

Yiwei “Wayne” Ge

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EMPLOYMENT

Auburn University

Postdoctoral Fellow

Mentor: Zach Walsh

August. 2026 — present

EDUCATION

Louisiana State University

Ph.D. in Mathematics

Dissertation: Extremal Connectivity in Graphs and Matroids

Advisor: James Oxley

January. 2021 — May. 2026

Wake Forest University

Bachelor of Science in Mathematics

Thesis: Permutation Difference for Petal Knots and an Algorithm for Composite Petal Knots

Thesis advisor: Jason Parsley

September. 2015 — December. 2019

RESEARCH INTERESTS

Structural and extremal results in graphs and matroids; Ramsey-theoretic results in graphs and matroids; connectivity theory.

PAPERS

Preprints

1. (with A. Bickle, J. D. Douthitt, and J. Singh) **Degeneracy: From Graphs to Matroids**, *Submitted*, 18pp. (arXiv:2608.09655)
2. **The Kővari–Sós–Turán theorem for $\text{GF}(q)$ -representable matroids**, *Submitted*, 11pp. (arXiv:2607.15226)
3. **Unavoidable flats in connected regular matroids**, *Submitted*, 32pp. (arXiv:2606.16064)
4. (with J. Oxley and J. Singh) **The connected binary matroids with a pair of elements in no non-spanning circuits**, *Submitted*, 8pp. (arXiv:2606.06852)
5. (with J. Oxley) **Super-minimally 3-connected matroids**, *Submitted*, 14pp. (arXiv:2603.11318)
6. (with S. Borgwardt, M. Carr, C. Chen, S.G. Hartke, Y. Huang, and A. Moon) **Reconstruction of C_4 -free graphs from closed neighborhoods and digital convexity**, *Submitted*, 12pp. (arXiv:2510.21195)
7. **Super-minimally 3-connected graphs**, *Submitted*, 31pp. (arXiv:2510.06392)
8. (with C. Chun, J. D. Douthitt, T. Huynh, M. E. Kroeker, and P. Nelson) **Rainbow triangles and the Erdős-Hajnal problem in projective geometries**, *Submitted*, 40pp. (arXiv:2505.13781)

Publications

1. (with J. Oxley) **Unavoidable cycle-contraction minors of large 2-connected graphs**, *SIAM J. Discrete Math.*, **40** (2026), 612–632 (arXiv:2503.20106)
2. (with X. Liu, and Z. Wang) **On the oriented diameter of near planar triangulations**, *Discrete Math.*, **348**(5) (2025), 114406, 7pp. (arXiv:2312.03258)
3. (with B. Appiah, P. Dani, C. Hudson, S. Jain, M. Lemoine, J. Murphy, J. Murray, A. Pandikkadan, K. Schreve, and H. Vo) **The algebraic structure of hyperbolic graph braid groups**, *Internat. J. Algebra Comput.*, **35** (2025), 329–342. (arXiv:2403.08623)

AWARDS

Bogdan Oporowski Prize, *Mathematics Department, LSU*

2025

Awarded to a final-year Ph.D. student in Mathematics who has made a significant research contribution through a paper or a series of papers submitted or accepted for publication.

Certificate of Teaching Excellence, *Mathematics Department, LSU*

Spring 2024

TEACHING EXPERIENCE

Graduate Teaching Assistant

Louisiana State University, Baton Rouge, LA, USA

Instructor of Record:

Math 1550 Differential and Integral Calculus

Fall 2023, Fall 2025

Math 1020/1021 Corequisite Support and College Algebra

Spring 2024, Fall 2024, Spring 2025

Math 2065 Elementary Differential Equations

Summer 2023

Math 1021 College Algebra

Fall 2022

Math 1552 Analytic Geometry and Calculus II

Summer 2022

PRESENTATIONS

Conference Talks

- (upcoming) AMS Southeastern Sectional Meeting (Kennesaw, GA) 2026
Topic: *The Kővari–Sós–Turán theorem for $\text{GF}(q)$ -representable matroids*
- AMS Southeastern Sectional Meeting (Clemson, SC) 2025
Topic: *Unavoidable cycle-contraction minors of large 2-connected graphs*
- CombinaTexas 2024 (College Station, TX) 2024
Topic: *Oriented diameter of near planar triangulations*

Seminar Talks

- LSU Combinatorics Seminar (Baton Rouge, LA) 2026
Topic: *Super-minimally 3-connected graphs*
- LSU Combinatorics Seminar (Baton Rouge, LA) 2025
Topic: *Unavoidable cycle-contraction minors of large 2-connected graphs*
- LSU Combinatorics Seminar (Baton Rouge, LA) 2024
Topic: *Reconstruction of C_4 -free graphs from closed neighborhoods*
- LSU Combinatorics Seminar (Baton Rouge, LA) 2024
Topic: *Oriented diameter of near planar triangulations*

WORKSHOPS

- The Graduate Research Workshop in Combinatorics (GRWC) (Milwaukee, WI) 2024
- The Workshop on (Mostly) Matroids (Daejeon, South Korea) 2024

SKILLS

- **Programming:** Python, Sage Math, MatLab, Mathematica, $\text{\LaTeX}$

SERVICES

- Referee, Graphs and Combinatorics
- Co-organizer, LSU Combinatorics Seminar (2025,2026)

- Mentor, the Directed Reading Program (2023)
Mentee: Johnathan Smith,
Topic: *Forbidden induced subgraphs and perfect graphs*

REFERENCES

Research

Prof. James Oxley

Boyd Professor, Mathematics Department, Louisiana State University, Baton Rouge, LA

E-mail: oxley@math.lsu.edu

Prof. Guoli Ding

Hubert Butts Professor, Mathematics Department, Louisiana State University, Baton Rouge, LA

E-mail: ding@math.lsu.edu

Prof. Zhiyu Wang

Assistant Professor, Mathematics Department, Louisiana State University, Baton Rouge, LA

E-mail: zhiyuw@lsu.edu

Teaching

Prof. James Oxley

Boyd Professor, Mathematics Department, Louisiana State University, Baton Rouge, LA

E-mail: oxley@math.lsu.edu

Dr. Julia Ledet

Distinguished Instructor, Mathematics Department, Louisiana State University, Baton Rouge, LA

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