

# Joshua N. Cooper

Department of Mathematics  
LeConte College  
1523 Greene Street, Room 317I  
University of South Carolina  
Columbia, SC 29208, USA

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Mathematical Research: *Quasirandomness, Spectral Hypergraph Theory, Discrete Geometry, Universal Cycles, Combinatorial Number Theory, Coding Theory, Extremal Combinatorics, Computational Complexity.*

Interdisciplinary Research: *Applied Machine Learning for Cell Microscopy, Computational Linguistics/NLP, Information Theory, Social Media Analytics, Astrobiology, Computer-Assisted Proof.*

## Education

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**Ph.D. Mathematics**, University of California, San Diego. *Jun 2003*  
*Thesis Title:* Quasirandom Permutations.  
*Advisors:* Professors Fan Chung and Ronald L. Graham.

**B.S. Mathematics**, MIT, Cambridge, MA. *Dec 1998*

**High School Diploma**, Mass. Acad. of Math. and Sci., Worcester, MA. *May 1995*

## Research Publications Accepted/Printed

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41. S. Butler, J. Cooper, G. Hurlbert (eds.), Connections in Discrete Math: Celebrating the Mathematics of Ron Graham, Cambridge University Press, in press.
40. J. N. Cooper, B. Kay, A. Swifton, Graham's Tree Reconstruction Conjecture and a Waring-Type Problem on Partitions, *J. Comb.*, in press.
39. J. N. Cooper, D. Rorabaugh, Density Dichotomy in Random Words, *Contrib. Disc. Math.*, in press.
38. J. N. Cooper, A. Swifton, Throwing a Ball as Far as Possible, Revisited, *Amer. Math. Monthly*, in press.
37. A. Chang, J. N. Cooper, W. Li, Analytic connectivity of  $k$ -uniform hypergraphs, *Linear and Multilinear Algebra*, **65** no. 6 (2017).
36. J. Cooper, D. Rorabaugh, Asymptotic Density of Zimin Words, *Discrete Mathematics & Theoretical Computer Science*, 18:3 (2016) #3.

35. J. N. Cooper, J. Davis, Successful Pressing Sequences for a Bicolored Graph and Binary Matrices, *Linear Alg. Appl.*, **490** no. 1 (2016), 162–173.
34. J. N. Cooper, A. Kirkpatrick, The complexity of counting poset and permutation patterns, *Australasian J. Combinatorics*, **64** no. 1 (2016).
33. J. N. Cooper, A. Dutle, Computing Hypermatrix Spectra with the Poisson Product Formula, *Linear and Multilinear Alg.*, **63** no. 5 (2015).
32. J. N. Cooper, D. Rorabaugh, Bounds on Zimin word avoidance, *Congressus Numerantium*, **222** (2014), 87–95.
31. J. Cooper, M. Filaseta, J. Harrington, D. White, Colorings of Pythagorean triples within colorings of the positive integers, *J. Comb. Number Th.*, **6** no. 1 (2014).
30. R. A. Brualdi, J. N. Cooper, Note on the Spectral Radius of Alternating Sign Matrices, *Linear Alg. Appl.*, **442** (2014), 99–105.
29. P. S. Barr, K. E. Beeler, K. S. Berenhaut, J. N. Cooper, M. N. Hunter, Deterministic Walks with Choice, *Disc. Appl. Math.*, Discrete Appl. Math. **162** (2014), 100–107.
28. J. N. Cooper, A. E. Kirkpatrick, Critical Sets for Sudoku and General Graphs, *Discrete Math.*, **315–316** (2014), 112–119.
27. J. N. Cooper, A. Riasanovsky, On the Reciprocal of the Binary Generating Function for the Sum of Divisors, *Journal of Integer Sequences*, **16** no. 1 (2013), Article 13.1.8.
26. J. N. Cooper, E. Lundberg, B. Nagle, Generalized Pattern Frequency in Large Permutations, *Electronic Journal of Combinatorics*, **20** no. 1 (2013), P#28.
25. J. N. Cooper, A. Dutle, Greedy Galois Games, *American Mathematical Monthly*, **120** no. 5 (2013), 441–451.
24. J. N. Cooper, C. Heitsch, Generalized Fibonacci Recurrences and the Lex-Least de Bruijn Sequence, *Advances in Applied Mathematics*, **50** no. 4 (2013), 465–473.
23. J. N. Cooper, A. Dutle, Spectra of uniform hypergraphs, *Linear Algebra Appl.* **436** no. 9 (2012), 3268—3292.
22. J. N. Cooper, J. Lenz, T. D. LeSaulnier, P. S. Wenger, D. B. West, Uniquely  $C_4$ -Saturated Graphs, *Graphs and Combinatorics* **28** no. 2 (2012), 189–197.
21. J. N. Cooper, S. Fenner, S. Purewal, Monochromatic Boxes in Colored Grids, *SIAM Journal of Discrete Mathematics*, SIAM J. Discrete Math. **25** no. 3 (2011), 1054–1068.
20. J. N. Cooper, L. Lu, Graphs with Asymptotically Invariant Degree Sequences under Restriction, *Internet Mathematics*, **7**, no. 1 (2011), 67–80.
19. J. N. Cooper, R. Ellis, Linearly Bounded Liars, Adaptive Covering Codes, and Deterministic Random Walks, *J. Combinatorics* Special Issue Dedicated to Joel Spencer, **1** no. 3–4 (2010), 307–334.
18. J. N. Cooper, B. Doerr, T. Friedrich, J. Spencer, Deterministic Random Walks on Regular Trees, *Random Structures & Algorithms*, **37**, no. 3 (2010), 353–366.

