David M. Howard

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EDUCATION	_
Ph.D Mathematics Georgia Institute of Technology, Atlanta, GA Thesis: A Study of Discrepancy Results in Partially Ordered Sets	August 2010
Advisor: William T. Trotter	
M.S. Mathematics Carnegie Mellon University, Pittsburgh, PA Thesis: A Study of Combinatorial Games Advisor: Clifford Smyth	May 2004
B.S. Mathematics (with honors) Carnegie Mellon University, Pittsburgh, PA Double major in Computer Science	May 2004
Academic Positions	_
Assistant Professor Colgate University	July 2012 - Present
Post Doctorate Technion University in Haifa, Israel	October 2010 - June 2012

♦ Full-Time Research position under Ron Aharoni, Ron Holzman, Roy Meshulam, and Amir Yehudayoff
 Fulbright Grant September 2007-May 2008

• Award to study at Charles University with Jaroslav Nešetřil

TEACHING EXPERIENCE AT COLGATE UNIVERSITY

A highly selective residential liberal arts institution distinguished by academic excellence and interdisciplinary inquiry. Standard teaching course load 3:2.

- Thinking Between the Lines: Interpreting the Numbers (FSEM), Fall '16
 Students learn how to critically analyze numbers found in the real-world. Topics include: Growth Analysis, Personal Finance, Probability, Statistics, and Voting and Social Choice.
- Graph Theory, Spring '15
 A rigorous introduction to graph theory. Topics include Trees, Matchings, Connectivity, Coloring, Planarity, Ramsey Theory, and Random Graphs.
- Combinatorial Problem Solving, Spring '14, Spring '16
 Course designed to develop methods for solving combinatorial problems in mathematics and computer science. The emphasis of this course is on problem solving.
- Intro to Statistics, Spring '14
 Introduces students to statistical thinking by examining data collected to solve real-world problems.
- Math Problem Solving (Senior Capstone), Fall '13, Fall '14, Spring '15
 This capstone course presents students with numerous and varied problems, drawn from many mathematical areas both pure and applied.
- Number Theory, Spring '13, Fall '13, Fall '14(x2), Spring '17(x2).
 This course is an introduction to the mathematics of the integers. This course serves as the introduction to mathematical proofs class where the focus is on developing the ability to construct logically sound mathematical arguments.
- ◆ Calculus II, Fall '12(x2), Spring '13, Spring '16(x2), Fall '16(x2).
- A continuation of the study of calculus primarily focusing on integration techniques and applications.
- ◆ Calculus I, Fall '17(x2) An introduction to Calculus. Topics include Limits, Differentiation, Applications of Derivatives, and Integration.

RESEARCH PAPERS

(Authors listed in alphabetical order as is the standard in mathematics)

- Convex Subsets of the Boolean Lattice in preparation (with Dwight Duffus and Imre Leader)
- A Result Pertaining to Bialostocki's Conjecture in preparation (with Aaron Robertson)
- Rainbow Matchings in 3-uniform hypergraphs in preparation (with Amir Yehudayoff)
- The dimension of posets with planar cover graphs excluding two long incomparable chains submitted (with Noah Streib, William T. Trotter, Bartosz Walczak, and Ruidong Wang)
- Large Rainbow Matchings in General Graphs submitted (with Ron Aharoni, Eli Berger, Maria Chudnovsky, and Paul Seymour)
- **Cross-intersecting pairs of hypergraphs** Journal of Combinatorial Theory, Series A 148:15-26, 2017 (with Ron Aharoni)
- A Rainbow *r*-partite version of the Erdős-Ko-Rado Theorem Combinatorics, Probability, and Computing 26(3):321-337, 2017 (with Ron Aharoni).
- **Cooperative Colorings and Independent Systems of Representatives** Electronic Journal of Combinatorics 22(2), 2015 (with Ron Aharoni, Ron Holzman, and Philipp Sprüssel)
- Determining membership with 2 simultaneous queries Theoretical Computer Science 543:112-119, 2014
- On a Generalization of the Ryser-Brualdi-Stein Conjecture Journal of Graph Theory 78(2):143-156, 2015 (with Ron Aharoni and Pierre Charbit)
- Revolutionaries and Spies Discrete Mathematics, 312:3384-3391 (2012) (with Clifford Smyth)
- When Linear and Weak Discrepancy Are Equal Discrete Mathematics, 311(4):252-257, February 2011 (with S.J. Young)
- On the Size of Maximal Antichains and the Number of Pairwise Disjoint Maximal Chains Discrete Mathematics, 310(21):2890-2894, November 2010. (with W.T. Trotter)
- The Total Linear Discrepancy of an Ordered Set Discrete Mathematics, 310(5):1022-1025, March 2010. (with R. Shull, N. Streib, and A. Trenk)
- The t-Discrepancy of a Poset Discrete Applied Mathematics, 158(16):1789-1798, August 2010. (with A. Trenk)
- The First Three Levels of an Order Preserving Hamiltonian Path in the Subset Lattice Order, 26(2):101-107, June 2009. (with Cs. Biro)
- Interval Partitions and Stanley Depth Journal of Combinatorial Theory, Series A Volume 117, Issue 4 (May 2010) (with Cs. Biro, M.T. Keller, W.T. Trotter, and S.J. Young)
- Irreducible Width 2 Posets of Linear Discrepancy 3 Order, 25:105-119, May 2008. (with G.B. Chae, M. Cheong, and S.M. Kim)
- A Characterization of Partially Ordered Sets with Linear Discrepancy Equal to 2 Order (2007), 24:139-153 (with M.T. Keller and S.J. Young)

