

# Curriculum vitae

Dániel Gerbner

Date and place of birth: October 5. 1980., Budapest

Nationality: Hungarian

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Research interest: Extremal Combinatorics and Search Theory.

## Education

1991-1999 Németh László Grammar School

1999-2004 Eötvös Loránd University

Faculty of Science

Msc. in Mathematics

2004-2007 Eötvös Loránd University

Faculty of Informatics

Ph.D program

Supervisor: Gyula O.H. Katona

Title of thesis: Extremal Combinatorial Problems

Date of Defense: 2009. Dec. 9.

### **Current position**

Senior research fellow at the Alfréd Rényi Institute of Mathematics in Budapest, Hungary, September 2016 – present

### **Earlier positions**

OTKA postdoctoral fellow at the Alfréd Rényi Institute of Mathematics in Budapest, Hungary, 2013–2016.

Young researcher (postdoc) and research fellow at the Alfréd Rényi Institute of Mathematics in Budapest, Hungary, January 2008–Augustus 2013.

Teaching Assistant, University of South Carolina, August–December 2007.

### **Teaching experience**

Teaching assistant, Discrete Mathematics, Eötvös Loránd University, Budapest 2005–2007

Teaching assistant, Calculus, Math 141, University of South Carolina, 2007.

Teaching assistant, Foundations of Computer Science, Technical University, Budapest, 2013.

### **Scientific Awards, Grants**

2009. Grünwald Géza emlékérem

2013–2016. OTKA (Hungarian National Scientific Fund) Postdoctoral Grant

## Publications

### BOOK

D. Gerbner, B. Patkós, Extremal Finite Set Theory, Chapman and Hall/CRC, (2018) 336 pages.

### PAPERS

1. D. Gerbner, Egy extrémális probléma, *Matematikai Lapok* 2000–2001/2 (2005), 5–12.
2. A. Bernáth, D. Gerbner, Chain intersecting set families, *Graphs and Combinatorics*, 23 (2007), no. 4, 353–366.
3. D. Gerbner, B. Patkós,  $l$ -chain profile vectors, *SIAM J. Discrete Math.* 22 (2008), no. 1, 185–193.
4. D. Gerbner, B. Patkós, Profile vectors in the lattice of subspaces, *Discrete Mathematics*, 309 (2009), no. 9, 2861–2869
5. D. Gerbner, D. Pálvölgyi, B. Patkós, G. Wiener, Finding the maximum and minimum elements with one lie, *Discrete Appl. Math.* 158 (2010), no. 9, 988–995.
6. D. Gerbner, B. Keszegh, N. Lemons, B. Patkós, C. Palmer, D. Pálvölgyi, Polychromatic colorings of arbitrary rectangular partitions, *Discrete Mathematics* 310 (2010), no. 1, 21–30

7. D. Gerbner, N. Lemons, B. Patkós, C. Palmer, V. Szécsi, Cross-Sperner families, *Studia Sci. Math.* 49 (2012), 44–51.
8. P.L. Erdős, D. Gerbner, N. Lemons, D. Mubayi, C. Palmer, B. Patkós, Two-part set systems *Electronic Journal of Combinatorics* 19 (2012) P52, 10pp.
9. D. Gerbner, B. Keszegh, C. Palmer, Generalizations of the Tree Packing Conjecture, *Discussiones Mathematicae Graph Theory* 32 (2012) 569–582.
10. D. Gerbner, B. Keszegh, Path-search in the pyramid and in other graphs, *Journal of Statistical Theory and Practice* 6 (2012) 303–314.
11. D. Gerbner, N. Lemons, C. Palmer, B. Patkós, V. Szécsi, Almost intersecting families of sets *SIAM J. Discrete Math.* 26 (2012) 1657–1699.
12. D. Gerbner, G.O.H. Katona, D. Pálvölgyi, B. Patkós, Majority and plurality problems, *Discrete Applied Mathematics*, 161 (2013) 813–818.
13. D. Gerbner, N. Lemons, C. Palmer, D. Pálvölgyi, B. Patkós, V. Szécsi, Almost Cross-Intersecting and Almost Cross-Sperner Pairs of Families of Sets *Graphs and Combinatorics* 29 (2013) 489–498.
14. D. Gerbner, B. Keszegh, N. Lemons, C. Palmer, D. Pálvölgyi, B. Patkós, Saturating Sperner Families, *Graphs and Combinatorics*, 29 (2013) 1355–1364.