17. J. N. Cooper, M. Walters, Iterated Point-Line Configurations Grow Doubly-Exponentially, *Discrete & Computational Geometry*, **43**, no. 3 (2010), 554–562.
16. J. N. Cooper, C. Heitsch, The Discrepancy of the Lex-Least de Bruijn Sequence, *Discrete Mathematics* **310** (2009), no. 6–7, 1152–1159.
15. J. N. Cooper, B. Doerr, T. Friedrich, J. Spencer, Deterministic Random Walks on Regular Trees, in S. Teng (Ed.), Proceedings of the ACM-SIAM Symposium on Discrete Algorithms (SODA 2008), San Francisco, USA, 766–772.
14. J. N. Cooper, B. Doerr, T. Friedrich, J. Spencer, Deterministic Random Walks on Regular Trees (extended abstract), *Electronic Notes in Discrete Mathematics* **29** (2007), 509–513.
13. J. N. Cooper, B. Doerr, J. Spencer, G. Tardos, Deterministic Random Walks on the Integers, *European Journal of Combinatorics*, **28** (2007), no. 8, 2072–2090.
12. J. N. Cooper, D. Eichhorn, K. O’Byrant, Reciprocals of Binary Power Series, *International Journal of Number Theory*, **2** (2006), no. 4, 499–522.
11. J. N. Cooper, B. Doerr, J. Spencer, G. Tardos, Deterministic Random Walks, *Proceedings of the Workshop on Analytic Algorithmics and Combinatorics (ANALCO 2006)*, 185–197, Philadelphia, PA, SIAM 2006.
10. J. N. Cooper, A Permutation Regularity Lemma, *Electronic J. Comb.* **13** (2006), #R22.
9. J. N. Cooper and J. Spencer, Simulating a Random Walk with Constant Error, *Combinatorics, Probability, and Computing*, **15** (2006), no. 06, 815–822.
8. J. N. Cooper, Continued Fractions with Partial Quotients Bounded in Average, *Fibonacci Quarterly* **44** (2006), no. 4, 297–301.
7. J. N. Cooper, B. Doerr, J. Spencer, G. Tardos, Deterministic Random Walks on the Integers, in S. Felsner (Ed.), European Conference on Combinatorics, Graph Theory and Applications (EuroComb) 2005, volume AE of Discrete Mathematics & Theoretical Computer Science, pages 73–76.
6. J. N. Cooper and J. Solymosi, Collinear Points in Permutations, *Ann. Comb.* **9** (2005), no. 2, 169–175.
5. J. N. Cooper, Quasirandom Arithmetic Permutations, *Journal of Number Theory* **114** (2005), no. 1, 153–169.
4. J. N. Cooper and R. L. Graham, Generalized de Bruijn Cycles, *Annals of Combinatorics* **8** (2004), no. 1, 13–25.
3. F. Chung and J. N. Cooper, De Bruijn Cycles for Covering Codes, *Random Structures and Algorithms* **25** (2004), no. 4, 421–431.
2. J. N. Cooper, Quasirandom Permutations, *Journal of Combinatorial Theory, Series A* **106** (2004), no. 1, 123–143.
1. J. N. Cooper, R. B. Ellis, A. B. Kahng, Asymmetric Binary Covering Codes, *Journal of Combinatorial Theory, Series A* **100** (2002), no. 2, 232–249.

## Research Publications in Process

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7. J. N. Cooper, H. W. Whitlatch, Uniquely Pressable Graphs: Characterization, Enumeration, and Recognition, submitted.
6. J. N. Cooper, M. Forst, Positive Semidefiniteness of Matrices arising from Ramsey Theory, submitted.
5. J. N. Cooper, A. E. Kirkpatrick, On the Size of Intervals in the Weak Bruhat Order, in revision.
4. J. N. Cooper, R. Overstreet, Coloring so that no Pythagorean Triple is Monochromatic, in revision.
3. J. N. Cooper, Spectra of Random Symmetric Hypermatrices and Random Hypergraphs, submitted.
2. G. Clark, J. Cooper, J. Folks, S. M. Lee, A. Mamroth, S. Miyasaki, C. Simmons, D. Stewart, A Summary of Splitting Numbers For Integer Tiles, in preparation.
1. D. Collins, J. N. Cooper, Deducing Vertex Weights from Empirical Occupation Times, in preparation.

## Interdisciplinary

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4. Laila Elsherif, Carrington A. Metts, Noah Sciaky, Joshua N. Cooper, Stephen P. Holly, and Leslie V. Parise, Quantitation of Suicidal Netosis Using Convolutional Neural Networks in Human Neutrophils, *Blood*, Vol. 128 **22**, 3686, 2016.
3. J. N. Cooper, Calculus Problems, *Journal of Humanistic Mathematics*, to appear.
2. J. N. Cooper, Bioterrorism and the Fermi Paradox, *International Journal of Astrobiology*, Vol. 12, **02**, April 2013, 144–148
1. J. N. Cooper, A Student at the Board Meeting, *Focus* (Newsletter of the MAA), Vol. 22, **3**, March 2002.

## Employment

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### Professor

Department of Mathematics, University of South Carolina.

*Jan 2017 – Present*

### Associate Professor

Department of Mathematics, University of South Carolina.

*Aug 2010 – Dec 2016*

### Chief Data Scientist

*Aug 2012 – Present*

BehaviorMatrix, Blue Bell, PA.

**Palmetto Assistant Professor**

*Aug 2006 – Present*

Department of Mathematics, University of South Carolina.

**Post-doctoral Researcher**

*Apr 2006 – Aug 2006*

Department of Mathematics, UCSD.

**Senior Scientist**

*Sep 2005 – Mar 2006*

Combinatorial Structures and Algorithms Group, ETH-Zürich.

**Instructor**

*Oct 2005 – Dec 2005*

Quasirandomness and Regularity, ETH-Zürich.

**Instructor, Vector Analysis**

*Jun 2005 – Aug 2005*

Courant Institute of Mathematical Sciences, NYU.

**Instructor, Calculus I**

*Oct 2004 – Dec 2004*

Courant Institute of Mathematical Sciences, NYU.

**NSF Mathematical Sciences Post-Doc. Research Fellow**

*Sep 2003 – Aug 2005*

Courant Institute of Mathematical Sciences, NYU.

*Sponsor:* Professor Joel Spencer.

**Consultant**

*Sep 2003 – Dec 2003*

Microsoft Research (Theory Group), Redmond, WA.

**Research Associate**

*Sep 2003 – Dec 2003*

University of Washington, Seattle, WA.

**Research Assistant**

*Jun 2003 – Sep 2003*

University of California, San Diego.

*Supervisor:* Professor Ronald L. Graham.

**Teaching Assistant**

*Sep 1999 – Jun 2003*

University of California, San Diego.

Instructor for sections in courses including Linear Algebra, Introductory Calculus, Multivariable Calculus, Algorithms, Cryptography, Financial Mathematics. Also served as grader, tutor, and occasional lecturer.

**Research Assistant**

*Jun 2002 – Sep 2002*

University of California, San Diego.

*Supervisor:* Professor Ronald L. Graham.

**Research Assistant**

*Jun 2001 – Sep 2001*

University of California, San Diego.

*Supervisor:* Professor Fan Chung Graham.

**Researcher/Programmer** *Jun 2000 – Sep 2000*  
DTAI, Inc. (now Kratos Defense & Security Solutions), San Diego, CA.  
Application of computational geometry to spatiotemporal data storage/query, interfacing in-house software with open source code, evaluating applications of constraint logic programming to geospatial data systems. Programming in Java, XIS, PROLOG.

**Quality Assurance Programmer** *Jun 1999 – Sep 1999*  
Curl Corporation, Cambridge, MA.  
Quality Assurance testing of Curl language and development environment. Programming in Curl, C++.

**Webmaster/Software Developer/Graphics Designer** *Jul 1996 – Sep 1998*  
Sanjeonics, Inc, South Boston, MA.  
Website design/management, development of software for small business valuation and credit reporting, systems administration. Programming in TurboPascal, C++, HTML, Perl, Java, 80x86 Assembly.

**Teacher** *Mar 1996 – May 1998*  
Combinatorics, MIT High School Studies Program (HSSP), Cambridge, MA.  
Teaching basic combinatorics to high school students in ten weekly classes each Spring. Course development and student evaluation.

## **Conferences/Workshops Attended**

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(Non-speaking attendance denoted by asterisk.)

