

Ruth Luo

ruthluo2@illinois.edu ; math.uiuc.edu/~ruthluo2
Department of Mathematics
University of Illinois at Urbana-Champaign

Education

Current:

Ph.D. in Mathematics - University of Illinois at Urbana-Champaign (2014-present)

- Advisor: Alexandr Kostochka
- Expected graduation: Spring 2019

Past:

M.S. in Mathematics - University of Illinois at Urbana-Champaign (2014-2016)

B.S. in Mathematical Sciences - Carnegie Mellon University (2010-2014)

- Phi Beta Kappa
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Research Interests

Extremal graph theory and hypergraph theory, specifically extremal problems for cycles, probabilistic combinatorics, discrete geometry, Ramsey theory

Publications and Preprints

- *On 2-connected hypergraphs with no long cycles.* (with Zoltán Füredi and Alexandr Kostochka) submitted.
- *Avoiding long Berge cycles II, exact bounds for all n .* (with Zoltán Füredi and Alexandr Kostochka) submitted.
- *On r -uniform hypergraphs with circumference less than r .* (with Alexandr Kostochka) submitted.
- *Avoiding long Berge cycles.* (with Zoltán Füredi and Alexandr Kostochka) to appear in Journal of Combinatorial Theory, Series B.
- *A variation of a theorem of Posa.* (with Zoltán Füredi and Alexandr Kostochka) to appear in Discrete Mathematics.
- *Stability in the Erdos--Gallai Theorem on cycles and paths, II.* (with Zoltan Furedi, Alexandr Kostochka, and Jacques Verstraete) Discrete Mathematics, Volume 341, Issue 5, pp. 1253-1263, 2018.

- *Extensions of a theorem of Erdos on nonhamiltonian graphs.* (with Zoltan Furedi and Alexandr Kostochka) *Journal of Graph Theory*, Volume 89, Issue 2, pp. 176-193, 2018.
 - *The maximum number of cliques in graphs without long cycles.* *Journal of Combinatorial Theory, Series B*, Volume 128, pp. 219-226, 2018.
 - *A stability version for a theorem of Erdos on nonhamiltonian graphs.* (with Zoltan Furedi and Alexandr Kostochka) *Discrete Mathematics*, Volume 340, Issue 11, pp. 2688-2690, 2017.
 - *A forest building process on simple graphs.*(with Zhanar Berikkyzy, Steve Butler, Jay Cummings, Kristin Heysse, Paul Horn, and Brent Moran) *Discrete Mathematics*, Volume 341, Issue 2, pp. 497-507, 2018.
 - *Signed quasi-clique merger: a new clustering method for signed networks with positive and negative edges.* (with Xingqin Qi, Edgar Fuller, Rong Luo, and Cun-Quan Zhang) *International Journal of Pattern Recognition and Artificial Intelligence*, Volume 30, Issue 3, 2016.
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Awards and Fellowships

- NSF Mathematical Sciences Postdoctoral Research Fellowship (2019-2022)
 - Philippe Tondeur Dissertation Prize, UIUC (2019)
 - James D. Hogan Memorial Scholarship, UIUC (2018-2019)
 - Mathematics Department TA Instructional Award, UIUC (2018)
 - Senior Leadership Recognition Award, CMU (2014)
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Invited Talks

- AWM Graduate Colloquium, Urbana, IL (March 2019)
- Joint Mathematics Meetings, AMS Special Session on Advances by Early Career Women in Discrete Mathematics, Baltimore, MD (January 2019)
- University of Illinois at Chicago seminar, Chicago, IL (November 2018)
- Rose Hulman Institute of Technology Seminar, Terre Haute, IN (October 2018)
- SIAM minisymposium on Modern methods in Graph Theory, Denver, CO (June 2018)
- AMS Special Session on Extremal graph theory and quantum walks on graphs, Boston, MA (April 2018)
- William and Mary Mathematics Colloquium, Williamsburg, VA (March 2018)
- AMS Special Session on Structural and Chromatic Graph Theory, Buffalo, NY (September 2017)

