

Brendan Nagle – Curriculum Vita (2019)

Contact

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Education

Ph.D. (Mathematics) & M.S. (Mathematics), Emory University (1999)

B.S. (Mathematics–High Honors) & B.A. (Philosophy), Emory University (1994)

Employment

Professor (2017–present), Department of Mathematics and Statistics, University of South Florida

Associate (Assistant) Professor (2010–2017) ((2006–2010)), Dept. Math. Stat., USF

Assistant Professor (2002–2006), Dept. Math. Stat., University of Nevada, Reno

Visiting Assistant Professor (1999–2002), School of Mathematics, Georgia Institute of Technology

Grants (Mathematics)

NSF grant DMS 1700280, Combinatorics: *Applications and Theory of the Algorithmic Hypergraph Regularity Method*, 2017–2020, PI

NSF grant DMS 1001781, Combinatorics: *Hypergraph Regularity Algorithms, Equivalent Conditions, and Applications*, 2010–2016, PI

NSF grant DMS 0639839, Algebra, Number Theory and Combinatorics: *Arithmetic Progressions and the Hypergraph Regularity Method*, 2005–2009, PI

NSF grant INT 0072064, U.S.–Brazil Cooperative Research: *Problems on Random Graphs (Structures) and Set Systems*, 2000–2003, co-PI (with V. Rödl (PI) and co-PIs: D. Duffus, J. Skokan, L. Thoma)

Grants (Education)

PROMiSE (Partnership to Rejuvenate and Optimize Mathematics and Science Education in Florida), Florida Department of Education, 2008–2010, Grant Partner

ACE (Achievement through Content Expertise), Hillsborough County and Florida Department of Education, 2007, Grant Partner

Administrative positions

Director of Mathematics Graduate Admissions, 2011–2018

Students

John Theado (PhD) - University of South Florida, 2019.

Thesis: *An optimal medium-strength regularity algorithm for 3-uniform graphs*

Gregory Churchill (PhD) - University of South Florida, 2017.

Thesis: *On extending Hansel's theorem to hypergraphs.*

Jill Dizona (PhD) - University of South Florida, 2012.

Thesis: *Constructive packings by linear hypergraphs*

Annika Poerschke (PhD, codirected with V. Rödl), Emory University, 2008.

Thesis: *On algorithmic hypergraph regularity*

Shoaib Khan (MA), University of South Florida, 2009.

Thesis: *On a hypergraph regularity method for linear hypergraphs*

Sayaka Olson (MA), University of Nevada, Reno, 2008.

Thesis: *Hypergraphs with small Ramsey numbers*

Ryan Dotson (MA), University of Nevada, Reno, 2005.

Thesis: *Hereditary properties of hypergraphs*

Preprints

41. *Coloring bipartite 3-graphs in expected cubic time* (preprint)
coauthors: T. Molla and J. Theado
40. *An optimal algorithm for the weak regularity of 3-graphs* (preprint)
coauthor: J. Theado
39. *Equivalent regular partitions of 3-uniform hypergraphs* (preprint)
coauthors: V. Rödl and M. Schacht
38. *On odd rainbow cycles in graphs* (submitted)
coauthors: A. Czygrinow, T. Molla, and R. Oursler
37. *On even rainbow or nontriangular directed cycles* (submitted)
coauthors: A. Czygrinow, T. Molla, and R. Oursler

Publications

36. *Bipartite Hansel results for hypergraphs*
European Journal of Combinatorics, *to appear*,
coauthor: G. Churchill
35. *An algorithmic hypergraph regularity lemma*
Random Structures Algorithms **52** (2018), no. 2, 301–353,
coauthors: V. Rödl and M. Schacht
34. *Constructive packings of triple systems*
SIAM J. Discrete Math **31** (2017), no. 4, 2479–2516.
33. *On extending Hansel's theorem to hypergraphs*
Congr. Numer. **227** (2016), 269–275
coauthor: G. Churchill
32. *An extremal problem for finite lattices*
Theory and Applications of Graphs **3** (2016), no. 1, 6pp.
coauthors: J. Goldwasser and A. Saez
31. *An algorithmic hypergraph regularity lemma* [Extended Abstract]
Proc. 27th Annual ACM-SIAM Symposium on Discrete Algorithms, 1765–1773. ACM Press
coauthors: V. Rödl and M. Schacht
30. *Asymptotics of the extremal exceedance set statistic*
European J. Combinatorics **46** (2015), 75–88
coauthors: R. Ferraz de Andrade and E. Lundberg
29. *Tiling 3-uniform hypergraphs with $K_4^{(3)} - 2e$*
Journal of Graph Theory **75** (2014) no. 4, 124–136
coauthors: A. Czygrinow and L. DeBiasio
28. *Constructive packings by linear hypergraphs*
Combin. Probab. Comput. **22** (2013) no. 6, 829–858
coauthor: J. Dizona

