

CURRICULUM VITAE

Péter Csikvári

February 2020

Personal data

- Place and date of birth: Budapest (Hungary), 8th March 1984
- Nationality: Hungarian
- E-mail: peter.csikvari@gmail.com
- Homepage: <http://csikvarip.web.elte.hu/>

Education

- 2007-2011: Eötvös Loránd University, PhD student in Mathematics (supervisor: Tamás Szőnyi)
Thesis: Graph polynomials and graph transformations in algebraic graph theory (2011)
- 2002-2007: Eötvös Loránd University, student in Mathematics (supervisor: András Sárközy)
MSc thesis: Subset sum problems (2007)
- 1996-2002: Fazekas Mihály High School, class specialised in Mathematics

Employment

- 2016-present: MTA-ELTE Geometric and Algebraic Combinatorics Research Group
- 2016-2017: Alfréd Rényi Institute of Mathematics
- 2010-present: Eötvös Loránd University, assistant professor
- 2013-2016: Massachusetts Institute of Technology, applied mathematics instructor
- 2010-2013: Alfréd Rényi Institute of Mathematics, young researcher

Research visits

- Georgia Institute of Technology, Atlanta, invited by Prasad Tetali (2015, 1 week)
- Centrum Wiskunde and Informatica, Amsterdam, invited by Alexander Schrijver (2012, 1 week)
- University of Memphis, invited by Béla Bollobás (2008, 4 months)

Competitions and Awards

- Junior prize, 2018 (an award by the Hungarian Academy of Sciences)
- Junior Prima prize, 2015 (an award by the Hungarian Academy of Sciences)
- Géza Grünwald prize, 2012 (an award for young researchers by the Bolyai Mathematical Society)
- Prize of the László Patai Foundation, 2009 (an award for young researchers by the Bolyai Mathematical Society)
- Outstanding student of the Faculty of Natural Sciences, 2006 (an award by Eötvös Loránd University)
- 1st prize at 12th International Mathematics Competition, Bulgaria, 2005
- 1st prize at 10th International Mathematics Competition, Romania, 2003

- 2nd prize at 43rd International Mathematical Olympiad, United Kingdom, 2002
- 3rd prize at 42nd International Mathematical Olympiad, USA, 2001

Grants

- Maria Skłodowska-Curie Individual Fellowship, 2017-2019
- NSF grant DMS-1500219, "Extremal graph theory, graph limits, and algebraic invariants", 2015-2016 (From 2016 to 2018 the grant is transferred to Alex Postnikov.)

Professional Activities

- Editor of Acta Mathematica Hungarica since 2019 september
- Editor of Transactions on Combinatorics since 2016
- Editor of International Journal of Mathematics and Statistics since 2015
- Managing editor of the journal *Combinatorica, An International Journal on Combinatorics and the Theory of Computing*, from 2013 January 1 to 2013 August 31.
- Local organizer of the Erdős Centennial Conference (2013 July 1-5, approximately 700 participants)
- Member of the János Bolyai Mathematical Society since 2005
- Member of the Editorial Board of KöMaL (Mathematical and Physical Journal for Secondary Schools, published by the János Bolyai Mathematical Society and the Loránd Eötvös Physical Society) between 2002 and 2005

Teaching

- Problem Solving Seminar in Combinatorics, Eötvös Loránd University (4 semesters, 2018-20)
- Discrete Mathematics II for Msc students: Probabilistic methods, Eötvös Loránd University (3 semester, 2018-20)
- Algebraic and Probabilistic Methods in Combinatorics for graduate students, Eötvös Loránd University (1 semester in 2017)
- Discrete Mathematics for Msc students, Eötvös Loránd University (3 semesters lecture and 1 semester recitation, 2016-2018)
- Exercise class in Algebra and Number Theory, Eötvös Loránd University (1 semester, 2016)
- Algebraic Combinatorics, Massachusetts Institute of Technology (2 semesters, 2015-2016)
- Combinatorial Analysis, Massachusetts Institute of Technology (1 semester, 2015)
- Undergraduate Discrete Mathematics Seminar, Massachusetts Institute of Technology (2 semesters, 2014)
- Exercise class in Calculus, Massachusetts Institute of Technology (2013)
- Exercise class in Discrete Mathematics I and II for undergraduate students, Eötvös Loránd University (13 semesters, 2006-2012; 2016)
- Exercise class in Discrete Mathematics for graduate students, Eötvös Loránd University (4 semesters, 2009-2012)
- Exercise class in Algebra for undergraduate students, Eötvös Loránd University (1 semester, 2009)
- Exercise class in Linear Algebra for undergraduate students, Eötvös Loránd University (1 semester, 2007)