**International Workshop on Spectral Hypergraph Theory** *Nov 2017*  
Anhui University, Hefei, P. R. China.

**American Society of Hematology Annual Meeting** *Nov 2016*  
San Diego Convention Center, San Diego, CA.

**AMS Fall Southeastern Sectional** *Nov 2016*  
North Carolina State University, Raleigh, NC.

**SIAM Discrete Math 2016** *Jun 2016*  
Georgia State University, Atlanta, GA.

\* **Random Roads: A Celebration of Joel Spencer's 70th Birthday** *Apr 2016*  
New York University, New York, NY.

**AMS Southeastern Section Meeting** *Mar 2016*  
University of Georgia, Athens, GA.

\* **Triangle Lectures in Combinatorics** *Feb 2016*  
University of North Carolina, Greensboro, NC.

<b>Networked Life (Chung/Graham Retirement)</b> University of California, San Diego, CA.	<i>Jan 2016</i>
<b>AMS Southeastern Section Meeting</b> University of Memphis, Memphis, TN.	<i>Oct 2015</i>
<b>International Conference on Hypergraphs and Hypernetworks</b> Qinghai Normal University, Xining, Qinghai, China.	<i>Jul 2015</i>
<b>Connections in Discrete Mathematics</b> Simon Fraser University, Burnaby, BC, Canada.	<i>Jun 2015</i>
<b>AMS Southeastern Section Meeting</b> University of North Carolina, Greensboro, NC.	<i>Nov 2014</i>
<b>International Linear Algebra Society Meeting 2014</b> Sungkyunkwan University, Seoul, Korea.	<i>Aug 2014</i>
<b>12th International Permutation Patterns Conference</b> East Tennessee State University, Johnson City, TN.	<i>Jul 2014</i>
<b>*WestFest</b> Institute for Mathematics and its Applications, Minneapolis, MN.	<i>Jun 2014</i>
<b>SIAM Discrete Math 2014</b> Hyatt Regency Minneapolis, Minneapolis, MN.	<i>Jun 2014</i>
<b>AMS Southeastern Sectional Meeting</b> University of Louisville, Louisville, KY.	<i>Oct 2013</i>
<b>International Workshop of Spectral Graph and Hypergraph Theory</b> Fuzhou University, Fuzhou, China.	<i>Jun 2013</i>
<b>* Sentiment Analysis Symposium</b> Lighthouse International, New York, NY.	<i>May 2013</i>
<b>2012 International Conference on the Spectral Theory of Tensors</b> Chern Institute, Nankai University, Tianjin, China.	<i>Jun 2012</i>
<b>* 2012 Joint Mathematics Meeting</b> Hynes Convention Center, Boston, MA.	<i>Jan 2012</i>
<b>Atlanta Lecture Series in Combinatorics and Graph Theory IV</b> Georgia State University, Atlanta, GA.	<i>Nov 2011</i>
<b>AMS Southeastern Sectional Meeting</b> Wake Forest University, Winston-Salem, NC.	<i>Sep 2011</i>

<b>Random Structures &amp; Algorithms 2011</b> Emory University, Atlanta, GA.	<i>May 2011</i>
<b>SIAM-SEAS 2011</b> University of North Carolina at Charlotte, Charlotte, NC.	<i>Apr 2011</i>
<b>AMS Southeastern Sectional Meeting</b> Georgia Southern University, Statesboro, GA.	<i>Mar 2011</i>
<b>Atlanta Lecture Series in Combinatorics and Graph Theory II</b> Georgia State University, Atlanta, GA.	<i>Feb 2011</i>
* <b>AMS-MAA Joint Mathematics Meeting</b> New Orleans, LA.	<i>Jan 2011</i>
* <b>Atlanta Lecture Series in Combinatorics and Graph Theory I</b> Emory University, Atlanta, GA.	<i>Nov 2010</i>
* <b>25th Mini-Conference on Discrete Mathematics and Algorithms</b> Clemson University, Clemson, SC.	<i>Oct 2010</i>
* <b>Triangle Lectures in Combinatorics</b> Duke University, Durham, NC.	<i>Sep 2010</i>
<b>SIAM Conference on Discrete Mathematics</b> Hyatt Regency, Austin, TX.	<i>Jun 2010</i>
<b>41st Southeastern Combinatorics, Graph Theory, &amp; Computing</b> Florida Atlantic University, Boca Raton, FL.	<i>Mar 2010</i>
<b>Palmetto Number Theory Series XI</b> University of South Carolina, Columbia, SC.	<i>Dec 2009</i>
* <b>24th Mini-Conference on Discrete Mathematics and Algorithms</b> Clemson University, Clemson, SC.	<i>Oct 2009</i>
<b>Research Experience for Graduate Students</b> University of Illinois, Urbana-Champaign, Urbana, IL.	<i>Jul 2009</i>
* <b>CanADAM 2009</b> Centre de Recherches Mathématiques, Montréal, Quebec, Canada.	<i>May 2009</i>
<b>SERMON 2009</b> University of North Carolina, Greensboro, Greensboro, NC.	<i>Apr 2009</i>
<b>SIAM-SEAS 2009 Conference</b> University of South Carolina, Columbia, SC.	<i>Apr 2009</i>



<b>Ulam Centennial Conference</b> University of Florida, Gainesville, FL.	<i>Mar 2009</i>
* <b>AMS-MAA Joint Mathematics Meeting #1046</b> Washington, DC.	<i>Jan 2009</i>
* <b>23th Mini-Conference on Discrete Mathematics and Algorithms</b> Clemson University, Clemson, SC.	<i>Oct 2008</i>
<b>AMS Southeastern Section Meeting #1044</b> University of Alabama, Huntsville, AL.	<i>Oct 2008</i>
* <b>SIAM Conference on Discrete Mathematics</b> University of Vermont, Burlington, VT.	<i>Jun 2008</i>
<b>Int. Conf. on Interdisciplinary Math. &amp; Stat. Techniques</b> University of Memphis, Memphis, TN.	<i>May 2008</i>
* <b>New Directions in Algorithms, Combinatorics, and Optimization</b> Georgia Tech, Atlanta, GA.	<i>May 2008</i>
* <b>MAA Southeastern Sectional Meeting</b> The Citadel, Charleston, NC.	<i>Mar 2008</i>
* <b>SAMSI CDI Workshop: Cyber-enabled Discovery and Innovation</b> Radisson RTP, Research Triangle Park, NC.	<i>Nov 2007</i>
* <b>22th Mini-Conference on Discrete Mathematics and Algorithms</b> Clemson University, Clemson, SC.	<i>Oct 2007</i>
<b>Mini-Conference on Applied Combinatorics</b> University of South Carolina, Columbia, SC.	<i>Oct 2007</i>
<b>2007 AMS Fall Central Section Meeting</b> DePaul University, Chicago, IL.	<i>Oct 2007</i>
<b>First Joint International Meeting of the AMS and PTM</b> University of Warsaw, Warsaw, Poland.	<i>Jul-Aug 2007</i>
<b>Random Combinatorial Structures Conference</b> University of Nebraska, Lincoln, NE.	<i>Apr 2007</i>
<b>2007 AMS Spring Southeastern Section Meeting</b> Davidson College, Davidson, NC.	<i>Mar 2007</i>
<b>Workshop on Complex Networks and their Applications</b> Georgia Institute of Technology, Atlanta, GA.	<i>Jan 2007</i>