27. *Generalized pattern frequency in large permutations*
Electron. J. Combin. **20** (2013), no. 1, #P28
coauthors: J. Cooper and E. Lundberg
26. *Tree-minimal graphs are almost regular*
Journal of Combinatorics **3** (2012) no. 1, 49–62
coauthors: Dellamonica, Haxell, Łuczak, Mubayi, Person, Rödl, and Schacht
25. *On even-degree subgraphs of linear hypergraphs*
Combin. Probab. Comput. **21** (2012), 113–127
coauthors: Dellamonica, Haxell, Łuczak, Mubayi, Person, Rödl, Schacht, and Verstraete
24. *A hypergraph regularity method for linear hypergraphs, with applications*
LAP Lambert Academic Publishing (2011), 1–56
coauthor: S. Khan
23. *On random sampling in uniform hypergraphs*
Random Structures Algorithms **38** (2011), 422–440
coauthor: A. Czygrinow
22. *On computing the frequencies of induced subhypergraphs*
SIAM J. Discrete Math. **24** (2010), no. 1, 322–329
21. *Weak regularity and linear hypergraphs*
J. Combin. Theory Ser. B **100** (2010), no. 2, 151–160
coauthors: Y. Kohayakawa, V. Rödl and M. Schacht
20. *Hereditary properties of hypergraphs*
J. Combin. Theory Ser. B **99** (2009), 460–473
coauthor: R. Dotson
19. *Hypergraph regularity and quasi-randomness*
Proc. 20th Annual ACM-SIAM Symposium on Discrete Algorithms, 227–245. ACM Press
coauthors: A. Poerschke, V. Rödl and M. Schacht
18. *Note on the 3-graph Counting Lemma*
Discrete Math. **308** (2008), 4501–4517
coauthors: V. Rödl and M. Schacht
17. *On the Ramsey number of sparse 3-graphs*
Graphs Combin. **24** (2008) no. 3, 205–228
coauthors: S. Olsen, V. Rödl, and M. Schacht
16. *An algorithmic version of hypergraph regularity*
SIAM J. Comput. **37** (2008), no. 6, 1728–1776
coauthors: P. Haxell and V. Rödl
15. *Extremal hypergraph problems and the regularity method*
Topics in Discrete Mathematics **26** (2006), *Algorithms Combin.*, 247–278, Springer, Berlin
coauthors: V. Rödl and M. Schacht
14. *The counting lemma for regular k -uniform hypergraphs*
Random Structures Algorithms **28** (2006), no. 2, 113–179
coauthors: V. Rödl and M. Schacht
13. *The hypergraph regularity method and its applications*
Proceedings of the National Academy of Science **102** (2005), no. 23, 8109–8113
coauthors: V. Rödl, J. Skokan, M. Schacht and Y. Kohayakawa
12. *An algorithmic version of the Hypergraph Regularity Method [Extended Abstract]*
46th Annual IEEE Symposium on Foundations of Computer Science, 2005, 439–448
coauthors: P. Haxell and V. Rödl
11. *Bounding the strong chromatic index of dense random graphs*
Discrete Math. **281** (2004), no. 1–3, 129–136
coauthor: A. Czygrinow

