size biased couplings and the spectral gap for random regular graphs</i>	October 2015
<b>Yale University</b> , Combinatorics and Probability Seminar <i>The second eigenvalue of dense random regular graphs</i>	September 2015
<b>Rutgers</b> , Discrete Math Seminar <i>The second eigenvalue of dense random regular graphs</i>	September 2015
<b>Penn/Temple</b> , Probability Seminar <i>The frog model on trees</i>	September 2015
<b>CUNY</b> , Probability Seminar <i>The frog model on trees</i>	September 2015
<b>Sherman Memorial Conference</b> , Indiana University <i>The frog model on trees</i>	May 2015
<b>UC Davis</b> , Mathematical Physics & Probability Seminar <i>The frog model on trees</i>	May 2015
<b>IMA</b> , Postdoc Seminar <i>The frog model on trees</i>	April 2015

<b>Weizmann Institute</b> , Geometric Functional Analysis & Probability Seminar <i>The frog model on trees</i>	March 2015
<b>UCLA</b> , Probability Seminar <i>Random matrices, random regular graphs, and Stein's method</i>	February 2015
<b>UC Irvine</b> , Probability Seminar <i>The frog model on trees</i>	February 2015
<b>Southern California Probability Symposium</b> , UCLA <i>The frog model on trees</i>	December 2014
<b>AMS Special Session on Random Matrices</b> , Joint Meetings, Baltimore <i>Random matrices and random regular graphs</i>	January 2014
<b>University of Southern California</b> , Probability Seminar <i>Stein's method and random regular graphs</i>	September 2013
<b>Courant Institute</b> , Probability Seminar <i>Growing random regular graphs and the Gaussian free field</i>	April 2012

## HONORS AND AWARDS

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<b>NSF Postdoctoral Fellow</b> , University of Southern California and Courant Institute	2014–2017
<b>ARCS Fellowship</b> , ARCS Foundation, Seattle chapter	2008–2010
<b>NSF VIGRE Graduate Fellowship</b> , University of Washington	2008–2009

## PROFESSIONAL ACTIVITIES

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- reviewer for *ALEA*, *Annals of Probability*, *Communications on Pure and Applied Mathematics*, *Journal of Integer Sequences*, *Probability Theory and Related Fields*, *Random Structures and Algorithms*, and *Symposium on Discrete Algorithms*
- reviewer for AMS MathSciNet
- organized USC's Probability/Statistics Seminar

## TEACHING

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### Classes taught as full instructor:

Probability (MTH 311, CSI)	Fall 2017, Fall 2018
Statistics (MTH 214, CSI)	Fall 2017, Spring 2018
Calculus I (MTH 231, CSI)	Spring 2018
Analysis (MATH 325, NYU)	Spring 2017
Math for Economics II (MATH 212, NYU)	Fall 2016
Business Calculus (MATH 118x, USC)	Fall 2014
Differential Equations (MATH 307, UW)	Winter 2014
Linear Algebra (MATH 308, UW)	Winter 2011, Summer 2011, Spring 2013
Calculus I (MATH 124, UW)	Summer 2010

### Other teaching duties:

Lead TA, University of Washington Trained and supervised all first-year teaching assistants	Fall 2012–Spring 2013
TA Mentor, University of Washington Observed and advised first-year teaching assistants	Fall 2010, Fall 2011
TA for calculus classes, University of Washington	Fall 2008, Spring 2009, Fall 2010, Fall 2011