<b>2006 AMS Fall Southeastern Section Meeting</b> University of Arkansas, Fayetteville, AR.	<i>Nov 2006</i>
<b>DIMACS/DIMATIA/Renyi Combinatorial Challenges Meeting</b> Rutgers/DIMACS, Piscataway, NJ.	<i>Apr 2006</i>
<b>Conference on Probabilistic Combinatorics &amp; Algorithms: A Conference in Honor of Joel Spencer's 60th Birthday</b> Rutgers/DIMACS, Piscataway, NJ.	<i>Apr 2006</i>
<b>Workshop on Analytic Algorithmics &amp; Combinatorics (ANALCO06)</b> Radisson Hotel Miami Downtown, Miami, FL.	<i>Jan 2006</i>
<b>Combinatorial and Additive Number Theory 2005</b> City University of New York, New York, NY.	<i>May 2005</i>
<b>AMS 2005 Spring Eastern Section Meeting</b> University of Delaware, Newark, Delaware.	<i>Apr 2005</i>
<b>Learn &amp; Workshop: Random Graphs and Probabilistic Methods</b> Humboldt-Universität, Berlin, Germany.	<i>Mar 2005</i>
<b>DOCCOURSE: Modern Ramsey Theory</b> Prague, Czech Republic.	<i>Feb 2005</i>
<b>* 2005 Annual AMS/MAA Joint Mathematics Conference</b> Atlanta, GA.	<i>Jan 2005</i>
<b>Generalizations of de Bruijn Cycles and Gray Codes</b> BIRS, Banff, Alberta, Canada.	<i>Dec 2004</i>
<b>DIMACS/DIMATIA/Rényi Working Group on Extremal Combinatorics II</b> Rutgers/DIMACS, Piscataway, NJ.	<i>Oct 2004</i>
<b>* Graph Drawing 2004</b> CCNY, New York, NY.	<i>Oct 2004</i>
<b>* Mini-Workshop on Harmonic Analysis of Boolean Functions</b> Yale University, New Haven, CT.	<i>Sep 2004</i>
<b>SIAM Conference on Discrete Mathematics</b> Loews Vanderbilt Plaza Hotel, Nashville, TN.	<i>Jun 2004</i>
<b>NSF/CBMS Regional Research Conference in Mathematical Sciences on The Combinatorics of Large Sparse Graphs</b> Cal State San Marcos, San Marcos, CA.	<i>Jun 2004</i>
<b>* Combinatorial and Additive Number Theory 2004</b>	<i>May 2004</i>

CUNY Graduate Center, New York, NY.

**2004 CombinaTexas** *Apr 2004*  
Texas A&M, College Station, TX.

**2003 West Coast Number Theory Conference** *Dec 2003*  
Asilomar Conference Center, Monterey, CA.

**Integers 2003 Conference** *Nov 2003*  
State University of West Georgia, Carrollton, GA.

\* **Introductory Workshop in Discrete and Computational Geometry** *Aug 2003*  
MSRI, Berkeley, CA.

\* **2003 Annual AMS/MAA Joint Mathematics Conference** *Jan 2003*  
Baltimore Convention Center, Baltimore, MD.

\* **West Coast Number Theory Conference** *Dec 2002*  
San Francisco State University, San Francisco, CA.

\* **DIMACS Workshop on Geometric Graph Theory** *Oct 2002*  
Rutgers University, Piscataway, NJ.

**SIAM Conference on Discrete Mathematics** *Aug 2002*  
Handlery Hotel & Resort, San Diego, CA.

\* **NSF/CBMS Regional Research Conference in Mathematical Sciences on Geometric Graph Theory** *May 2002*  
University of North Texas, Denton, TX.

\* **2002 Annual AMS/MAA Joint Mathematics Conference** *Jan 2002*  
San Diego Convention Center, San Diego, CA.

\* **42nd Annual Symposium on Foundations of Computer Science** *Oct 2001*  
Tropicana Hotel, Las Vegas, NV.

**26th Annual Combinatorics, Graph Theory, and Computing** *Mar 1995*  
Florida Atlantic University, Boca Raton, FL.

\* **25th Annual Combinatorics, Graph Theory, and Computing** *Mar 1994*  
Florida Atlantic University, Boca Raton, FL.

## **Activities and Honors**

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- AMS Mathematical Reviews reviewer since 2017.

- Co-organizer of R. L. Graham's 80th birthday celebration, "Connections in discrete mathematics; A celebration of the work of Ron Graham", June 15–19 2015, Simon Fraser University, Burnaby, BC, Canada; co-editor of associated Festschrift.
- Co-organizer of 12th International Permutation Patterns Conference, July 2014, East Tennessee State University, Johnson City, TN, USA; Guest Editor of associated Special Issue of Australasian Journal of Combinatorics.
- Editorial Board member of *Involve*.
- Organizer of USC Combinatorics Seminar (Aug. 2009–May 2012, Aug 2013–Present).
- Co-organizer of Special Session on New Developments in Graph Theory at AMS Southeastern Sectional, Sep. 2011.
- Proposal reviewer for National Science Foundation (Fall '10), National Security Agency (Fall '10), and Fonds Québécois de la Recherche sur la Nature et les Technologies (Fall '10).
- Co-PI (with Linyuan Lu) of National Science Foundation (NSF) Division of Undergraduate Education: Course, Curriculum, and Laboratory Improvement (Type 2), "Collaborative Research: STEM Real World Applications of Mathematics" (DUE-TUES-1020692) 2010-2012.
- PI of National Science Foundation (NSF) Division of Mathematical Sciences: Algebra, Number Theory, and Combinatorics Award, "Combinatorial Quasirandomness and its Applications" (DMS-ANTC-1001370) 2010–2013.
- University of South Carolina Distinguished Undergraduate Research Mentor 2009.
- Co-organizer of Probabilistic and Extremal Combinatorics mini-symposium at SIAM–SEAS 2009.
- Invitation as Plenary Speaker at "Random Combinatorial Structures" conference, University of Nebraska, Lincoln, 4/07.
- USC Organizer for Virginia Tech Regional Mathematics Contest (VTRMC) 2010 & 2011.
- Carolina Scholar Mentor for 2008–09, 2009–10, 2010–11, 2011–12.
- Mentor for Magellan Scholar Anna Kirkpatrick, Nicholas Smith, Bill Kay, and Andrew Mamroth.
- Mentor for Magellan Scholar Joshua King, awarded First Prize at poster session of USC Discovery Day '11.
- Mentor for Magellan Scholar Chris Poirel, awarded First Prize at poster session of USC Discovery Day '08.
- Member of the Interdisciplinary Mathematics Institute IMI–USC (9/06–Present).
- Honors College Mathematics Major Adviser (9/06–Present).

