

Kevin G. Milans

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Research Interests

Discrete mathematics, combinatorics, and graph theory. Specific interests include extremal combinatorics, probabilistic combinatorics, combinatorial games, combinatorial algorithms, and computational complexity of combinatorial decision problems.

Appointments

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| 2012- | Assistant Professor , Department of Mathematics, West Virginia University |
| 2010-2012 | Visiting Assistant Professor , Department of Mathematics, University of South Carolina |

Education

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| August 2010 | University of Illinois at Urbana Champaign , Ph.D. in Mathematics
Advisor: Professor Douglas B. West |
| December 2006 | University of Illinois at Urbana Champaign , M.S. in Computer Science
Advisor: Professor Jeff Erickson |
| May 2002 | Carnegie Mellon University , B.S. in Computer Science
Minor in Physics |

Publications

- K. G. Milans and B. Clark, The Complexity of Graph Pebbling. *SIAM J. Discret. Math.* 20(3) (2006), 769-798.
- D. P. Bunde, K. G. Milans, D. B. West, and H. Wu, Parity and strong parity edge-colorings of graphs. *Congressus Numer.* 187 (2007), 193-213.
- D. P. Bunde, E. W. Chambers, D. Cranston, K. G. Milans, and D. B. West, Pebbling and optimal pebbling in graphs. *J. Graph Theory* 57 (2008), 215–238.
- D. P. Bunde, K. G. Milans, D. B. West, and H. Wu, Optimal strong parity edge-coloring of complete graphs. *Combinatorica* 28 (2008), 625-632.
- G. Joret and K. G. Milans, First-Fit is Linear on Posets Excluding Two Long Incomparable Chains. *Order* 28 (2011), 455-464.

- D. W. Cranston, N. Korula, T. LeSaulnier, K. G. Milans, C. Stocker, and J. Vandebussche, Overlap number of graphs. *J. Graph Theory*, doi: 10.1002/jgt.20596.
- J. Butterfield, T. Grauman, W. B. Kinnersley, K. G. Milans, C. Stocker, and D. B. West, Online degree-Ramsey theory. *Electronic Journal of Combinatorics* 18 (2011), Paper 136.
- K. G. Milans, D. Schreiber, and D. B. West, Acyclic sets in k -majority tournaments. *Electronic Journal of Combinatorics* 18 (2011), Paper 122.
- R. Downey, N. Greenberg, C. Jockusch, and K. G. Milans, Binary subtrees with few labeled paths. *Combinatorica* 31 (2011), 285-303.
- W. B. Kinnersley, K. G. Milans, and D. B. West, Degree Ramsey numbers of graphs. *Combin. Probab. Comput.* 21 (2012), 229-253. Richard Schelp memorial issue.
- M. Ferrara, M. S. Jacobson, K. G. Milans, C. Tennenhouse, and P. S. Wenger, Saturation numbers for graph subdivision families. *J. Graph Theory*, 71 (2012), 416-434.
- F. Pfender, K. G. Milans, D. Rautenbach, F. Regen, and D. B. West, Cycle spectra of Hamiltonian graphs. *Journal of Combinatorial Theory, Series B*, 102 (2012), 869-874.
- T. Jiang, K. G. Milans, and D. B. West, Degree Ramsey numbers for cycles and blowups of trees. *European J. Combin.*, 34 (2013), 414-423.
- D. W. Cranston, W. B. Kinnersley, K. G. Milans, G. J. Puleo, and D. B. West, Chain-making games in grid-like posets. *Journal of Combinatorics*, 3 (2012), 633-649.
- A. V. Kostochka and K. G. Milans, Coloring clean and K_4 -free circle graphs. In János Pach, editor, *Thirty Essays in Geometric Graph Theory*, pages 399-414. Springer, 2013.
- J. Choi, K. G. Milans, and D. B. West, Linear Discrepancy of Chain Products and Posets with Bounded Degree. *Order*, 31(3) (2014), 291-305.
- P. Horn, K. G. Milans, and V. Rödl, Degree Ramsey numbers of closed blowups of trees. *Electronic Journal of Combinatorics* 21 (2014), Paper 2.5.
- G. Joret, P. Micek, K. G. Milans, W. T. Trotter, B. Walczak, and R. Wang, Tree-width and dimension. *Combinatorica*, to appear.
- K. G. Milans, D. Stolee, and D. B. West, Ordered Ramsey Theory and Track Representations of Graphs. *Journal of Combinatorics*, to appear.
- T. Johnston, L. Lu, and K. G. Milans, Boolean algebras and Lubell functions. *J. Combin. Th. Ser. A*, to appear.
- L. Lu and K. G. Milans, Set families with forbidden induced subposets. *J. Combin. Th. Ser. A*, to appear.
- K. G. Milans, Monotone paths in dense graphs, in preparation.
- J. Almeter, S. Demircan, A. Kallmeyer, K. G. Milans, R. Winslow, A strengthening of star-coloring, in preparation. (From the 2015 Research Experience for Undergraduate Students at West Virginia University.)

