landon rabern

CONTACT INFORMATION

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RESEARCH INTERESTS

Structural and extremal graph theory, particularly graph coloring. The structure of paradox. Machine learning/discovery, automated proof writing. Game-based and play-based pedagogy.

EDUCATION

Ph.D., Mathematics. Arizona State University, 2011 - 2013.
- Dissertation: *Coloring graphs from almost maximum degree sized palettes*
- Advisor: Hal Kierstead

M.A., Mathematics. University of California, Santa Barbara, 2003 - 2005.
B.A., Mathematics. Washington University in St. Louis, 1999 - 2003.

TEACHING

Franklin & Marshall College
Department of Mathematics
Adjunct Assistant Professor **2015 -**
- Precalculus (2 sections)
- Differential Calculus (7 sections)

Arizona State University
School of Mathematical and Statistical Sciences
Teaching Assistant **2011 - 2012**
- Graph Theory

University of California, Santa Barbara
Department of Mathematics
Teaching Assistant **2003 - 2005**
- Abstract Algebra
- Differential Equations & Linear Algebra
- Logic and Proofs

INDUSTRY WORK

LBD Data
Owner / Software Architect **2008 -**

Wall Street On Demand
Senior Software Engineer **2010 - 2011**

Synaptics
Software Engineer **2009 - 2010**

Wall Street On Demand
Software Engineer **2007 - 2009**

L-3 Communications - Applied Technologies Division
Scientific Programmer, Security Clearance—Secret **2005 - 2007**

Math Publications

[1] L. Rabern. A better lower bound on average degree of 4-list-critical graphs. *Electron. J. Combin.*, Accepted.

[2] H. Kierstead and L. Rabern. Extracting list colorings from large independent sets. *J. Graph Theory*, Accepted.

[3] D.W. Cranston and L. Rabern. Edge Lower Bounds for List Critical Graphs, via Discharging. *Combinatorica*, Accepted.

[4] D.W. Cranston and L. Rabern. Planar graphs have independence ratio at least 3/13. *Electron. J. Combin.*, Accepted.

[5] D.W. Cranston and L. Rabern. List-coloring claw-free graphs with $\Delta - 1$ colors. *SIAM J. Discrete Math.*, Accepted.

[6] D.W. Cranston and L. Rabern. Subcubic edge chromatic critical graphs have many edges. *J. Graph Theory*, Accepted.

[7] D.W. Cranston and L. Rabern. Painting squares in $\Delta^2 - 1$ shades. *Electron. J. Combin.*, Accepted.

[8] H. Kierstead and L. Rabern. Improved lower bounds on the number of edges in list critical and online list critical graphs. *J. Combin. Theory Ser. B*, Accepted.

[9] D.W. Cranston and L. Rabern. The fractional chromatic number of the plane. *Combinatorica*, Accepted.

[10] D.W. Cranston and L. Rabern. Graphs with $\chi = \Delta$ have big cliques. *SIAM J. Discrete Math.*, Accepted.

[11] D.W. Cranston and L. Rabern. Brooks' Theorem and Beyond. *J. Graph Theory*, Accepted.

[12] D.W. Cranston and L. Rabern. A note on coloring vertex-transitive graphs. *Electron. J. Combin.*, **22** (2), 2015.

[13] D.W. Cranston and L. Rabern. Conjectures equivalent to the Borodin-Kostochka conjecture that appear weaker. *European J. Combinatorics*, Volume 44, Part A, February 2015, Pages 23-42.

[14] L. Rabern. A game generalizing Hall's theorem. *Discrete Math.*, **320**(6):87-91, 2014.

[15] L. Rabern. Coloring graphs with dense neighborhoods. *J. Graph Theory*, **76**(4):323-340, 2014.

[16] L. Rabern. A different short proof of Brooks' theorem. *Discuss. Math. Graph Theory*, **34**(3), 2014.

[17] L. Rabern. Partitioning and coloring graphs with degree constraints. *Discrete Math.*, **313**(9): 1028-1034, 2013.

[18] D.W. Cranston and L. Rabern. Coloring claw-free graphs with $\Delta - 1$ colors. *SIAM J. Discrete Math.*, **27**(1):534-549, 2013.

[19] L. Rabern. Destroying non-complete regular components in graph partitions. *J. Graph Theory*, **72**(2):123-127, 2013.

[20] A.V. Kostochka, L. Rabern and M. Stiebitz. Graphs with chromatic number close to maximum degree. *Discrete Math.*, **312**(6):1273-1281, 2012.

[21] L. Rabern. A strengthening of Brooks' Theorem for line graphs. *Electron. J. Combin.*, N145, **18** (1), 2011.

[22] L. Rabern. Δ-Critical graphs with small high vertex cliques. *J. Combin. Theory Ser. B*, **102** (1):126-130, 2012.

[23] L. Rabern. On hitting all maximum cliques with an independent set. *J. Graph Theory*, **66**(1): 32-37, 2011.

[24] L. Rabern. A note on Reed's conjecture. *SIAM J. Discrete Math.*, **22**(2):820-827, 2008.

[25] L. Rabern. Applying Groebner basis techniques to group theory. *J. Pure Appl. Algebra*, **210** (1):137-140, 2007.

[26] L. Rabern. The Borodin-Kostochka conjecture for graphs containing a doubly critical edge. *Electron. J. Combin.*, N22, **14** (1), 2007.

[27] D. Gernert and L. Rabern. A knowledge-based system for graph theory, demonstrated by partial proofs for graph-colouring problems. *Comm. Math. Comput. Chem.*, **58**, N2 2007.

[28] L. Rabern. On graph associations. *SIAM J. Discrete Math.*, **20** (2):529–535, 2006.

[29] L. Rabern. Properties of magic squares of squares. *Rose Hulman Undergraduate J. Math.*, **4**(1), 2003.

Philosophy Publications

[30] L. Rabern, B. Rabern, and M. Macauley. Dangerous reference graphs and semantic paradoxes. *J. Philos. Logic*, **42**(5):727-765, 2013.

[31] B. Rabern and L. Rabern. A simple solution to the hardest logic puzzle ever. *Analysis*, **68**(2), April 2008.

Under Review

[32] L. Rabern. A better lower bound on average degree of k-list-critical graphs.

[33] D.W. Cranston and L. Rabern. Planar graphs are 9/2-colorable.

[34] D.W. Cranston and L. Rabern. Short fans and the 5/6 bound for line graphs..

[35] D.W. Cranston and L. Rabern. Beyond Degree Choosability.

[36] D.W. Cranston and L. Rabern. Edge-coloring via fixable subgraphs.

Peer Reviews

- Journal of Combinatorial Theory, Series B
- Electronic Journal of Combinatorics
- Journal of Graph Theory
- Discrete Math
- Synthese
- Minds and Machines
- SIAM Journal on Discrete Mathematics

Presentations

- *A common generalization of Hall's theorem and Vizing's edge-coloring theorem.* Miami University Colloquium, 2015.
- *Extending Alon-Tarsi Orientations.* AMS Special Session on Structural and Extremal Problems, 2014.
- *Improving Brooks' theorem.* The 26th Clemson Conference on Discrete Mathematics and Algorithms, 2011.
- *An improvement on Brooks' theorem.* CU-Denver Discrete Math Seminar, 2011.

Computer Skills

- Languages: C#, C/C++, JavaScript, Python, Java, Pascal, Scheme, x86 assembly.
- Applications: GAP, Boost Graph Library, LaTeX.
- Operating Systems: UNIX/Linux, Windows.