- IMI Executive Committee (9/07–12/08), USC Math Web Committee (9/06–5/12), USC Math Undergraduate Advisor (9/06–Present), USC Math Hiring Committee (9/07–5/08, 9/10–5/11), USC Math Qualifying Exam Committee (9/07–5/08), USC Math Undergraduate Advisory Council (9/08–Present), USC Faculty Senator (9/08–5/11), USC Math Event Planning Committee (9/08–Present), USC Math Grant Mentoring Committee (8/11–Present), USC Virginia Tech Regional Mathematics Contest Advisor (8/11–5/12)
- Co-organizer of the “Extremal and Probabilistic Combinatorics” AMS Special Session at the 2006 Fall Southeastern Section Meeting, Fayetteville, AR, November 3–4, 2006.
- Co-organizer of the “Probabilistic Paradigms in Combinatorics” AMS Special Session at the 2005 Spring Eastern Section Meeting, Newark, DE, April 2–3, 2005.
- Two months invited visit to the Rényi Institute, Budapest, Feb 2005–Mar 2005.
- Second-place winner (with Reid Andersen and Robert Ellis) of Graph Drawing Contest at the 2004 Graph Drawing Conference in New York, NY.
- Recipient of National Science Foundation (NSF) Mathematical Sciences Postdoctoral Research Fellowship (MSPRF-0303272) 2003–2006 to study at New York University (NYU) with Professor Joel Spencer.
- Graduate Assistance in Areas of National Need (GAANN) Fellow, 2001.
- Co-organizer of the Combinatorial Structures from Discrete Geometry Mini-Symposium at the August 2002 SIAM Conference on Discrete Mathematics, San Diego, CA.
- Referee for Elec. J. Comb., Comp. Geom.: Theory and Appl., J. Comb. Theory Series A, SIAM J. Comp., SIAM J. Disc. Math., J. Integer Sequences, Math. Research Letters, Ars Combinatoria, Combinatorica, J. Design Theory, Discrete Math., Discrete Appl. Math., Ann. Comb., J. Comb., Networks, American Math. Monthly, Random Structures & Alg., Graphs & Comb., Integers, Disc. & Comp. Geom., Comb. Prob. & Comp., Inf. Proc. Letters, Appl. Anal. & Disc. Math., Linear Alg. & Appl., Phys. Letters A, STOC, SODA, ALENEX, LAGOS, STACS.
- Invited Representative for Graduate Students to January 2002 Mathematical Association of America Board of Governors Meeting, San Diego, CA.
- Administrator of MathStorm, a student-run mathematics consulting service for researchers at UCSD.
- Recipient of National Merit Scholarship Award, 1995.

## Presentations

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- **Invited Long Form**

### **Adjacency Spectra of Hypertrees and other Hypergraphs with Few Eigenvalues**

*Nov 2017*

2017 International Workshop on Spectral Hypergraph Theory, Hefei, Anhui, P. R. China.

- Graph Pressing Sequences and Binary Linear Algebra** *Oct 2017*  
Illinois Institute of Technology Department of Mathematics Colloquium, Chicago, IL.
- Graph Pressing Sequences and Binary Linear Algebra** *Oct 2017*  
UIC Department of Mathematics MCS Seminar, Chicago, IL.
- Using Machine Learning to Study NETs and NETosis** *Oct 2017*  
UNC Department of Hematology/Oncology Seminar Series, Chapel Hill, NC.
- MAMS Alumni Presentation: Computer Science Week** *Dec 2016*  
Massachusetts Academy of Mathematics and Science, Worcester, MA.
- SCGSSM Presentation: SmartChat Speaker Series** *Mar 2016*  
SC Governor's School for Science and Math, Hartsville, SC.
- MAMS Alumni Presentation: Computer Science Week** *Dec 2015*  
Massachusetts Academy of Mathematics and Science, Worcester, MA.
- Spectra of random hypergraphs and hypermatrices** *Oct 2015*  
AMS Southeastern Sectional Meeting, Memphis, TN.
- Spectra of random hypergraphs and hypermatrices** *Jul 2015*  
International Conference on Hypergraphs and Hypernetworks, Xining, Qinghai, China.
- Pressing sequences, bicolored graphs, and binary matrix algebra** *Jun 2015*  
Connections in Discrete Mathematics, Burnaby, BC, Canada.
- The complexity of counting poset and permutation patterns** *Dec 2014*  
ADM Seminar, Clemson University, Clemson, SC.
- Computer "proofs": Are they rigorous?** *Oct 2014*  
Math for Everyone Lecture Series, Notre Dame, South Bend, IN.
- Homogeneous Adjacency Spectra of Random Hypergraphs** *Feb 2014*  
Probability Seminar, Cornell University, Ithaca, NY.
- Homogeneous Adjacency Spectra of Random and Complete Hypergraphs** *Feb 2014*  
Combinatorics Seminar, Georgia Tech, Atlanta, GA.
- Eigenvalues of the All-Ones Hypermatrix and the Poisson Product Formula** *May 2013*  
International Workshop of Spectral Graph and Hypergraph Theory, Fuzhou, China.
- Spectra of Hypergraphs** *Jun 2012*  
Zhejiang University, Hangzhou, China.

- Spectra of Hypergraphs** *Jun 2012*  
International Conference on the Spectral Theory of Tensors, Tianjin, China.
- Spectra of Hypergraphs** *May 2012*  
Tsinghua University, Beijing, China.
- The Minimum Number of Givens in a Fair Sudoku Puzzle is 17** *Mar 2012*  
Hudson Colloquium, Armstrong Atlantic State University, Savannah, GA.
- Deterministic Random Walks** *Mar 2012*  
Wake Forest University, Winston-Salem, NC.
- Reconstructing Trees and a Waring-type Problem on Partitions** *Sep 2010*  
USC-Sumter Mathematics Seminar, Sumter, SC.
- Open Problems & Topics** *Jul 2009*  
REGS, University of Illinois, Urbana-Champaign, Urbana, IL.
- Liar Games, Optimal Codes, and Deterministic Simulation of Random Walks** *May 2009*  
Georgia Tech Combinatorics Seminar, Atlanta, GA.
- Roto-Router Analysis of the Liar Game** *Mar 2009*  
Ulam Centennial Conference, Gainesville, FL.
- Triple Systems with the Sum Property** *Jul 2008*  
ETSU-REU Seminar, Johnson City, TN.
- Where do power laws come from?** *Apr 2007*  
Georgia Tech Seminar, Atlanta, GA.
- Finite Plane Kakeya Problem & Collinear Points in Permutations** *Apr 2007*  
Georgia Tech Combinatorics Seminar, Atlanta, GA.
- Deterministic Random Walks** *Mar 2007*  
Howard University Mathematics Department Colloquium, Washington, DC.
- Quasirandom Permutations** *Mar 2007*  
IIT Mathematics Department Colloquium, Chicago, IL.
- Random Linear Extensions of Grids** *Mar 2007*  
IIT Combinatorics Seminar, Chicago, IL.
- Random Linear Extensions of Grids** *Dec 2006*  
Georgia Tech Combinatorics Seminar, Atlanta, GA.
- Foundations of Quasirandomness** *Apr 2006*  
DIMACS/DIMATIA/Renyi Combinatorial Challenges Meeting, Piscataway, NJ.