15. D. Gerbner, B. Keszegh, D. Pálvölgyi, G. Wiener, Density-based group testing, *Information Theory, Combinatorics and Search Theory, in Memory of Rudolf Ahlswede, LNCS 7777 (2013)* 543–556.
16. D. Gerbner, Profile polytopes of some classes of families, *Combinatorica* 33 (2013) 199–216.
17. D. Gerbner, G. Tóth, Separating families of convex sets, *Computational Geometry* 46 (2013) 1056–1058.
18. D. Gerbner, The Magnus-Derek game in groups, *Discrete Mathematics and Theoretical Computer Science* 15 (2013) 119–126.
19. J. Balog, J. Barát, D. Gerbner, A. Gyárfás, G. Sárközy, Partitioning edge-2-colored graphs by monochromatic paths and cycles, *Combinatorica* 34 (2014) 507–526.
20. J. Barát, D. Gerbner, Edge-decomposition of graphs into copies of a tree with four edges, *Electronic J. of Combinatorics* 21 (2014) paper 1.55, 11 pages
21. A. Dumitrescu, D. Gerbner, B. Keszegh, Cs. Tóth, Covering paths for planar point sets, *Discrete and Computational Geometry* 51 (2014) 462–484.
22. D. Gerbner, V. Mészáros, D. Pálvölgyi, A. Pokrovskiy, G. Rote, Advantage in the discrete Voronoi game, *J. Graphs Algorithms Appl.* 18 (2014) 439–457,

23. Z. Füredi, D. Gerbner, M. Vizer, A discrete isodiametric result: the Erdős-Ko-Rado theorem for multisets, *European J. Combin.* 48 (2015) 224–233.
24. D. Gerbner, B. Keszegh, D. Pálvölgyi, B. Patkós, M. Vizer, G. Wiener, Finding a majority ball with majority answers, *Electr. Notes in Disc. Math.* 49 (2015) 345–351.
25. D. Gerbner, B. Keszegh, C. Palmer, D. Pálvölgyi, Topological orderings of weighted directed acyclic graphs, *Information Processing Letters* 116(9) (2016), 564–568.
26. D. Gerbner, A. Methuku, C. Tompkins, Intersecting P-free families, *Journal of Combinatorial Theory Series A*, 151, (2017) 61 – 83.
27. D. Gerbner, M. Vizer, A note on tilted Sperner families, *Discrete Mathematics*, 339(11) (2016) 2737–2741.
28. D. Gerbner, C. Palmer, Extremal results for Berge-hypergraphs, *SIAM J. Discrete Math (SIDMA)*, 31(4) (2017) 2314–2327.
29. D. Gerbner, B. Keszegh, D. Pálvölgyi, G. Rote, G. Wiener, Search for the end of a path in the d-dimensional grid and in other graphs, *Ars Mathematica Contemporanea*, 12(2) (2017) 301–314.
30. D. Gerbner, B. Keszegh, C. Palmer, B. Patkós, On the number of cycles in a graph with restricted cycle lengths, *SIAM J. Discrete Math (SIDMA)*, 32(1) (2018) 266–279.