Supervision

- Roland Somogyi, Msc thesis, Eötvös Loránd Tudományegyetem 2020
- Márton Borbényi, András Imolay, Ádám Schweitzer, Haoran Luo, Undergraduate Research Opportunity Program, Eötvös Loránd Tudományegyetem 2019–2020
- Zsófia Toma, Bsc thesis, Eötvös Loránd University 2017
- Ferenc Bencs, PhD, Central European University, 2016-present
- Ryan Alweiss, Yang Liu, Tahsin Saffat, Vuong, Undergraduate Research Opportunity Program, Massachusetts Institute of Technology, 2015-2016
- Theo McKenzie, Bsc senior thesis (shadow advisor: Sukhada Fadnavis), Harvard University 2015
- Ferenc Bencs, research, Eötvös Loránd University 2013–2014
- Gábor Szűcs, Msc thesis, Eötvös Loránd University 2013
- Ákos Kovács, Bsc thesis, Eötvös Loránd University 2013
- Bálint Varga, Bsc thesis, Eötvös Loránd University 2012

Publications

- P. Csikvári: *Subset sums avoiding quadratic nonresidues*, Acta Arithmetica **135** (2008), pp. 91–98
- P. Csikvári: *A note on character sums*, Acta Math. Hungar. **123** (2009), pp. 357–363
- P. Csikvári: *On a conjecture of V. Nikiforov*, Discrete Mathematics **309** (2009), pp. 4522–4526
- P. Csikvári: *On a poset of trees*, Combinatorica **30** (2) (2010), pp. 125–137
- P. Csikvári: *Integral trees of arbitrarily large diameters*, Journal of Algebraic Combinatorics, **32** (3) (2010), pp. 371–377
- P. Csikvári, M. R. Oboudi: *On the roots of edge cover polynomials of graphs*, European Journal of Combinatorics **32** (8) (2011), pp. 1407–1416
- P. Csikvári: *Applications of the Kelmans transformation: extremality of the threshold graphs*, The Electronic Journal of Combinatorics **18** (2011), P182
- P. Csikvári, Z. L. Nagy: *Density Turán problem*, Combinatorics, Probability and Computing **21** (4) (2012), pp. 531–553
- P. Csikvári: *Two remarks on the adjoint polynomial*, European Journal of Combinatorics **33** (4) (2012), pp. 583–591
- P. Csikvári, K. Gyarmati, A. Sárközy: *Density and Ramsey type results on algebraic equations with restricted solution sets*, Combinatorica **32** (4) (2012), pp. 425–449
- P. Csikvári: *On a poset of trees II*, Journal of Graph Theory **74**(1) (2013), pp. 81–103
- P. Csikvári: *Note on the smallest root of the independence polynomial*, Combinatorics, Probability and Computing **22** (1) (2013), pp. 1–8
- P. Csikvári and P. E. Frenkel: *Benjamini-Schramm continuity of root moments of graph polynomials*, European Journal of Combinatorics (Special issue on recent advances in graphs and analysis) **52** (2016), pp. 302–320