**Quasirandom Permutations** *Feb 2005*  
DOCCOURSE: Modern Ramsey Theory, Prague, Czech Republic.

**Cycles for other Shapes of Sliding Window** *Dec 2004*  
Generalizations of de Bruijn Cycles and Gray Codes, Banff, Alberta, Canada.

**Erdős-Hajnal Sets and Semigroup Decompositions** *Nov 2004*  
Princeton Combinatorics Seminar, Princeton, NJ.

**Generalized de Bruijn Cycles** *Sep 2004*  
CUNY Combinatorics Seminar, New York, NY.

**A Permutation Regularity Lemma** *Jun 2004*  
NSF/CBMS Regional Research Conference in Mathematical Sciences on The Combinatorics of Large Sparse Graphs, San Marcos, CA.

**Quasirandom Permutations** *Nov 2003*  
UW Discrete Math Seminar, University of Washington, Seattle, WA.

**Quasirandomness and Fourier Coefficients** *Nov 2003*  
Texas A&M, College Station, TX.

**A Generalization of Zaremba's Conjecture** *Nov 2003*  
Texas A&M, College Station, TX.

**De Bruijn Covering Codes** *Nov 2003*  
Texas A&M, College Station, TX.

**Quasirandom Permutations** *Oct 2003*  
Microsoft Research, Redmond, WA.

**Quasirandom Permutations** *Feb 2003*  
Graph Theory Seminar, Georgia Tech, Atlanta, GA.

• **Invited Short Form**

**Analytic Connectivity of Uniform Hypergraphs** *Nov 2016*  
AMS Fall Southeastern Sectional, Raleigh, NC.

**Spectra of Random Symmetric Hypermatrices and Random Hypergraphs** *Jun 2016*  
SIAM-DM 2016, Atlanta, GA.

**Successful Pressing Sequences for a Bicolored Graph and Binary Matrices** *Mar 2016*  
AMS Southeastern Section Meeting, Athens, GA.



**Successful Pressing Sequences for a Bicolored Graph and Binary Matrices** *Jan 2016*

Networked Life (Chung/Graham Retirement), San Diego, CA.

**Spectra of Random Symmetric Hypermatrices and Random Hypergraphs** *Oct 2015*

AMS Southeastern Section Meeting, Memphis, TN.

**Successful Pressing Sequences for a Bicolored Graph and Binary Matrices** *Jun 2015*

Connections in Discrete Mathematics, Burnaby, BC, Canada.

**Deducing vertex weights from empirical occupation times** *Nov 2014*

AMS Southeastern Section Meeting, Greensboro, NC.

**Homogeneous adjacency spectra of random hypergraphs** *Aug 2014*

International Linear Algebra Society Meeting 2014, Seoul, Korea.

**The Complexity of Counting Poset and Permutation Patterns** *Jul 2014*

12th International Permutation Patterns Conference, Johnson City, TN.

**Eigenvalue Stability under Hypermatrix Perturbation and Random Hypergraphs**

*Jun 2014*

SIAM Discrete Math 2014, Minneapolis, MN.

**Combinatorial Explosion: The Mathematical Limits of Computation** *Mar 2014*

Science on Screen Film Festival, Nickelodeon Theater, Columbia, SC.

**When is Counting Linear Extensions Easy?** *Oct 2013*

AMS Southeastern Sectional Meeting, University of Louisville, Louisville, KY.

**Spectra of Hypergraphs** *Nov 2011*

Atlanta Lecture Series in Combinatorics and Graph Theory, Atlanta, GA.

**Spectra of Hypergraphs** *Sep 2011*

AMS Southeastern Sectional Meeting, Winston-Salem, NC.

**Spectra of Hypergraphs** *May 2011*

Random Structures & Algorithms 2011, Atlanta, GA.

**Spectra of Hypergraphs** *Apr 2011*

SIAM-SEAS 2011, Charlotte, NC.

**Spectra of Hypergraphs** *Mar 2011*

AMS Southeastern Sectional Meeting, Statesboro, GA.

**The Mathematics of Sudoku** *Oct 2010*

Gathering for Gardner (G4G), Columbia, SC.

**Reconstructing Trees and a Waring-type Problem on Partitions** *Jun 2010*  
SIAM Conference on Discrete Mathematics, Austin, TX.

**Tree Reconstruction and a Waring-Type Problem on Partitions** *Dec 2009*  
PANTS XI, Columbia, SC.

**The Discrepancy of the Lexicographically Least de Bruijn Cycle** *Apr 2009*  
SERMON 2009, Greensboro, NC.

**Roto-Router Analysis of the Liar Game** *Apr 2009*  
SIAM-SEAS 2009, Columbia, SC.

**Monochromatic Boxes in Colored Grids** *Oct 2008*  
2008 Fall AMS Southeastern Section Meeting, Huntsville, AL.

**Monochromatic Boxes in Colored Grids** *Oct 2008*  
The 23rd Clemson Mini-Conference, Clemson, SC.

**Learning Vertex Weights from Sample Mean Occupation Times** *May 2008*  
Int. Conf. on Interdisciplinary Mathematical & Statistical Techniques, Memphis, TN.

**Discrete Stochastic Differentiation** *Oct 2007*  
Mini-Conference on Applied Combinatorics, Columbia, SC.

**Discrete Stochastic Differentiation** *Oct 2007*  
2007 AMS Fall Central Section Meeting, Chicago, IL.

**Discrete Stochastic Differentiation** *Jul 2007*  
First Joint International Meeting of the AMS and PTM, Warsaw, Poland.

**Deterministic Random Walks: Recent Developments** *Apr 2007*  
Random Combinatorial Structures Conference, Lincoln, NE.

**Finite Field Kakeya Problem and Collinear Triples in Permutations** *Mar 2007*  
2007 AMS Spring Southeastern Section Meeting, Davidson, NC.

**Where Do Power Laws Come From?** *Mar 2007*  
2007 AMS Spring Southeastern Section Meeting, Davidson, NC.

**Where Do Power Laws Come From?** *Jan 2007*  
Workshop on Complex Networks and their Applications, Atlanta, GA.

**Random Linear Extensions of Grids** *Nov 2006*  
2006 AMS Fall Southeastern Sectional Meeting, Fayetteville, AR.

**Deterministic Random Walks on the Integers** *Apr 2006*

Joel Spencer's 60th Birthday Conference, Piscataway, NJ.

**Deterministic Random Walks** *Jan 2006*  
ANALCO '06, Miami, FL.

**Inverting Power Series Mod 2** *May 2005*  
Combinatorial and Additive Number Theory 2005, New York, NY.

**A Permutation Regularity Lemma** *Apr 2005*  
AMS 2005 Spring Eastern Section Meeting, Newark, DE.

**Erdős-Hajnal Sets and Semigroup Decompositions** *Mar 2005*  
Learn & Workshop: Random Graphs and Probabilistic Methods, Berlin, Germany.