- AMS Special Session on Graph Theory, Charleston, SC (March 2017)
 - IIT Applied Math Seminar, Chicago, IL (February 2017)
 - AMS Special Session on Graphs, Hypergraphs, and Set Systems, Raleigh, NC (November 2016)
 - UIUC Graph Theory Seminar, Urbana, IL (September 2016, February 2017, April 2018, September 2018, February 2019)
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Contributed Talks

- Mostly Manitoba, Michigan and Minnesota Combinatorics Graduate Students Workshop 2018, Ames, IA (September 2018)
 - Structure in Graphs and Matroids (SiGMA), Waterloo, ON (July 2017)
 - 30th Midwest Conference on Combinatorics and Combinatorial Computing (MCCCC), Normal, IL (October 2016)
 - Sao Paulo School of Advanced Science on Algorithms, Combinatorics and Optimization (poster presentation), Sao Paulo, Brazil (July 2016)
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Teaching Experience

At University of Illinois at Urbana-Champaign:

- Fall 2018 - Instructor for 1 section of Math 181: A Mathematical World **
- Spring 2018 - TA for 5 sections of Math 415: Applied Linear Algebra **
- Fall 2017 - TA for 5 sections of Math 415: Applied Linear Algebra; Head TA **
- Spring 2017 - TA for 5 sections of Math 415: Applied Linear Algebra; Head TA **
- Fall 2016 - TA for 5 sections of Math 415: Applied Linear Algebra **
- Spring 2016 - TA for 4 sections of Math 415: Applied Linear Algebra **
- Fall 2015 - TA for 2 sections of Math 231: Calculus 2 **
- Spring 2015 - TA for 4 sections of Math 415: Applied Linear Algebra **
- Fall 2014 - TA for 2 sections of Math 231: Calculus 2 *

* = On the list of Teachers Ranked as Excellent by their students

** = * + outstanding rating

At Carnegie Mellon University:

- Spring 2014 - TA for 1 section of 21-241: Matrices and Linear Transformations
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Mentoring Experience

- Fall 2017 - Graduate mentor for undergraduate research project "The Four Color Theorem: Archival Documentation and Outreach" under Jeremy Tyson (through the Illinois Geometry Lab)
 - Spring 2016 - Fall 2016 - Graduate mentor for undergraduate research project "Interactive Learning Tools for Linear Algebra" under Cary Malkiewich and Jenya Sapir (through the Illinois Geometry Lab in Spring 2016)
 - Spring 2015 - Graduate mentor for undergraduate research project "Collaboration graphs and cluster analysis" under Steven Bradlow (through the Illinois Geometry Lab)
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Selected Conferences and Workshops Attended

- Tsinghua Sanya International Mathematics Forum (TSIMF) Workshop on Structural Graph Theory and Graph Colorings, Sanya, Hainan, China (April 2019) (upcoming)
 - Joint Mathematics Meetings, Baltimore, MD (January 2019)
 - SIAM Conference on Discrete Mathematics (DM18), Denver, CO (June 2018)
 - Structure in Graphs and Matroids (SiGMA), Waterloo, ON (July 2017)
 - Fields Institute Summer School on Random Graphs and Probabilistic Methods, Toronto, CA (June 2017)
 - Sao Paulo School of Advanced Science on Algorithms, Combinatorics and Optimization, Sao Paulo, Brazil (July 2016)
 - Random Structures and Algorithms, Pittsburgh, PA (July 2015)
 - Graduate Research Workshop in Combinatorics, Ames, IA (June 2015)
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Refereeing

- Combinatorica (Springer)
- Combinatorics, Probability and Computing (Cambridge Core)
- Discrete Mathematics (Elsevier)
- Discussiones Mathematicae Graph Theory (University of Zielona Gora)
- SIAM Journal on Discrete Mathematics (SIDMA)