Xizhi Liu

Mathematics Institute
Zeeman Building
University of Warwick
Coventry UK CV4 7AL
Tel: +44 (0)24 761 50903
E-mail: xizhi.liu@warwick.ac.uk

Education

- 2018.08–2022.05: Ph.D. in Mathematics, University of Illinois at Chicago (UIC).
- 2014.08–2018.05: B.S. in Mathematics and Applied Mathematics, University of Science and Technology of China (USTC).

Fields of Interest

- Extremal Combinatorics (extremal graph/hypergraph/set theory) and Theoretical Computer Science.

Employment History

- 2022.04–2026.04: Research Fellow, University of Warwick

Teaching

- 2020 Spring, Math 165, Calculus for Business, Teaching Assistant, UIC.
- 2019 Fall, Math 110, College Algebra, Teaching Assistant, UIC.
- 2019 Spring, Math 310, Applied Linear Algebra, Teaching Assistant, UIC.
- 2018 Fall, Math 310, Applied Linear Algebra, Teaching Assistant, UIC.

Awards/Fellowships/Grants

- 2021–2022: Dean's Scholar Fellowship, UIC.

Talks

- 01/2019: Seminar, School of Mathematical Sciences, University of Science and Technology, Hefei, China.
- 06/2019: Seminar, School of Mathematical Sciences, University of Science and Technology, Hefei, China.
- 07/2020: Seminar, School of Mathematical Sciences, East China Normal University, Shanghai, China, online Zoom.

- 08/2020: Combinatorics Literature Seminar at UIUC (University of Illinois Urbana-Champaign), online Zoom.
- 10/2020: UIC (University of Illinois at Chicago) Graduate Combinatorics Seminar, online Zoom.
- 02/2021: Seminar, School of Mathematical Sciences, Shangdong University, Jinan, China, online Zoom.
- 03/2021: SCMS (Shanghai Center for Mathematical Sciences) Combinatorics Seminar, Shanghai, China, online Zoom.
- 05/2021: EPC (Extremal and Probabilistic Combinatorics) Webinar, online Zoom.
- 09/2021: Georgia Tech Graph Theory Seminar, Atlanta, US.
- 10/2021: Seminar, Center for Discrete Mathematics and Theoretical Computer Science, Fuzhou University, Fujian, China.
- 01/2022: Seminar, School of Mathematical Sciences, Shangdong University, Jinan, China.
- 03/2022: Seminar, Center for Discrete Mathematics and Theoretical Computer Science, Fuzhou University, Fujian, China.
- 04/2022: Warwick Combinatorics seminar, University of Warwick, Coventry, UK.
- 06/2022: IBS Discrete Math seminar, Korea, online Zoom.
- 07/2022: The Second Armenian Workshop On Graphs, Combinatorics, Probability, and their application to machine learning.
- 07/2022: Seminar, Data Science Institute, Shangdong University, Jinan, China, online Zoom.
- 08/2022: Extremal Combinatorics and Geometry workshop, Banff, Canada, online Zoom.

Conferences/Workshops

- *Atlanta Lecture Series in Combinatorics and Graph Theory XXIII*, March 30-31, 2019, Georgia Institure of Technology.
  http://people.math.gatech.edu/ mwigal3/ALSXXIII.html
- *6th Lake Michigan Workshop on Combinatorics and Graph Theory*, April 6-7, 2019, Western Michigan University.
  http://homepages.wmich.edu/ zyb1431/workshop2019/
- *Birmingham-Warwick One-Day Combinatorics Meeting*, July 14, 2022, University of Warwick, UK.
  https://warwick.ac.uk/fac/sci/maths/research/events/events2021-22/bhamwarwickcombinatorics/
- *The Second Armenian Workshop On Graphs, Combinatorics, Probability, and their application to machine learning*, July 3-9, 2022, Yenokavan, Armenia.
  https://perouz.github.io/gcp2022/
- *Extremal Combinatorics and Geometry* (22w5009), Aug. 14-19, 2022, Banff, Canada.
  http://www.birs.ca/events/2022/5-day-workshops/22w5009

Publications

Submitted

- Cancellative hypergraphs and Steiner triple systems, (29 pages), preprint available at http://arxiv.org/abs/1912.11917.
- Stability theorems for some Kruskal–Katona type results, (with S. Mukherjee) (20 pages), preprint available at http://arxiv.org/abs/2006.04848.
- Hypergraphs with many extremal configurations, (with D. Mubayi and C. Reiher) (32 pages), preprint available at https://arxiv.org/abs/2102.02103.
- Hypergraphs with infinitely many extremal constructions, (with J. Hou, H. Li, D. Mubayi, and Y. Zhang) (30 pages), preprint available at https://arxiv.org/abs/2206.03948.
- Hypergraph Turán densities can have arbitrarily large algebraic degree, (with O. Pikhurko) (9 pages), preprint available at https://arxiv.org/abs/2207.05576.
- Turán problems in pseudorandom graphs, (with D. Mubayi) (13 pages), preprint available at https://arxiv.org/abs/2209.12103.

Accepted

- d-cluster-free sets with a given matching number, (19 pages), *European J. Combin., 82:103000, 2019.*
- Structural results for conditionally intersecting families and some applications, (13 pages), *Electron. J. Combin., 33(2), 2020.*
- New short proofs to some stability theorems, (8 pages), *European J. Combin., 96:103350, 2021*
- The feasible region of hypergraphs, (with D. Mubayi), *J. Combin. Theory, Ser. B, 148:23 - 59, 2021.*
- Tight bounds for Katona's shadow intersection theorem, (with D. Mubayi) (17 pages), *European J. Combin., 97:103391, 2021.*
- Independent sets in hypergraphs omitting an intersection, (with T. Bohman and D. Mubayi), *Random Structures Algorithms 61 (2022), no. 3, 493–519.*
- A hypergraph Turán problem with no stability, (with D. Mubayi), *Combinatorica 42 (2022), no. 3, 433–462.*
- Sparse halves in K_4-free graphs, (with J. Ma) (19 pages), *J. Graph Theory 99 (2022), no. 1, 5-25.*
- On a generalized Erdős-Rademacher problem, (with D. Mubayi), *J. Graph Theory 100 (2022), no. 1, 101-126.*
- On explicit constructions of designs, (with D. Mubayi), *Electron. J. Combin. 29 (2022), no. 1, Paper No. 1.53, 11 pp.*
- Hypergraphs without non-trivial intersecting subgraphs, Combinatorics, Probability and Computing (2022), 1-16.
- Tight query complexity bounds for learning graph partitions, (with S. Mukherjee) (14 pages), *35th Annual Conference on Learning Theory* (COLT 2022).

- A unified approach to hypergraph stability, (with D. Mubayi and C. Reiher), *J. Combin. Theory Ser. B 158 (2023), 36–62.*.
- The feasible region of induced graphs, (with D. Mubayi and C. Reiher), *J. Combin. Theory Ser. B 158 (2023), 105–135.*