Amanda Redlich

Education

Ph.D. Mathematics, MIT, June 2010
Adviser: Peter Shor

B.A. Mathematics, University of Chicago, June 2005

Student, Budapest Semesters in Mathematics, Fall 2003

Positions held

Visiting lecturer, Department of Mathematical Sciences, UMass Lowell, Sept. 2018-present

Assistant professor, Department of Mathematics, Bowdoin College, July 2013 - June 2018

Visiting assistant professor (sabbatical position), Tufts University, Sept. 2016-May 2017

Postdoctoral fellow, Network science and graph algorithms, Institute for Computational and Experimental Research in Mathematics, Brown University, February 2014-May 2014

Postdoctoral associate, Department of Mathematics, Rutgers University, September 2010 - May 2013

Research intern, Tata Research Development and Design Centre, Pune, India, Summer 2008

Teaching assistant, Young Scholars Program and Seminars for Endorsement of Science and Mathematics Educators, U. Chicago, Jan. 2002-June 2005

Math tutor, Lincoln Land Community College, Jan. 1998-June 2001

Research interests

Combinatorics, theoretical computer science, probability.

Publications

- J. Augustine, M. Mitzenmacher, W. K. Moses Jr., A. Redlich: *Practical load balancing: the variable probes way*, in preparation.
- Amanda Redlich: *Power laws and power-of-two-choices*, submitted.
- J. Augustine, W. K. Moses Jr., A. Redlich, E. Upfal: *Balanced allocation: Patience is not a virtue*, submitted.
- Amanda Redlich: *A power-of-two-choices unbalanced allocation process*, SIAM J. Discrete Math, 31-1 (2017), pp. 477-488

- Robert DeMarco, Amanda Redlich: *Graph decomposition and parity*, J. Graph Theory 82 (4): 374386 (2016).
- J. Augustine, W. K. Moses Jr., A. Redlich, E. Upfal: *Balanced allocation: Patience is not a virtue*, Proceedings of the Twenty-Seventh Annual ACM-SIAM Symposium on Discrete Algorithms, (2016) 655-671.
- Robert DeMarco, Jeffry Kahn, Amanda Redlich: *Modular statistics for subgraph counts in sparse random graphs*, Electronic J. of Combinatorics 22(1): P1.37 (2015).
- Shabnam Beheshti, Amanda Redlich: *Remarks on combinatorial aspects of the KP Equation*, Proceedings of the Second International Conference on Nonlinear and Modern Mathematical Physics, AIP Conf. Proc. 1562, 5 (2013).
- S. Patil, S. Roy, J. Augustine, A. Redlich, A. Deshpande, M. Gharote, S. Lodha, A. Mehrotra, H. Vin: *Minimizing Testing Overheads in Database Migration Lifecycle*. Proceedings of 16th International Conference on Management of Data (COMAD), 2010.
- Igor Pak, Amanda Redlich: *Long cycles in abc-permutations*. Functional Analysis and Other Mathematics 2(1): 87-92 (2008).
- David Eisenstat, Gary Gordon, Amanda Redlich: *Combinatorial properties of a rooted graph polynomial*. SIAM J. Discrete Math. 22(2): 776-785 (2008)
- D. Eisenstat, J. Feder, G. Francos, G. Gordon, A. Redlich: *Expected rank and randomness in rooted graphs*. Discrete Applied Mathematics 156(5): 746-756 (2008)

Service

- NSF panelist
- Referee for American Mathematical Monthly
- Referee for ACM-SIAM Symposium on Discrete Algorithms
- Referee for Discrete Mathematics
- Referee for SIAM Undergraduate Research Online
- Reviewer for Mathematical Reviews/MathSciNet
- Organizer of Special Session on Combinatorics and Integrability, AMS Spring Eastern Sectional Meeting, April 2013
- Organizer of Rutgers Discrete Math Seminar, January 2011-May 2013

Outreach

◇ College-level

- First-generation college student advising - Bowdoin College
- Undergraduate research talks - Bowdoin College, Colby-Sawyer College, Lafayette College, Macalester College, Rutgers University, York College
- Head mentor, Summer Program in Undergraduate Research - MIT math REU, Summer 2009
- Referee for SIAM Undergraduate Research Online

◇ Pre-college

- "Knitting Knerdery" "Fractions and Food" "Web of Friends" "Zeno's Paradox" - Creative math workshops for 7 to 13 year old students (4H, Brownies, museum visitors)
- Combinatorics instructor, Rutgers Young Scholars Program - program for talented teens, Summer 2011
- Head mentor, Research Science Institute - MIT research program for talented high school students, Summer 2006, 2007
- Teaching assistant, U. Chicago Young Scholars Program - program for middle and high school students, January 2002 - June 2005
- Judge, Association for Women in Mathematics middle-school essay contest

