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Employment

- Leverhulme Early Career Fellow, Mathematics Institute, *University of Warwick* Sep 2016 - Present
- Postdoctoral Research Fellow, Mathematics Institute, *University of Warwick* Feb 2016 - Aug 2016

Grant

- Marie Curie Individual Fellowship 2019 - 2021
- Leverhulme Early Career Fellowship 2016 - 2019

Education

- Ph.D., Mathematics 2010 - 2015
University of Illinois at Urbana-Champaign, Urbana, IL
Advisor: Professor József Balogh
- Visiting student Jan 2014 - Aug 2014
University of Szeged, Hungary
- M.S., Applied Mathematics 2008 - 2010
Illinois Institute of Technology, Chicago, IL
- B.S., Mathematics 2004 - 2007
University of Shanghai for Science and Technology, Shanghai, China

Research Interests

Extremal combinatorics, Graph theory, Ramsey theory, Random graphs.

Publications

1. Polynomial Schur's theorem
H. Liu, P. Pach, Cs. Sándor, *submitted*, 21 pages.
2. On the rational Turán exponents conjecture
D. Kang, J. Kim, H. Liu, *submitted*, 18 pages.
3. The number of multiplicative Sidon sets of integers
H. Liu, P. Pach, *submitted*, 20 pages.
4. Tree decompositions of graphs without large bipartite holes
J. Kim, Y. Kim, H. Liu, *submitted*, 15 pages.
5. A degree sequence Komlós theorem
J. Hyde, H. Liu, A. Treglown, *submitted*, 19 pages.
6. The number of maximum primitive sets of integers
H. Liu, P. Pach, R. Palincza, *submitted*, 11 pages.
7. Two conjectures in Ramsey-Turán theory
J. Kim, Y. Kim, H. Liu, *submitted*, 22 pages.
8. The exact minimum number of triangles in graphs of given order and size
H. Liu, O. Pikhurko, K. Staden, *submitted*, 99 pages.
9. On the maximum number of integer colourings with forbidden monochromatic sums
H. Liu, M. Sharifzadeh, K. Staden, *submitted*, 27 pages.
10. Stability and exact Turán numbers for matroids

- H. Liu, S. Luo, P. Nelson, K. Nomoto, *submitted*, 12 pages.
11. Structure and supersaturation for intersecting families
J. Balogh, S. Das, H. Liu, M. Sharifzadeh, T. Tran, *submitted*, 28 pages.
 12. Edges not in any monochromatic copy of a fixed graph
H. Liu, O. Pikhurko, M. Sharifzadeh,
Journal of Combinatorial Theory Series B, to appear, 24 pages.
 13. Sharp bound on the number of maximal sum-free subsets of integers
J. Balogh, H. Liu, M. Sharifzadeh, A. Treglown, *Journal of the European Mathematical Society*, 20 (8), (2018), 1885–1911.
 14. Rainbow spanning trees in properly coloured complete graphs
J. Balogh, H. Liu, R. Montgomery, *Discrete Applied Mathematics*, 247, (2018), 97–101.
 15. Proof of Komlós’s conjecture on Hamiltonian subsets
J. Kim, H. Liu, M. Sharifzadeh, K. Staden,
Proceedings of the London Mathematical Society, 115 (5), (2017), 974–1013.
 16. A proof of Mader’s conjecture on large clique subdivisions in C_4 -free graphs
H. Liu, R. Montgomery,
Journal of the London Mathematical Society, 95 (1), (2017), 203–222.
 17. The number of subsets of integers with no k -term arithmetic progression
J. Balogh, H. Liu, M. Sharifzadeh
International Mathematics Research Notices, 20, (2017), 6168–6186.
 18. Local conditions for exponentially many subdivisions
H. Liu, M. Sharifzadeh, K. Staden,
Combinatorics, Probability and Computing, 26 (3), (2017), 423–430.
 19. On two problems in Ramsey-Turán theory
J. Balogh, H. Liu, M. Sharifzadeh,
SIAM Journal on Discrete Mathematics, 31 (3), (2017), 1848–1866.
 20. The typical structure of graphs with no large cliques
J. Balogh, N. Bushaw, M. Collares Neto, H. Liu, R. Morris, M. Sharifzadeh.
Combinatorica, 37 (4), (2017), 617–632.
 21. Densities in large permutations and parameter testing
R. Glebov, C. Hoppen, T. Klímašová, Y. Kohayakawa, Král’, H. Liu
European Journal of Combinatorics, 60, (2017), 89–99.
 22. The number of maximal sum-free subsets of integers
J. Balogh, H. Liu, M. Sharifzadeh, A. Treglown
Proceedings of the American Mathematical Society, 143, (2015), 4713–4721.
 23. The typical structure of maximal triangle-free graphs
J. Balogh, H. Liu, S. Petříčková, M. Sharifzadeh.
Forum of Mathematics, Sigma, 3, (2015), 19 pages.
 24. Subdivisions of a large clique in C_6 -free graphs
J. Balogh, H. Liu, M. Sharifzadeh
Journal of Combinatorial Theory Series B, 112, (2015), 18–35.
 25. Intersecting families of discrete structures are typically trivial
J. Balogh, S. Das, M. Delcourt, H. Liu, M. Sharifzadeh
Journal of Combinatorial Theory Series A, 132, (2015), 224–245.
 26. On the number of K_4 -saturating edges
J. Balogh, H. Liu
Journal of Combinatorial Theory Series B, 109, (2014), 250–257.
 27. Multicolor Ramsey numbers for triple systems
M. Axenovich, A. Gyárfás, H. Liu, D. Mubayi
Discrete Mathematics, 322, (2014) 69–77.
 28. Upper bounds on the size of 4- and 6-cycle-free subgraphs of the hypercube

