

# CURRICULUM VITAE

## Personal data

**Name:** Balázs Patkós

**Place and date of birth:** Budapest, Hungary, January 4 1978.

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**Research Interests:** extremal and probabilistic combinatorics

## Education

2003-2007 Central European University, Budapest, PhD in Mathematics and its Applications

Title of thesis: Problems in extremal finite set theory (supervisor: Gyula O.H. Katona)

date of defense: January 2008

1996-2003 Eötvös Loránd University, Budapest, MSc in Mathematics

## Current position

Senior Researcher and Scientific Secretary at the Alfréd Rényi Institute of Mathematics in Budapest, Hungary, July 2014 -

## Earlier positions

- Researcher at MTA-ELTE Geometric and Algebraic Combinatorics Research Group, Budapest, Hungary, March 2014 - August 2015
- OTKA postdoctoral fellow at the Alfréd Rényi Institute of Mathematics in Budapest, Hungary, March 2011 - February 2014
- Young researcher (postdoc) at the Alfréd Rényi Institute of Mathematics in Budapest, Hungary, January 2010 - February 2011
- Researcher at the University of Memphis, September 2008 - December 2009
- Pre-doc fellowship at Eötvös University, Budapest, September 2007 - August 2008

## Teaching experience

- Eötvös University, Budapest: problem solving sessions (calculus, analysis, discrete mathematics), lecturer (set theory, discrete mathematics)
- Technical University, Budapest: problem solving sessions in several introductory discrete mathematics course
- Business School of Central European University, Budapest, Mathematics and its application / Math and modeling (in English)
- McDaniel College, Budapest, Statistics and Calculus (in English)
- Acquincum Institute of Technology, Budapest, Theory of Computation (in English)

#### **Academic visits:**

March - May 2012 Zhejiang Normal University

#### **Scientific Awards, Fellowships, Grants:**

- 2005 CEU Award for Advanced Doctoral Students
- 2005 October - 2006 January: Marie-Curie Fellowship (COMBSTRU), Bielefeld University, Germany
- 2006 September - November: Marie-Curie Fellowship (Phenomena in High Dimensions) Tel Aviv University, Israel
- 2011 Youth Award of the Hungarian Academy of Sciences
- 2011 March - 2014 February OTKA (Hungarian National Scientific Fund) Post-doctoral Grant
- 2011 September - 2013 August, János Bolyai Fellowship of the Hungarian Academy of Sciences
- 2014 September - 2017 August János Bolyai Fellowship of the Hungarian Academy of Sciences

#### **Scientific Activities**

- reviewer for Mathematical Reviews and referee for several international scientific journals,
- deputy secretary general of the János Bolyai Mathematical Society,

## Conference Organization

- founder and organizer of Emléktábla Workshop Series. (8 workshops)
- co-secretary in Organizing Committee of EuroComb'11, Budapest August 29 - September 2, 2011
- secretary of Organizing Committee of Katona70, Budapest, September 3-4, 2011
- member of local Organizing Committee of Erdős Centennial, Budapest, July 1-5, 2013
- member of the Organizing Committee of Miki Simonovits is 70, Budapest, January 3-4, 2014
- secretary of the Organizing Committee of Sum(m)it240, Budapest, July 7-11, 2014
- organizer of Workshop on Graph and Hypergraph Domination, June 5-10, 2017

## Publications

1. Balázs Patkós, How different can two intersecting families be, *Electronic Journal of Combinatorics* 12 (2005) R24
2. Balázs Patkós, The distance of  $\mathcal{F}$ -free families, *Studia Sci. Math. Hungarica* 46 (2009) 2, 275-286.
3. Dániel Gerbner, Balázs Patkós  $l$ -chain profile vectors, *SIAM Journal on Discrete Mathematics* 22 (2008) 1, 185-193.
4. Dániel Gerbner, Balázs Patkós, Profile vectors in the lattice of subspaces, *Discrete Mathematics*, 309 (2009) 2861-2869.
5. Michael Krivelevich, Balázs Patkós, Equitable coloring of random graphs, *Random Structures and Algorithms* 35 (2009) 83–99.
6. Balázs Patkós,  $l$ -trace  $k$ -Sperner families, *J. of Combinatorial Theory, Ser. A*, 116 (2009) 1047–1055.
7. Balázs Patkós, Krisztián Tichler, Gábor Wiener, Inclusionwise minimal completely separating systems, *Journal of Statistical Theory and Practice*, 3 (2009) 459–466.
8. Dániel Gerbner, Dömötör Pálvölgyi, Balázs Patkós, Gábor Wiener, Selecting the largest and the smallest elements with a lie, *Discrete Applied Mathematics* 158, (2010), 988–995.