31. D. Gerbner, B. Keszegh, G. Mészáros, B. Patkós, M. Vizer, Line Percolation in Finite Projective Planes, *SIAM J. Discrete Math (SIDMA)*, 32(2) (2018) 864–881.
32. F. Benevides, D. Gerbner, C. Palmer, D. Vu, Identifying defective sets using queries of small size, *Discrete Mathematics*, 341(1) (2018) 143–150.
33. D. Gerbner, M. Vizer, Smart elements in combinatorial group testing problems, *Journal of Comb. Opt* 35(4) (2018) 1046–1060.
34. D. Gerbner, B. Patkós, M. Vizer, Forbidden subposet problems for traces of set families, *Electronic J. of Combinatorics*, Volume 25, Issue 3 (2018), Paper P3.49, 17 pp.
35. D. Gerbner, M. Vizer, Majority problems of large query size, *Disc. Appl. Math*, 254 (2019), 124–134.
36. D. Gerbner, A. Methuku, M. Vizer, Asymptotics for the Turán number of Berge- $K_{2,t}$ , *JCTB*, 137 (2019), Pages 264–290.
37. D. Gerbner, B. Keszegh, A. Methuku, B. Patkós, M. Vizer, An improvement on the maximum number of  $k$ -dominating independent sets, *Journal of Graph Theory*, available online.
38. D. Gerbner, M. Vizer, Smart elements in combinatorial group testing problems with more defectives, *The Art of Discrete and Applied Mathematics*, accepted.

39. D. Gerbner, A. Methuku, D.T. Nagy, B. Patkós, M. Vizer, Forbidding rank-preserving copies of a poset, *Order*, *accepted*.
40. D. Gerbner, A. Methuku, D.T. Nagy, B. Patkós, M. Vizer, Stability results on vertex Turán problems in Kneser graphs, *Electronic Journal of Combinatorics*, *accepted*
41. D. Gerbner, D. Lenger, M. Vizer, A plurality problem with three colors and query size three, *submitted*
42. D. Gerbner, B. Keszegh, B. Patkós, Generalized forbidden subposet problems, *submitted*
43. D. Gerbner, M. Vizer, Rounds in a combinatorial search problem, *submitted*
44. D. Gerbner, A. Methuku, M. Vizer, Generalized Turán problems for disjoint copies of a graph, *submitted*
45. D. Gerbner, E. Győri, A. Methuku, M. Vizer, Generalized Turán problems for even cycles, *submitted*
46. D. Gerbner, A. Methuku, D.T. Nagy, B. Patkós, M. Vizer, On the number of containments in  $P$ -free families, *submitted*
47. D. Gerbner, C. Palmer, Counting copies of a fixed subgraph of  $F$ -free graphs, *submitted*
48. D. Gerbner, A. Methuku, D.T. Nagy, B. Patkós, M. Vizer, Vertex Turán problems for the oriented hypercube, *submitted*



49. S. English, D. Gerbner, A. Methuku, M. Tait, Linearity of Saturation for Berge Hypergraphs, *submitted*
50. D. Gerbner, A. Methuku, G.Omidi, M. Vizer, Ramsey problems for Berge hypergraphs, *submitted*
51. D. Gerbner, A. Methuku, C. Palmer, General lemmas for Berge-Turán hypergraph problems, *submitted*
52. A. Davoodi, D. Gerbner, A. Methuku, M. Vizer, On Clique Coverings of Complete Multipartite Graphs, *submitted*
53. F-H. Chang, D. Gerbner, W-T. Li, A. Methuku, D.T. Nagy, B. Patkós, M. Vizer, Rainbow Ramsey problems for the Boolean lattice, *submitted*
54. D. Gerbner, D.T. Nagy, B. Patkós, M. Vizer, On the maximum number of copies of  $H$  in graphs with given size and order, *submitted*
55. H. Chang, D. Gerbner, B. Patkós, Finding non-minority balls with majority and plurality queries, *submitted*
56. D. Gerbner, D.T. Nagy, B. Patkós, M. Vizer,  $t$ -wise Berge and  $t$ -heavy hypergraphs, *submitted*
57. S. English, D. Gerbner, A. Methuku, C. Palmer, On the weight of Berge- $F$ -free hypergraphs, *submitted*
58. D. Gerbner, A note on the Turán number of a Berge odd cycle, *submitted*

59. G. Damásdi, D. Gerbner, G.O.H. Katona, B. Keszegh, D. Lenger, A. Methuku, D.T. Nagy, D. Pálvölgyi, B. Patkós, M. Vizer, G. Wiener, Adaptive Majority Problems for Restricted Query Graphs and for Weighted Sets, *submitted*
60. D. Gerbner, The covering lemma and q-analogues of extremal set theory problems, *submitted*
61. D. Gerbner, On Berge-Ramsey problems, *submitted*