J. Balogh, P. Hu, B. Lidický, H. Liu
European Journal of Combinatorics, 35, (2014), 75–85.

29. On the Turán number of forests
 B. Lidický, H. Liu, C. Palmer
Electronic Journal of Combinatorics, Vol 20, Issue 2, (2013), paper 62.
30. The biased odd cycle game
 A. Ferber, R. Glebov, M. Krivelevich, H. Liu, C. Palmer, T. Valla, M. Vizer
Electronic Journal of Combinatorics, Vol 20, Issue 2, (2013), paper 9.
31. Extremal graphs for blow-ups of cycles and trees
 H. Liu
Electronic Journal of Combinatorics, Vol 20, Issue 1, (2013), paper 65.
32. Dominating sets in triangulations on surfaces
 H. Liu and M. Pelsmajer
Ars Mathematica Contemporanea, Vol 4, No 1, (2011), 177–204.

Conference proceedings

1. The minimum number of triangles in graphs of given order and size
 H. Liu, O. Pikhurko, K. Staden
Eurocomb 2017, Vienna, Austria.
2. Proof of Komlós’s conjecture on Hamiltonian subsets
 J. Kim, H. Liu, M. Sharifzadeh, K. Staden
Eurocomb 2017, Vienna, Austria.
3. Sharp bound on the number of maximal sum-free subsets of integers
 J. Balogh, H. Liu, M. Sharifzadeh, A. Treglown
Eurocomb 2015, Bergen, Norway.

Invited talks

- Combinatorics Seminar, University of Birmingham Oct 2018
- Combinatorics Seminar, Nankai University, China Sep 2018
- Combinatorics Seminar, Zhejiang Normal University, China Sep 2018
- Combinatorics Seminar, KAIST, South Korea Sep 2018
- Summer Course, Shandong University China Jul 2018
- Combinatorics Seminar, Fuzhou University, China Jul 2018
- Combinatorics Seminar, KAIST, South Korea Apr 2018
- Combinatorics Seminar, Duksung Women’s University, South Korea Apr 2018
- Combinatorics Seminar, Incheon National University, South Korea Apr 2018
- Combinatorics Seminar, Ajou University, South Korea Apr 2018
- Combinatorics Seminar, Shandong University China Mar 2018
- International Workshop on Graph Theory, Ewha Womans University, South Korea January 2018
- Combinatorics Seminar, KAIST, South Korea December 2017
- Combinatorics Seminar, Fuzhou University, Fuzhou, China December 2017
- Combinatorics Seminar, Koc University, Istanbul December 2017
- Extremal Combinatorics Conference, University of Warwick September 2017
- Combinatorics Seminar, Freie Universität Berlin April 2017
- Berlin-Poznań seminar on Discrete Mathematics, Hamburg April 2017
- Combinatorics Seminar, University of Warwick March 2017
- Combinatorics Seminar, Fuzhou University, China January 2017
- Combinatorics Seminar, Korea Institute for Advanced Study December 2016

- Combinatorics Seminar, University of Science and Technology of China December 2016
- Combinatorics Seminar, Sharif University of Technology, Tehran September 2016
- Combinatorics Seminar, Institute for Research in Fundamental Sciences, Isfahan September 2016
- Bristol-Oxford Additive Combinatorics meeting, University of Oxford July 2016
- Combinatorics Seminar, Institute for Research in Fundamental Sciences, Tehran June 2016
- Combinatorics Seminar, Czech Academy of Sciences, Prague April 2016
- British Mathematical Colloquium, University of Bristol March 2016
- Combinatorics Seminar, University of Warwick February 2016
- AMS meeting, Loyola University Chicago October 2015
- Combinatorics Seminar, University of Birmingham July 2015
- AMS meeting, University of Nevada April 2015
- Combinatorics Seminar, Iowa State University March 2015
- AMS meeting, Michigan State University March 2015
- Combinatorics Seminar, University of Szeged, Hungary July 2014
- Combinatorics Seminar, ETH, Switzerland June 2014
- SZTE-Novi Sad workshop, Szeged, Hungary March 2014
- Combinatorics Seminar, University of Szeged, Hungary February 2014
- AMS meeting, University of Louisville, Kentucky October 2013
- Combinatorics Seminar, University of Illinois at Urbana Champaign August 2013
- Combinatorics Seminar, University of Illinois at Urbana Champaign October 2012

Contributed talks

- Random Structure and Algorithm, Pittsburgh July 2015
- SUMMIT 240, Budapest, Hungary July 2014
- Midwest Graph Theory Conference, Iowa September 2012
- Cumberland Conference, Johnson city, TN May 2012
- Graduate Student Combinatorics Conference, UIUC April 2012
- Graduate Student Combinatorics Conference, PennState April 2011
- Midwest Graph Theory Conference, Detroit April 2010

Fellowships & Awards

- University fellowship: Spring 2015
University of Illinois at Urbana-Champaign, Urbana, IL
- Research Experience for Graduate Students fellowships: Summer 2010, Summer 2011
University of Illinois at Urbana-Champaign, Urbana, IL
- F.R. "Buck" McMorris Summer Stipend Summer 2009
Illinois Institute of Technology, IL

Teaching Experience

At the University of Illinois at Urbana-Champaign

- Teaching Assistant Calculus I (Math 220) Fall 2013, Fall 2010
- Teaching Assistant Calculus III (Math 241) Summer 2013*, Fall 2011*
- Teaching Assistant Calculus for Business (Math 234) Spring 2012*, Spring 2011*

* Named to the List of Teachers Ranked as Excellent