9. Balázs Patkós, Traces of uniform set families, *Electronic Journal of Combinatorics*, 16 (2009) N8
10. D. Gerbner, B. Keszegh, N. Lemons, C. Palmer, D. Pálvölgyi, Balázs Patkós, Polychromatic Colorings of Arbitrary Rectangular Partitions, *Discrete Mathematics* 310 (2010), 21–30.
11. A. Blokhuis, A.E. Brouwer, A. Chowdhury, T. Mussche, Balázs Patkós, T. Szőnyi, Hilton-Milner theorem for vector spaces, *Electronic Journal of Combinatorics*, 17 (2010), R71
12. Ameera Chowdhury, Balázs Patkós, Shadows and Intersections in Vector Spaces, *J. of Combinatorial Theory, Ser. A* 117 (2010) 1095–1106
13. Balázs Patkós, On randomly generated non-trivially intersecting hypergraphs, *Electronic Journal of Combinatorics* 17 (2010), R26
14. Paul Balister, Balázs Patkós, Random partial orders defined by angular domains, *Order*, 28 (2011) 341–355
15. János Barát, Zoltán Füredi, Ida Kantor, Younjin Kim, Balázs Patkós, Large  $B_d$ -free and union-free subfamilies, *SIAM J. on Discrete Mathematics*, 26 (2012) 71–76
16. Dániel Gerbner, Nathan Lemons, Cory Palmer, Balázs Patkós, Vajk Szécsi, Cross-Sperner families, *Studia Sci. Math. Hungarica*, 49 (2012), 44-51.
17. Balázs Patkós, A note on traces of set families, *Moscow Journal of Combinatorics and Number Theory*, 2 (2012), 47-55.
18. P.L. Erdős, D. Gerbner, N. Lemons, D. Mubayi and C. Palmer, Balázs Patkós, Two-part set systems, *Electronic Journal of Combinatorics*, 19 (2012), P52
19. Dániel Gerbner, Nathan Lemons, Cory Palmer, Balázs Patkós, Vajk Szécsi, Almost intersecting families, *SIAM J. on Discrete Mathematics*, 26 (2012), 1657-1669.
20. Dániel Gerbner, Nathan Lemons, Cory Palmer Dömötör Pálvölgyi, Balázs Patkós, Vajk Szécsi, Almost Cross-Intersecting and Almost Cross-Sperner Pairs of Families of Sets, *Graphs and Combinatorics*, 29 (2013), 489-498.
21. D. Gerbner, B. Keszegh, N. Lemons, C. Palmer, D. Pálvölgyi, Balázs Patkós, Saturating Sperner families, *Graphs and Combinatorics*, 29 (2013), 1355–1364.
22. Z.L. Nagy, L Özkahya, Balázs Patkós, M. Vizer, On the ratio of maximum and minimum degree in maximal intersecting families, *Discrete Mathematics*, 313 (2013), 207–211.