◇ Broader community

- "Musical Numbers: Math Goes to Bollywood" "Knitting Knerdery" "Knitting and Math" "Women in Mathematics"- general-audience presentations for 18 to 80 year olds (museums, colleges)
- "Truth Values" panelist - Central Square Theater, Cambridge MA

Teaching

- Discrete Structures I - UMass Lowell
  Fall 2018
- Management Calculus - UMass Lowell
  Fall 2018
- Linear Algebra - Bowdoin College
  Spring 2018
- Various independent-study and honors projects - Bowdoin College
  Spring 2015, Spring 2016, Fall 2017, Spring 2018
- Multivariate Calculus - Bowdoin College, Rutgers University
  Fall 2011, Fall 2012, Fall 2013, Fall 2014, Spring 2015, Fall 2015, Spring 2016, Fall 2017

- Combinatorics and Graph Theory - Bowdoin College
  Fall 2014, 2017
- Probability - Bowdoin College
  Fall 2013, Spring 2015, Fall 2015, Spring 2016, Spring 2018
- Introduction to Theory of Computation, (head) teaching assistant - taught recitation, created curriculum, and led other instructors for large introductory MIT class
  Fall 2006, 2007, 2008, 2009
- U. Chicago Seminars for Elementary Specialists And Mathematics Educators, teaching assistant - math and science program for public school teachers
  August 2002 - December 2004
- Math Center, Lincoln Land Community College - worked with students from 18 to 65 on math ranging from arithmetic to calculus
  January 1998-June 2001

Selected awards

- National Science Foundation Mathematical Sciences Postdoctoral Research Fellowship
  September 2010-July 2013
- Graduate Student Appreciation Fellowship - MIT department-wide fellowship
  Spring 2009
- Akamai Presidential Fellowship - MIT-wide fellowship
  Fall 2005, Spring 2006

Selected Talks

- Random Walks and Metrics Minisymposium, SIAM Annual Meeting, Pittsburgh PA, July 2017 - *Generating power-law-like distributions easily: Popularity contests*
- Computer Science & Engineering Seminar, Indian Institute of Technology Madras, May 2017 - *The power of two choices when the rich get richer: multiple choice at the multiplex*
- Topology et al. Seminar, Wesleyan University, Nov. 2016 - *Graph counting and combinatorial games: A logical connection*
- Special Session on Extremal and Probabilistic Combinatorics, AMS Fall Central Sectional Meeting, University of St. Thomas, Oct. 2016 - *The waiting game: Balanced allocation via random choices*
- MSCS Seminar, Macalester College, Oct. 2016 - *The best random choice*
- Special Session on New Developments in Graphs and Hypergraphs, AMS Fall Eastern Sectional Meeting, Bowdoin College, Sept. 2016 - *Strategic graph decompositions*
- SIAM Workshop on Network Science, Boston MA, July 2016 - *Designing exit frequency distance measures for biological networks*

- Randomized Structures and Algorithms, Carnegie Mellon University, July 2015 - *Power laws and the power of two choices*
- Colby-Bowdoin-Bates Math Colloquium, April 2015 - *There is method in madness: Increasing randomness to decrease randomness*
- ICERM, Providence RI, March 2014 - *Subgraphs in random graphs*
- Discrete Mathematics Days in the Northeast, Middletown CT, October 2013 - *Parity, first-order logic, and gluing and cutting graphs*
- IAS WAM Research Seminar, Princeton NJ, May 2013 - *Gluing graphs, ungluing graphs, and first-order logic with parity*
- DIMACS/CCICADA Interdisciplinary Seminar, Piscataway NJ, April 2013 - *Unbalanced allocations and cost minimization*
- Applied Communication Sciences, Basking Ridge NJ, April 2013 - *Logic, parity, and counting subgraphs in random graphs*
- Princeton Discrete Mathematics Seminar, Princeton NJ, March 2013 - *Graph constructions, graph decompositions, and random graphs*
- Bell Labs Mathematics Colloquium, Murray Hill NJ, Jan. 2013 - *Unbalanced allocations and cost minimization*
- Midwestern Graph Theory Conference LIII, Ames IA, Sept. 2012 - *Logic and graph decompositions*
- 2012 SIAM Conference on Discrete Mathematics, Halifax NS, June 2012 - *The power and weakness of two choices*
- Applied Mathematics Colloquium, Illinois Institute of Technology, Chicago IL, April 2012 - *Deterministic randomness*
- Penn Combinatorics and Probability Seminar, Philadelphia PA, March 2012 - *Deterministic random algorithms*
- Columbia Discrete Math Seminar, New York NY, March 2012 - *Logic, parity, and graph decompositions*