- P. Csikvári and Z. Lin: *Graph homomorphisms between trees*, Electronic Journal of Combinatorics 24(4) (2014), P 4.9
- P. Csikvári and Z. Lin: *Homomorphisms of trees into a path*, SIAM Journal of Discrete Mathematics, **29**(3), pp. 1406–1422.
- M. Abért, P. Csikvári, P. E. Frenkel, G. Kun: *Matchings in Benjamini–Schramm convergent graph sequences*, Transactions of the American Mathematical Society **368** (2016), pp. 4197–4218
- M. Abért, P. Csikvári and T. Hubai: *Matching measure, Benjamini–Schramm convergence and the monomer–dimer free energy*, Journal of Statistical Physics **161** (2015), pp. 16–34
- P. Csikvári: *Lower matching conjecture, and a new proof of Schrijver’s and Gurvits’s theorems*, Journal of European Mathematical Society **19** (2017), pp. 1811–1844
- P. Csikvári: *Matchings in vertex-transitive bipartite graphs*, Israel Journal of Mathematics **215**(1) (2016), pp. 99–134
- P. Csikvári, P. E. Frenkel, J. Hladký and T. Hubai: *Chromatic roots and limits of dense graphs*, Discrete Mathematics **340**(5) (2017), pp. 1129–1135
- P. Csikvári and Z. Lin: *Sidorenko’s conjecture, colorings and independent sets*, Electronic Journal of Combinatorics **24**(1) (2017), P1.2
- E. Cohen, P. Csikvári, W. Perkins and P. Tetali: *The Widom–Rowlinson model, the hard-core model and the extremality of the complete graph*, European Journal of Combinatorics **62** (2017), pp. 70–76
- S. Akbari, P. Csikvári, A. Ghafari, S. Khalashi Ghezelahmad, M. Nahvi: *Graphs with integer matching zeros*, Discrete Applied Mathematics **224** (2017), pp. 1–8
- P. Csikvári and B. Szegedy: *On Sidorenko’s conjecture for determinants and Gaussain Markov random fields*
- F. Bencs and P. Csikvári: *Note on the zero-free region of the hard-core model*
- M. Borbényi and P. Csikvári: *Counting degree-constrained subgraphs and orientations*, Discrete Mathematics **343**(6) (2020)
- P. Csikvári and A. Imolay: *Covers, orientations and factors*

Conference talks

- British Combinatorics Conference, St. Andrews, 2009, *Graph transformations in algebraic graph theory*
- Combinatorics 2010, Verbania, *Integral trees of arbitrarily large diameters*
- Number Theory and its Applications, Debrecen, 2010, *Subset sums avoiding quadratic nonresidues*
- British Combinatorics Conference, Exeter, 2011, *Applications of the Kelmans transformation*
- Geometric and Algebraic Combinatorics 5, 2011, *Applications of the generalized tree shift*
- Algebraic Combinatorics and Graph Theory, Andries Brouwer 60, 2011, *From density Turán problem to integral trees*
- ICTP-IPM Workshop and Conference in Combinatorics and Graph Theory, Trieste, 2012, *Benjamini–Schramm continuity of root moments of graph polynomials*
- Topology and Geometry of Networks and Discrete Metric Spaces, Institute of Mathematics and its Applications, Minneapolis 2013, *Statistical matching theory* (invited speaker)

- Graph limits, groups and stochastic processes, Rényi Alfréd Institute of Mathematics 2014, *Statistical matching theory* (invited speaker)
- Groups, Graphs and Stochastic Processes, Banff 2015, *Statistical matching theory* (invited speaker)
- Spectra of Graphs and Hypergraphs, AMS meeting, Memphis 2015 (invited speaker)
- Extremal and Probabilistic Combinatorics, AMS meeting, Fargo, 2016 (invited speaker)
- Graph Limits and Statistics, Cambridge, 2016 (invited speaker)
- Workshop on Graph Limit Theory, Janov, 2018
- Summer School on Graph Limit Theory, Budapest, 2018 (lecturer)
- Building Bridges II, Celebrating the Work of László Lovász, Budapest, 2018, (invited speaker, mini talk)
- Introduction to Partition Functions, EPFL, Lausanne, 2018 (invited speaker)
- Partition Functions and Computational Complexity, Amsterdam, 2018 (invited speaker)
- Theoretical Challenges in Partition Functions, EPFL, Lausanne, 2018 (invited speaker)
- Applications of Partition Functions, EPFL, Lausanne, 2018 (invited speaker)
- Deterministic Counting, Probability, and Zeros of Partition Functions, UC Berkeley, 2019 (invited speaker)

Selected seminar talks

- University of California, Berkeley, Geometry of Polynomials seminar, 2019
- London School of Economics, Combinatorics seminar, 2017
- Massachusetts Institute of Technology, Combinatorics seminar, 2014, 2015, 2016
- Georgia Institute of Technology, Combinatorics seminar, 2015
- Cornell University, Probability seminar, 2015