23. D. Gerbner, G.O.H. Katona, D. Pálvölgyi, Balázs Patkós, On majority and plurality problems, *Discrete Applied Mathematics*, 161 (2013), 813-818.
24. Ida Kantor, Balázs Patkós, Towards a de Bruijn-Erdos theorem in the  $L_1$ -metric, *Discrete and Computational Geometry*, 49 (2013), 659-670.
25. Balázs Patkós, Families that remain  $k$ -Sperner even after omitting an element of their ground set, *Electronic Journal of Combinatorics*, 20 (2013), P32
26. Balázs Patkós, Máté Vizer, Game saturation of intersecting families, *Cent. Eur. J. Math.*, 2014, 12(9), 1382-1389
27. B. Keszegh, B. Patkós, X. Zhu Nonrepetitive colorings of lexicographic product of paths and other graphs, *DISCRETE MATHEMATICS AND THEORETICAL COMPUTER SCIENCE* 16:(2) 97–110. (2014)
28. B. Patkós Induced and non-induced forbidden subposet problems, *ELECTRONIC JOURNAL OF COMBINATORICS* 22:(1) Paper P1.30. 16 p. (2015)
29. Z.L. Nagy, B. Patkós, On the number of maximal intersecting  $k$ -uniform families and further applications of Tuza's set pair method, *ELECTRONIC JOURNAL OF COMBINATORICS* 22:(1) Paper P1.83. (2015)
30. Y. Kim, M. Kumbhat, Z.L. Nagy, B. Patkós, A. Pokrovskiy, M. Vizer, Identifying codes and searching with balls in graphs, *DISCRETE APPLIED MATHEMATICS* 193: 39-47. (2015)
31. T. Héger, B. Patkós, M. Takáts, Search problems in vector spaces, *DESIGNS CODES AND CRYPTOGRAPHY* 76:(2) 207-216. (2015)
32. A. Grzesik, M. Mikalacki, Z. L. Nagy, A. Naor, B. Patkos, F. Skerman, Avoider-Enforcer star games, *DISCRETE MATHEMATICS AND THEORETICAL COMPUTER SCIENCE* 17:(1) 145-160. (2015)
33. Balázs Patkós, Supersaturation and stability for forbidden subposet problems, *JOURNAL OF COMBINATORIAL THEORY SERIES A* 136: 220–237. (2015)
34. B. Bresar, Cs. Bujtás, T. Gologranc, S. Klavzar, G. Kosmrlj, B. Patkós, Zs. Tuza, M. Vizer, Dominating Sequences in Grid-Like and Toroidal Graphs, *ELECTRONIC JOURNAL OF COMBINATORICS* 23:(4) Paper 4.34. 19 p. (2016)
35. D. Gerbner, B. Keszegh, D. Pálvölgyi, B. Patkós, M. Vizer, G. Wiener, Finding a non-minority ball with majority answers, *DISCRETE APPLIED MATHEMATICS* 219:(11) 18–31. (2017)

36. Cs. Bujtás, B. Patkós, Zs. Tuza, M. Vizer, The minimum number of vertices in uniform hypergraphs with given domination number, DISCRETE MATHEMATICS 340:(11) 2704–2713 (2017)
37. B. Bresar , Cs. Bujtás, T. Gologranc, S. Klavzar, G. Kosmrlj, B. Patkós, Zs. Tuza, M. Vizer, Grundy dominating sequences and zero forcing sets DISCRETE OPTIMIZATION 26: 66–77 (2017)
38. Dániel Gerbner, Balázs Keszegh, Gábor Mészáros, Balázs Patkós, Máté Vizer, Line Percolation in Finite Projective Planes, SIAM JOURNAL ON DISCRETE MATHEMATICS 32:(2) pp. 864-881. (2018)
39. Dániel Gerbner, Balázs Keszegh, Cory Palmer, Balázs Patkós, On the Number of Cycles in a Graph with Restricted Cycle Lengths, SIAM JOURNAL ON DISCRETE MATHEMATICS 32:(1) pp. 266–279. (2018)
40. Dániel Gerbner, Balázs Patkós, Máté Vizer, Forbidden subposet problems for traces of set families ELECTRONIC JOURNAL OF COMBINATORICS 25 : 3 Paper: P3.49 , 17 p. (2018)
41. Dániel Gerbner, Balázs Patkós, *Extremal Finite Set Theory* , Boca Raton, USA : CRC Press - Taylor and Francis Group (2018)
42. 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 91 : 1 pp. 88-97. , 10 p. (2019)
43. Dániel Gerbner, Abhishek Methuku, Dániel Nagy, Balázs Patkos, Máté Vizer, Stability Results for Vertex Turán Problems in Kneser Graphs ELECTRONIC JOURNAL OF COMBINATORICS 26 : 2 p. P2.13 Paper: P2.13 (2019)
44. Cs. Bujtás, B. Patkós, Zs. Tuza, M. Vizer, Domination game on uniform hypergraphs DISCRETE APPLIED MATHEMATICS 258 pp. 65-75. , (2019)