CONFERENCES AND TALKS **PIC Math Workshop** Provo, UT May 2017 Invited Talk: Why You Haven't Learned Enough Mathematics Le Moyne College Apr 2017 Invited Talk: AWM & Women in Math Colgate University Feb. 2017 Joint Math Meetings Jan 2017 Atlanta, GA SIAM Conference on Discrete Mathematics Atlanta, GA Jun 2016 **Joint Mathematics Meetings** Jan. 2016 Seattle, WA Canadam Saskatoon, Saskatchewan Canada Jun. 2016 Invited Talk: Industry, Science, and Gaming and Colgate University Mar 2015 Their Love Affair with Graph Theory Joint Mathematics Meetings San Antonio, TX Jan. 2015 Invited Talk at King's College: Graph Theory Wilkes-Barre, PA Oct. 2014 SIAM Conference on Discrete Mathematics Minneapolis, MN Jun 2014 Invited Talk: Size Conditions for Rainbow Matchings Feb. 2014 Invited Talk: Matchings! Colgate University Baltimore, MD Jan 2014 Joint Mathematics Meetings 2013 Mathfest and Projet NExT Hartford, CT Jul 2013 San Diego, CA Jan 2013 Joint Mathematics Meetings Madison, WI 2012 Mathfest and Projet NExT Jul 2012 Awards and Honors • Konosioni Torch Medals(x2)2016

◆ Most Influential People at Colgate from Alum Survey	2015, 2016
◆ Major Grant - Colgate Research Council: \$6,100	2015
◆ United States - Israel Binational Science Foundation (BSF) Grant	2013-2017
(with Ron Aharoni, Eli Berger, and Maria Chudnovsky): \$126,800	
◆ Faculty Development Council (Colgate University) Major Grant \$3,000	2012-2013
◆ Project NExT (New Experiences in Teaching) fellow.	2012-2013

SERVICE

- ◆ Referee:
 - 1.) Order: A Journal on the Theory of Ordered Sets and its Applications
 - 2.) Electronic Journal of Combinatorics
 - 3.) Discrete Mathematics, Algorithms, and Applications,
 - 4.) SIAM Journal on Discrete Mathematics
 - 5.) Discrete Mathematics
 - 6.) European Journal of Combinatorics
 - 7.) Contributions to Discrete Mathematics
 - 8.) Journal of Graph Theory
 - Served as judge for undergraduate research competitions
 - Colgate University, AMS/MAA national meeting, Young Mathematicians Conference
 - ◆ Served on Student Conduct Board at Colgate University
 - Organized Putnam Seminar at Colgate University
 - Organize weekly math department tea
 - Currently advise 9 math majors, 1 math minor, and 17 undeclared majors. (Graduated advisees: 10 majors, 2 minors)
 - Participated in numerous events for Prospective Students, Current Students, and Colgate Families (April Visit Days at Colgate, NASC Family Weekend Luncheons, Expo for Admitted Students,...)
 - ♦ Attended Colgate's Natural Science and Mathematics Division retreat '14,'17
 - Written numerous Colgate student recommendations.
 - ◆ Faculty Advisor to Math Club