10. *Strong edge colorings of uniform graphs*
Discrete Math. **286** (2004), no. 3, 219–223
coauthor: A. Czygrinow
9. *Matrix-free proof of a regularity characterization*
Electron. J. Combin. **10** (2003), # 39, 11 pp
coauthor: A. Czygrinow
8. *Regularity properties for triple systems*
Random Structures Algorithms **23** (2003), no. 3, 264–332
coauthor: V. Rödl
7. *Hereditary properties of triple systems*
Combin. Probab. Comput. **12** (2003), 248–310
coauthors: Y. Kohayakawa and V. Rödl
6. *Integer and fractional packings in dense 3-uniform hypergraphs*
Random Structures Algorithms **22** (2003), no. 3, 248–310
coauthors: P. Haxell and V. Rödl
5. *Efficient testing of hypergraphs*
29th International Colloq. on Automata, Languages and Programming,
Lecture Notes in Comp. Sc. 2286, Springer, Berlin (2002), 278–293
coauthors: Y. Kohayakawa and V. Rödl
4. *On characterizing hypergraph regularity*
Random Structures Algorithms **21** (2002), no. 3–4, 293–335
coauthors: Y. Dementieva, P. Haxell and V. Rödl
3. *A note on codegree problems for hypergraphs*
Bull. Inst. Combin. Appl. **32** (2001), 63–69
coauthor: A. Czygrinow
2. *The asymptotic number of triple systems not containing a fixed one*
Discrete Math. **235** (2001), 271–290.
coauthor: V. Rödl
1. *Turán related problems for hypergraphs*
Congr. Numer. **136** (1999), 119–127

Courses

University of South Florida (2006–present)

Combinatorics II (MAD 6207)

Combinatorics I (MAD 6206)

Graph Theory (MAD 5305)

Combinatorics and Graph Theory (MAT 4930)

Elementary Abstract Algebra (MAS 4301)

Introduction to Graph Theory (MAD 4301)

Introduction to Combinatorics (MAD 4203)

Bridge to Abstract Mathematics (MGF 3301)

Linear Algebra (MAS 3105)

Calculus 1 (MAC 2301)

University of Nevada, Reno (2002–2006)

Topics in Algebra (Math 773/639/439)

Combinatorics and Graph Theory (Math 685/485)

Probability Theory (Math 661/461)

Probability and Statistics (Math 352)

Linear Algebra (Math 330)

Differential Equations (Math 285)

Multivariable Calculus (Math 283)

Business Calculus (Math 183)

College Algebra (Math 124)

Georgia Institute of Technology (1999–2002)

Combinatorial Analysis (Math 4032)

Probability and Statistics (Math 3052)

Applied Combinatorics (Math 3012)

Emory University (1995–1999)

Business Calculus (Math 119)

Calculus II (Math 112)

Calculus I (Math 111)

Thesis Committees

Matthew Lewandowski (USF, PhD, CS, ongoing)
Yan Albright (USF, PhD, CS, 2020)
John Theado (USF, PhD, Math, 2019)
Ryan Herchig (USF, PhD, Phys, 2017)
Donald Ray (USF, PhD, CS, 2016)
Jonathan Burns (USF, PhD, Math, 2014)
Romain Perriot (USF, PhD, Phys, 2012)
Jill Dizona (USF, PhD, Math, 2012)
Ransford Hyman Jr. (USF, PhD, CS, 2011)
Kevin Wagner (USF, PhD, Math, 2010)
Shoab Khan (USF, MA, Math, 2009)
Ibtisam Daqqa (USF, PhD, Math, 2007)
Annika Poerschke (Emory, MA, Math, 2006)
Yulia Dementieva (Emory, PhD, Math, 2001)

Danielle Ferguson (USF, PhD, CS, 2020)
Daniel Cruz (USF, PhD, Math, 2019)
Greg Churchill (USF, PhD, Math, 2017)
Alireza Chakeri (USF, PhD, CS, 2017)
Jonathan Spiewak (USF, MA, Math, 2016)
Egor Dolzhenko (USF, PhD, Math, 2013)
Tilahun Muche (USF, PhD, Math, 2012)
Daria Karpenko (USF, Mathematics, 2012)
Nailin Saigal (USF, PhD, CS, 2011)
Jennifer Tarr (USF, MA, Math, 2010)
Sayaka Olsen (UNR, MA, Math, 2008)
Annika Poerschke (Emory, PhD, Math, 2006)
Ryan Dotson (UNR, Mathematics, 2005)
Jason Hunt (Emory, PhD, Math, 2001)