**Erdős-Hajnal Sets and Semigroup Decompositions** *Oct 2004*  
DIMACS/DIMATIA/Rényi Working Group on Extremal Combinatorics II, Piscataway, NJ.

**A Permutation Regularity Lemma** *Jun 2004*  
SIAM Conference on Discrete Mathematics, Nashville, TN.

**Simulating a Random Walk with Constant Error** *Apr 2004*  
CombinaTexas, Texas A&M, College Station, TX.

**Partial Quotients Bounded in Average** *Dec 2003*  
2003 West Coast Number Theory Conference, Monterey, CA.

**Quasirandomness and Continued Fractions** *Nov 2003*  
Integers 2003 Conference, Carrollton, GA.

**Forbidden Subgraphs and Large Discrepancy** *Aug 2002*  
SIAM Conference on Discrete Mathematics, San Diego, CA.

**Asymmetric Covering Codes** *Aug 2002*  
SIAM Conference on Discrete Mathematics, San Diego, CA.

**Quasirandom Permutations** *Jan 2002*  
AMS Joint Mathematics Meetings (# 973), San Diego, CA.

• **Local Contributed**

**Pressing Sequences and Binary Matrix Algebra** *Oct 2017*  
Combinatorics Seminar, University of South Carolina, Columbia, SC.

**Deducing Vertex Weights from Empirical Occupation Times** *Apr 2017*  
Combinatorics Seminar, University of South Carolina, Columbia, SC.

**Complexity of Graph Pressing: Matrix Algebra, MCMC, and Permutation Met-**

- rics** *Sep 2016*  
Algebra & Logic Seminar, University of South Carolina, Columbia, SC.
- Pressing Games** *Sep 2016*  
Algebra & Logic Seminar, University of South Carolina, Columbia, SC.
- Throwing a Ball as Far as Possible, Revisited** *Sep 2016*  
Combinatorics Seminar, University of South Carolina, Columbia, SC.
- More on the Erdős-Hajnal Conjecture** *Sep 2015*  
Algebra & Logic Seminar, University of South Carolina, Columbia, SC.
- More on the Erdős-Hajnal Conjecture** *Sep 2015*  
Algebra & Logic Seminar, University of South Carolina, Columbia, SC.
- The Erdős-Hajnal Conjecture** *Sep 2015*  
Algebra & Logic Seminar, University of South Carolina, Columbia, SC.
- Avoiding Approximate Repetitions** *Sep 2015*  
Algebra & Logic Seminar, University of South Carolina, Columbia, SC.
- Combinatorial Trials and Tribulations** *Sep 2015*  
Graduate Student Seminar, University of South Carolina, Columbia, SC.
- Spectra of Random Hypergraphs and the Symmetric Bernoulli Hyperensemble** *Sep 2015*  
Discrete Math Seminar, University of South Carolina, Columbia, SC.
- The Complexity of Counting Poset and Permutation Patterns** *Sep 2014*  
Discrete Math Seminar, University of South Carolina, Columbia, SC.
- Sudoku and Graph Theory: Critical Sets** *Mar 2014*  
Discrete Math Seminar, University of South Carolina, Columbia, SC.
- Sudoku and Graph Theory: Critical Sets** *Feb 2014*  
USC PME/Gamecock Math Club 7th Annual Sudoku Championship, Columbia, SC.
- The Discrepancy of the Lexicographically Least de Bruijn Cycle** *Nov 2013*  
Discrete Math Seminar, University of South Carolina, Columbia, SC.
- When is Counting Linear Extensions Easy?** *Sep 2013*  
Discrete Math Seminar, University of South Carolina, Columbia, SC.
- On the Reciprocal of the Binary Generating Function for the Sum of Divisors** *Oct 2012*  
USC Number Theory Seminar, Columbia, SC.
- The Minimum Number of Givens is 17!** *Jan 2012*

Pi Mu Epsilon / Gamecock Math Club Sudoku Contest, Columbia, SC.

**Hall's Theorem for Hypergraphs** *Oct 2011*  
USC Combinatorics Seminar, Columbia, SC.

**Expander Graphs: Prep. for Dinur's Proof of the PCP Theorem** *Oct 2011*  
USC Algebra & Logic Seminar, Columbia, SC.

**The Polynomial Interpolation Matroid** *Sep 2011*  
USC Combinatorics Seminar, Columbia, SC.

**The Smooth Digraph Theorem II** *Apr 2011*  
USC Algebra and Logic Seminar, Columbia, SC.

**The Smooth Digraph Theorem I** *Apr 2011*  
USC Algebra and Logic Seminar, Columbia, SC.

**The Kun-Szegedy Proof of the Hell-Nešetřil Theorem III** *Jan 2011*  
USC Algebra and Logic Seminar, Columbia, SC.

**The Kun-Szegedy Proof of the Hell-Nešetřil Theorem II** *Jan 2011*  
USC Algebra and Logic Seminar, Columbia, SC.

**The Kun-Szegedy Proof of the Hell-Nešetřil Theorem I** *Jan 2011*  
USC Algebra and Logic Seminar, Columbia, SC.

**Intro. to Expander Graphs & their Appl. to Compressed Sensing III** *Mar 2010*  
USC Compressed Sensing Seminar, Columbia, SC.

**Intro. to Expander Graphs & their Appl. to Compressed Sensing II** *Mar 2010*  
USC Compressed Sensing Seminar, Columbia, SC.

**Intro. to Expander Graphs & their Appl. to Compressed Sensing I** *Mar 2010*  
USC Compressed Sensing Seminar, Columbia, SC.

**Uniquely  $C_4$ -Saturated Graphs II** *Mar 2010*  
USC Combinatorics Seminar, Columbia, SC.

**Uniquely  $C_4$ -Saturated Graphs I** *Feb 2010*  
USC Combinatorics Seminar, Columbia, SC.

**How to Choose a Random Sudoku Board** *Nov 2009*  
PME/GMC 3rd Annual Sudoku Championship, Columbia, SC.

**Linearly Bounded Liars, Adaptive Covering Codes, and Deterministic Random Walks** *Sep 2009*  
USC Combinatorics Seminar, Columbia, SC.