Presentations

- June 2015 “Monotone paths in edge-ordered complete graphs”, Connections in Discrete Mathematics: A Celebration of the work of Ron Graham, Simon Fraser University, Burnaby, BC, Canada.
- May 2015 “Monotone paths in K_n ”, 28th Cumberland Conference, University of South Carolina, Columbia, SC.
- November 2014 “Tilings of Hypercubes”, AMS Fall Southeastern Sectional Meeting at University of North Carolina at Greensboro.
- June 2014 “Turán and Ramsey Results for Boolean Algebras”, West Fest: Celebrating 60 Years. Hosted by the Institute for Mathematics and its Applications, Minneapolis, MN.
- June 2014 “Forbidden Structures in the Boolean Lattice”, 2014 SIAM Conference on Discrete Mathematics, Posets minisymposium.
- March 2014 “Multicolor Degree Ramsey Numbers of Cycles”, AMS Southeastern Spring Sectional Meeting at University of Tennessee, Knoxville.
- October 2013 “Multicolor Degree Ramsey Numbers of Cycles”, AMS Fall Southeastern Sectional Meeting at University of Louisville.
- April 2013 “Turán and Ramsey Results for Boolean Algebras”, AMS Spring Sectional Meeting at Iowa State University.
- October 2012 “Forbidden Induced Posets in the Boolean Lattice”, AMS Fall Central Sectional Meeting at University of Akron.
- September 2012 “Forbidden Induced Posets in the Boolean Lattice”, Carnegie Mellon University, ACO Seminar.
- September 2012 “Forbidden Induced Posets in the Boolean Lattice”, AMS Fall Eastern Sectional Meeting at Rochester Institute of Technology.
- September 2012 “Forbidden Induced Posets in the Boolean Lattice”, 4th Polish Combinatorial Conference.
- April 2012 “Sparse Ramsey Hosts”, Georgia Southern University, Department Colloquium.
- February 2012 “Sparse Ramsey Hosts”, West Virginia University, Department Colloquium.
- February 2012 “Sparse Ramsey Hosts”, University of Denver.
- February 2012 “Sparse Ramsey Hosts”, University of South Florida, Department Colloquium.
- February 2012 “Sparse Ramsey Hosts”, University of Rhode Island.
- October 2011 “First-Fit is Linear on $(\underline{r} + \underline{s})$ -free Posets”, Clemson Mini-Conference on Discrete Mathematics and Algorithms.
- October 2011 “First-Fit is Linear on $(\underline{r} + \underline{s})$ -free Posets”, Emory University.

September 2011 “Binary Subtrees with Few Path Labels”, Carolina Math Seminar at USC Sumter.

July 2011 “Degree Ramsey Numbers of Graphs”, two part lecture series, Freie Universität Berlin.

April 2011 “Coloring Clean and K_4 -free Circle Graphs”, Atlanta Lecture Series in Discrete Mathematics III at Georgia Institute of Technology.

March 2011 “Binary Subtrees with Few Path Labels”, AMS Southeastern Section Meeting at Georgia Southern University.

March 2011 “First-Fit is Linear on $(\underline{r} + \underline{s})$ -free Posets”, Georgia Institute of Technology.

February 2011 “Degree Ramsey Numbers of Graphs”, Virginia Commonwealth University.

November 2010 “Acyclic Sets in k -majority Tournaments”, AMS Southeastern Section Meeting in Richmond, Virginia.

October 2010 “Binary Subtrees with Few Path Labels”, Georgia Institute of Technology.

October 2010 “Degree Ramsey Numbers of Graphs”, Emory University.

June 2010 “First-Fit is Linear on $(\underline{r} + \underline{s})$ -free Posets”, SIAM Conference on Discrete Mathematics in Austin, Texas.

February 2010 “Degree Ramsey Numbers of Graphs”, Simon Fraser University.

January 2010 “Degree Ramsey Numbers of Graphs”, 2010 Joint Mathematics Meetings in San Francisco, California.

December 2009 “Degree Ramsey Numbers of Graphs”, Mathematics Colloquium, University of Louisville.

November 2009 “Acyclic Sets in k -majority Tournaments”, University of Colorado Denver.

July 2009 “Cycle Spectra of Hamiltonian Graphs”, SIAM Annual Meeting 2009 in Denver, Colorado.

May 2009 “Computational Complexity aspects of Graph Pebbling”, CanaDAM 2009 in Montreal, Quebec.

April 2008 “Online Degree Ramsey Theory”, AMS Sectional Meeting at Indiana University, Bloomington.

November 2007 “On-line Ramsey Theory”, Combinatorics Seminar, U. of Louisville.

April 2006 “Parity Edge Coloring of Graphs”, DISCMATH Seminar, Illinois State U.

