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## Employment

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- Assistant Professor, *University of Warwick* Sep 2019 - Present
- UKRI Future Leaders Fellow, *University of Warwick* May 2019 - Present
- Leverhulme Early Career Fellow, *University of Warwick* Sep 2016 - Apr 2019
- Postdoctoral Research Fellow, *University of Warwick* Feb 2016 - Aug 2016

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## Grant

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- UKRI Future Leaders Fellowship 2019 - 2026
- Leverhulme Early Career Fellowship 2016 - 2019

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## Education

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- Ph.D., Mathematics Aug 2010 - Dec 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*

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## Research Interests

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Extremal combinatorics, Graph theory, Ramsey theory, Random graphs and combinatorial number theory.

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## Publications

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- (40) Stability from graph symmetrisation arguments with applications to inducibility  
H. Liu, O. Pikhurko, M. Sharifzadeh, K. Staden,  
*preprint*, 41 pages.
- (39) Generalised Bollobás-Erdős graphs with all rational densities  
H. Liu, C. Reiher, M. Sharifzadeh, K. Staden,  
*preprint*, 22 pages.
- (38) A solution to Erdős and Hajnal's odd cycle problem  
H. Liu, R. Montgomery,  
*submitted*, 42 pages.
- (37) Clique immersion in graphs without fixed bipartite graph ,  
H. Liu, G. Wang, D. Yang,  
*submitted*, 12 pages.
- (36) Extremal density for sparse minors and subdivisions  
J. Haslegrave, J. Kim, H. Liu,  
*submitted*, 33 pages.
- (35) On the rational Turán exponents conjecture  
D. Kang, J. Kim, H. Liu,  
*submitted*, 18 pages.

- (34) Polynomial Schur's theorem  
H. Liu, P. Pach, Cs. Sándor,  
*submitted*, 21 pages.
- (33) On the maximum number of integer colourings with forbidden monochromatic sums  
H. Liu, M. Sharifzadeh, K. Staden,  
*submitted*, 27 pages.
- (32) The number of maximum primitive sets of integers  
H. Liu, P. Pach, R. Palincza,  
*Combinatorics, Probability and Computing*, to appear, 11 pages.
- (31) Asymptotic structure for the clique density theorem  
J. Kim, H. Liu, O. Pikhurko, M. Sharifzadeh,  
*Discrete Analysis*, to appear, 26 pages.
- (30) Groups with few maximal sum-free sets  
H. Liu, M. Sharifzadeh,  
*Journal of Combinatorial Theory, Series A*, 177, (2021), 105333, 18 pages.
- (29) The exact minimum number of triangles in graphs of given order and size  
H. Liu, O. Pikhurko, K. Staden,  
*Forum of Mathematics, Pi*, 8, E8, (2020), 144 pages.
- (28) Tree decompositions of graphs without large bipartite holes  
J. Kim, Y. Kim, H. Liu,  
*Random Structures and Algorithms*, 57 (1), (2020), 150–168.
- (27) Stability and exact Turán numbers for matroids  
H. Liu, S. Luo, P. Nelson, K. Nomoto,  
*Journal of Combinatorial Theory, Series B*, 143, (2020), 29–41.
- (26) The number of multiplicative Sidon sets of integers  
H. Liu, P. Pach,  
*Journal of Combinatorial Theory Series A*, 165, (2019), 152–175
- (25) Edges not in any monochromatic copy of a fixed graph  
H. Liu, O. Pikhurko, M. Sharifzadeh,  
*Journal of Combinatorial Theory Series B*, 135, (2019), 16–43.
- (24) Bivariate fluctuations for the number of arithmetic progressions in random sets  
Y. Barhoumi-Andréani, C. Koch, H. Liu,  
*Electronic Journal of Probability*, 24 (2019), paper 145, 32 pp.
- (23) Two conjectures in Ramsey-Turán theory  
J. Kim, Y. Kim, H. Liu,  
*SIAM Journal on Discrete Mathematics*, 33 (1), (2019), 564–586.
- (22) A degree sequence Komlós theorem  
J. Hyde, H. Liu, A. Treglown,  
*SIAM Journal on Discrete Mathematics*, 33 (4), (2019), 2041–2061.
- (21) Structure and supersaturation for intersecting families  
J. Balogh, S. Das, H. Liu, M. Sharifzadeh, T. Tran,  
*Electronic Journal of Combinatorics*, , 26 (2), (2019), P2.34, 38 pages.
- (20) 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.
- (19) Rainbow spanning trees in properly coloured complete graphs  
J. Balogh, H. Liu, R. Montgomery,  
*Discrete Applied Mathematics*, 247, (2018), 97–101.
- (18) 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.
- (17) 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.
- (16) 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.
- (15) Local conditions for exponentially many subdivisions  
 H. Liu, M. Sharifzadeh, K. Staden,  
*Combinatorics, Probability and Computing*, 26 (3), (2017), 423–430.
- (14) On two problems in Ramsey-Turán theory  
 J. Balogh, H. Liu, M. Sharifzadeh,  
*SIAM Journal on Discrete Mathematics*, 31 (3), (2017), 1848–1866.
- (13) 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.
- (12) Densities in large permutations and parameter testing  
 R. Glebov, C. Hoppen, T. Klímošová, Y. Kohayakawa, Král', H. Liu  
*European Journal of Combinatorics*, 60, (2017), 89–99.
- (11) 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.
- (10) The typical structure of maximal triangle-free graphs  
 J. Balogh, H. Liu, S. Petříčková, M. Sharifzadeh.  
*Forum of Mathematics, Sigma*, 3, (2015), 19 pages.
- (9) 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.
- (8) 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.
- (7) On the number of  $K_4$ -saturating edges  
 J. Balogh, H. Liu  
*Journal of Combinatorial Theory Series B*, 109, (2014), 250–257.
- (6) Multicolor Ramsey numbers for triple systems  
 M. Axenovich, A. Gyárfás, H. Liu, D. Mubayi  
*Discrete Mathematics*, 322, (2014) 69–77.
- (5) 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.
- (4) On the Turán number of forests  
 B. Lidický, H. Liu, C. Palmer  
*Electronic Journal of Combinatorics*, Vol 20, Issue 2, (2013), paper 62.
- (3) 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.
- (2) Extremal graphs for blow-ups of cycles and trees  
 H. Liu  
*Electronic Journal of Combinatorics*, Vol 20, Issue 1, (2013), paper 65.
- (1) Dominating sets in triangulations on surfaces  
 H. Liu and M. Pelsmayer  
*Ars Mathematica Contemporanea*, Vol 4, No 1, (2011), 177–204.

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## Conference proceedings

- (3) 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.

- (1) Sharp bound on the number of maximal sum-free subsets of integers  
J. Balogh, H. Liu, M. Sharifzadeh, A. Treglown  
*Eurocomb 2015*, Bergen, Norway.