<b>The Discrepancy of the Lexicographically Least de Bruijn Cycle</b> USC Combinatorics Seminar, Columbia, SC.	<i>Feb 2009</i>
<b>The Mathematics of Sudoku</b> USC Gamecock Math Club/IIME 2008 Sudoku Contest, Columbia, SC.	<i>Nov 2008</i>
<b>Pythagorean Partition-Regularity and Triple Systems with the Sum Property</b> USC Combinatorics Seminar, Columbia, SC.	<i>Sep 2008</i>
<b>Symmetric and Asymptotically Symmetric Permutations II</b> USC Combinatorics Seminar, Columbia, SC.	<i>Mar 2008</i>
<b>Symmetric and Asymptotically Symmetric Permutations I</b> USC Combinatorics Seminar, Columbia, SC.	<i>Mar 2008</i>
<b>Ladner's Theorem</b> USC Algebra & Logic Seminar, Columbia, SC.	<i>Feb 2008</i>
<b>Klee's Measure Problem, Multiobjective Optimization, and Monotone Boolean Functions</b> USC Combinatorics Seminar, Columbia, SC.	<i>Feb 2008</i>
<b>Discrete Stochastic Differentiation</b> USC Combinatorics Seminar, Columbia, SC.	<i>Sep 2007</i>
<b>Collinear Triple Hypergraphs and the Finite Plane Kakeya Problem</b> USC Number Theory Seminar, Columbia, SC.	<i>Oct 2006</i>
<b>Random Linear Extensions of Grids</b> USC Combinatorics Seminar, Columbia, SC.	<i>Sep 2006</i>
<b>Collinear Points in Permutations and the Finite Plane Kakeya Problem</b> UCSD Combinatorics Seminar, San Diego, CA.	<i>Jul 2006</i>
<b>Random Linear Extensions of Grids</b> UCSD Combinatorics Seminar, San Diego, CA.	<i>Jun 2006</i>
<b>Deterministic Random Walks on the Integers</b> Mittagsseminar, ETH-Zürich.	<i>Mar 2006</i>
<b>Missing Induced Subgraphs</b> Mittagsseminar, ETH-Zürich.	<i>Oct 2005</i>
<b>What Keeps Me Up At Night</b> Mittagsseminar, ETH-Zürich.	<i>Oct 2005</i>
<b>Cycles for Other Shapes of Sliding Window</b>	<i>Dec 2004</i>

Courant Institute Geometry Seminar, New York, NY.

**Erdős-Hajnal Sets and Semigroup Decompositions** *Nov 2004*  
Courant Institute Geometry Seminar, New York, NY.

**Quasirandom Permutations** *Mar 2004*  
Courant Institute Probability and Mathematics Physics Seminar, New York, NY.

**Quasirandom Permutations** *Jun 2003*  
Thesis Defense, UCSD, San Diego, CA.

**Abstract Line Configurations and the Milnor-Thom Theorem** *Oct 2002*  
Combinatorics Seminar, UCSD, San Diego, CA.

**4-cycle-free Graphs and Homogeneous Subsets** *Apr 2002*  
Combinatorics Seminar, UCSD, San Diego, CA.

**Directed Covering Codes - An Update** *Jan 2002*  
Combinatorics Seminar, UCSD, San Diego, CA.

**The Theory of Quasirandom Permutations** *Oct 2001*  
Combinatorics Seminar, UCSD, San Diego, CA.

**Matroids and Heart-Shaped Lattices** *Feb 2001*  
Combinatorics Seminar, UCSD, San Diego, CA.

**Constructing Small Sets Uniform in Arithmetic Progressions** *Apr 2001*  
Combinatorics Seminar, UCSD, San Diego, CA.

• **Non-local Contributed**

**Tree Reconstruction and a Waring-Type Problem on Partitions** *Mar 2010*  
41st Southeastern Combinatorics, Graph Theory, & Computing Conf., Boca Raton, FL.

**Flawed Subgraphs and Primitive Partitions** *Mar 1995*  
26th Annual Combinatorics, Graph Theory, and Computing, Florida Atlantic University, Boca Raton, FL.

**Research Advisement**

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1. PhD

- (a) Chair: Anton Strizhov (USC, Mathematics PhD Candidate), Hays Whitlatch (USC, Mathematics PhD Candidate), Greg Clark (USC, Mathematics PhD Candidate), Chris Edgar (USC, Mathematics PhD Candidate), Danny Rorabaugh (USC, Mathematics PhD Recipient 2015), David Collins (USC, Mathematics

PhD Recipient 2013), Aaron Dutle (USC, Mathematics PhD Recipient 2012), Mark Walters (USC, Mathematics PhD Recipient 2009).

- (b) Committee: Hai Jin (USC, Geography PhD Recipient 2017), Nathan Faulkner (USC, Mathematics PhD Recipient 2015), Kamala Diefenthaler (USC, Mathematics PhD Recipient 2013), Austin Mohr (USC, Mathematics PhD Recipient 2013), Xing Peng (USC, Mathematics PhD Recipient 2012), Andrew Vincent (USC, Mathematics PhD Recipient 2012), Virginia Johnson (USC, Mathematics PhD Recipient 2012), Andrew Dove (USC, Mathematics PhD Recipient 2013), Travis Johnston (USC, Mathematics PhD Recipient 2015), Jessica Nelson (USC, Mathematics PhD Recipient 2012).

## 2. MS

- (a) Chair: Erin Hanna (USC, Mathematics MS Candidate), Bill Kay (USC, Mathematics MS Recipient 2012), Bonny Riemer (USC, Mathematics MS Recipient 2008)
- (b) Cochair: Brett Ermer (USC, Statistics MS Recipient 2008, joint with John Grego, USC Department of Statistics)
- (c) Committee: Jared Szi (USC, Mathematics MS Candidate), Dan White (USC, Mathematics MS Recipient 2013), Tatiana Orlova (USC, Mathematics MS Recipient 2010), Charles Cavalier (USC, Mathematics MS Recipient 2009), Bonny Riemer (USC, Mathematics MS Recipient 2008)

## 3. BS

- (a) Ronald Austin Herrygers (USC, BS Mathematics), Harrison Engoren (USC, BS Computer Science & Engineering), David Corey Stewart (USC, BS Mathematics), Blakeley Hoffman (USC, BS Computer Science & Engineering), Abraham Khan (USC BC Computer Science & Engineering), Maxwell Forst (USC, BS Mathematics), David Edelson (USC, BS Physics), Caleb Simmons (USC, BS Mathematics), Anna Kirkpatrick (USC, BS Mathematics), Leanna O'Brien (USC, BS Mathematics), Eric Miller (USC, BS Mathematics), Alexander Auerback (USC, BS Mathematics), Kimberly Selsor (USC, BS Mathematics), Alexander Riasanovsky (University of Pennsylvania, BS Mathematics), Nnenna Anoruo (USC, BS Mathematics), Jeffrey Davis (USC, BS Mathematics), Wesley Alexander (Morris College, BS Mathematics), Lewis Fordjour (Morris College, BS Mathematics), Tiara Howard (Morris College, BS Mathematics), Christopher Boyd (USC, BS Mathematics), Ralph Overstreet (USC, BS Mathematics), De'Shara Gadson (USC, BS Mathematics), Artem Aleshin (USC, BS Mathematics), Oliver Holmes (Morris College, BS Mathematics), Nicholas Smith (USC, BS Mathematics), Bill Kay (USC, BS Mathematics), Andrew Mammoth (USC, BS Mathematics), Andrew Petrarca (USC, BS Nuclear Engineering), Chris Poirel (USC, BS Mathematics), Josh King (USC, BS Mathematics).

## 4. High School

- (a) Alexander Riasanovsky (South Carolina Governor's School for Science and Mathematics, diploma June 2012), Jacob Folks (South Carolina Governor's School for Science and Mathematics), Seung Mok Lee (Gyeonggi Science High School), Sydney Miyasaki (South Carolina Governor's School for Science and Mathematics).