Teaching Experience

Fall 2014	Instructor for Math 261, “Elementary Differential Equations”, Instructor for Math 573, “Graph Theory”
Spring 2014	Instructor for Math373/578, “Introduction to Cryptography”
Fall 2013	Instructor for Math251, “Multivariable Calculus” Instructor for Math545, “Number Theory 1”
Spring 2013	Instructor for Math571, “Combinatorial Analysis 1”
Fall 2012	Instructor for Math343, “Introduction to Linear Algebra” Instructor for Math375, “Applied Modern Algebra”
Spring 2012	Instructor for Math242, “Elementary Differential Equations” Instructor for Math122, “Calculus for Business Administration and Social Sciences”
Fall 2011	Instructor for Math374, “Discrete Structures” Instructor for Math122, “Calculus for Business Administration and Social Sciences”
Spring 2011	Instructor for Math374, “Discrete Structures” Instructor for Math122, “Calculus for Business Administration and Social Sciences”
Fall 2010	Instructor for Math122, “Calculus for Business Administration and Social Sciences”
Spring 2009	Teaching assistant for Math234, “Calculus for Business I”
Fall 2008	Teaching assistant for Math231, “Calculus II”
Summer 2008	Co-instructor for CS273, “Theory of Computation” Small lecture format; approximately 20 students.
Spring 2008	Co-instructor for CS173, “Discrete Structures” Large lecture format; approximately 120 students.
Fall 2007	Teaching assistant for Math221, “Calculus I”
Summer 2007	Designer and instructor for Theory Bridge Course Distance learning format; provides distance masters students with the discrete math background necessary for a graduate course in algorithms. Course materials available at http://www.math.sc.edu/~milans/teaching/cstbc/ .
Spring 2007	Teaching assistant for CS473g, “Graduate Algorithms”
Fall 2006	Teaching assistant for CS473ug, “Undergraduate Algorithms”
Fall 2004	Teaching assistant for CS375, “Formal Models of Computation”
Spring 2004	Teaching assistant for CS373, “Combinatorial Algorithms”

2002-2003 **Teaching assistant** for CS421, “Programming Languages”
 Fall 2001 **Teaching assistant** for CS15-412, “Operating Systems”, Carnegie Mellon University

Honors, Awards, Grants, and Fellowships

July 2014 Grant to support REU Site: Graph Theory and Combinatorics at WVU; co-PI. (\$119,883) .
 January 2014 Grant to support the 27th Cumberland Conference on Combinatorics, Graph Theory, and Computing; co-PI. (\$12,680).
 July 2011 AMS-Simons Travel Grant (\$4,000).
 September 2010 MSRI Travel Award to attend the BIRS workshop “New trends on structural graph theory” in Banff, Alberta, Canada.
 August 2010 Fellowship to attend the conference in honor of the 70th birthday of Endre Szemerédi in Budapest, Hungary.
 June 2010 SIAM Student Travel Award to attend the SIAM Conference on Discrete Mathematics in Austin, TX.
 January 2010 AMS Travel Award to attend the Joint Mathematics Meetings in San Francisco, CA.
 November 2009 IPAM award to attend the IPAM workshop “Topics in Graphs and Hypergraphs”.
 August 2009 Dissertation Completion Fellowship; awarded by Mathematics Department and funded by the National Science Foundation.
 Spring 2009 List of Teachers Ranked as Excellent by their Students; Outstanding ratings designation.
 May 2009 CanaDAM Student Funding Committee award to attend CanaDAM 2009, Montreal.

Service Activities

- Co-organizer, 27th Cumberland Conference on Combinatorics, Graph Theory, and Computing, hosted at West Virginia University, May 2014. Supported by the WVU Mathematics Department and the NSF.
- Co-advisor, West Virginia University Pi Mu Epsilon and Math Club, Fall 2012-present.
- Junior Faculty Mentor, University of Illinois Research Experience for Graduate Students (REGS) in combinatorics, Summer 2012.
- University of South Carolina Events Committee, Fall 2011-Spring 2012.
- University of South Carolina Pi Mu Epsilon faculty advisor, Fall 2010-Spring 2012.

- South Carolina High School Mathematics Contest Committee, Fall 2010-Spring 2012.
- Co-organizer, AMS Special Session on New Developments in Graph Theory (featuring 24 talks), AMS Southeastern Section Meeting, September 2011.
- Referee for scholarly journals. *Journal of Combinatorial Theory, Series A*: 6/2014. *Journal of Combinatorial Theory, Series B*: 11/2013; *SIAM J. on Disc. Math.*: 9/2011, 9/2011, 7/2013, 10/2014; *J. of Combin.*: 7/2011; *Discrete Mathematics & Theoretical Computer Science*: 7/2011; *Electronic J. of Combin.*: 6/2011, 8/2011; *Central European J. of Math.*: 2/2011, 6/2011; *Order*: 9/2010, 7/2011; *Discrete Mathematics*: 12/2007, 5/2009, 7/2009, 9/2009, 6/2010, 11/2010, 1/2011, 7/2011; *Journal of Graph Algorithms and Applications*: 5/2009; *Graphs and Combinatorics*: 2/2014; *European J. of Math.*: 10/2014.
- Reviewer for AMS Mathematical Reviews, 9/2009-present.
- Micro-teaching facilitator, U. of Illinois Graduate Academy for College Teaching, Fall 2009.
- Computer science and mathematics small group facilitator, TA orientation program, U. of Illinois Graduate Academy for College Teaching, Fall 2008.