

# Austin Mohr

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Note: Most items are hyperlinked

## Education

Ph.D. Mathematics, University of South Carolina at Columbia, 2013.

*Dissertation:* Applications of the Lopsided Lovász Local Lemma Regarding Hypergraphs

*Committee:* László Székely (advisor), Joshua Cooper, Linyuan Lu, George McNulty, Peter Nyikos, and Edsel Peña.

*Comprehensive Study*

Galois Theory and Lattice Theory (under George McNulty)

Graph Theory I and II (under Joshua Cooper)

General Topology I and II (under Peter Nyikos)

Honors: Presidential Doctoral Recruiting Fellowship, Outstanding Graduate Student Instructor, Dean's Dissertation Fellowship.

M.S. Mathematics, Southern Illinois University at Carbondale, 2008.

*Thesis:* Partitioning the Labeled Spanning Trees of a Graph into Isomorphism Classes

*Committee:* Thomas Porter (advisor), Norman Carver, and Lane Clark.

B.S. Mathematics, Southern Illinois University at Carbondale, 2007.

*Honors:* *Summa Cum Laude*, Outstanding Senior.

B.S. Computer Science, Southern Illinois University at Carbondale, 2007.

*Honors:* *Summa Cum Laude*, Outstanding Senior.

## Employment

Assistant Professor of Mathematics, Nebraska Wesleyan University, 2013 – Present.

Graduate Student Instructor, University of South Carolina, 2008 – 2012.

Instructor of Mathematics, North Carolina Governor's School East, Summer 2011.

Graduate Student Instructor, Southern Illinois University, 2007 – 2008.

## Teaching

### *Nebraska Wesleyan University*

College Algebra: Summer 2014, Spring 2015, Spring 2018.

Applied Calculus: Fall 2013, Spring 2014.

Calculus II: Fall 2013, Spring 2014, Spring 2015, Spring 2016, Spring 2017, Spring 2018.

Calculus III: Fall 2013, Fall 2014, Fall 2015, Fall 2016, Fall 2017.

Finite Mathematics: Fall 2014, Spring 2015, Fall 2015, Fall 2016, Fall 2017.

Introduction to Higher Mathematics: Spring 2018.

Computational Mathematical Problem Solving: Fall 2014, Fall 2016, Fall 2017.

Introduction to Combinatorics (Senior Seminar): Spring 2014, Spring 2015, Spring 2016, Spring 2017, Spring 2018.

Introduction to General Topology: Spring 2014, Spring 2015, Spring 2016.

Special Topics in Combinatorics: Spring 2017.

Special Topics in Graph Theory: Fall 2015.

### *University of South Carolina at Columbia*

Discrete Mathematics I: Summer 2012.

Finite Mathematics: Spring 2012.

Mathematics for Elementary Educators I: Spring 2010, Fall 2011.

Calculus I: Spring 2011.

Mathematics for Elementary Educators II: Fall 2010.

Precalculus: Fall 2009.

College Mathematics: Fall 2008, Summer 2009.

Intensive College Mathematics: Spring 2009.

### *North Carolina Governor's School East*

Graph Theory, Summer 2011.

### *Southern Illinois University at Carbondale*

College Algebra, Spring 2008.

Intermediate Algebra, Fall 2007.

## University Service

At-Large Representative for Faculty Development Committee, 2017 – Present.

Faculty Representative for Student Conduct Board, 2014 – Present.

Co-PI for Undergraduate Research and Career Planning on NSF S-STEM Scholarship Grant, Spring 2016 – Present.

New Faculty Mentor, Fall 2016.

Access NWU Mentor, Spring 2016.

Untenured Faculty Representative for Evaluation Committee, Spring 2016.

Fetzer Lecture Organizer, 2015, 2016.

Science Division Representative for CLAS Curriculum Committee, 2014 – 2015.

Curriculum Committee proposals for Finite Mathematics, Calculus II, and Calculus III, 2013.

## Mathematics Community Service

MAA MathFest Themed Contributed Paper Session Co-Organizer, *Mastery Grading*, Summer 2018.

MAA MathFest Minicourse Co-Organizer, *Beyond Traditional Grading Schemes: Mastery-Based Grading*, Fall 2017.

Preparing Future Faculty Mentor, Fall 2016, Fall 2017.

MAA MathFest Themed Contributed Paper Session Co-Organizer, *Formative Assessment Techniques for Undergraduate Math Courses*, Summer 2016.

## Journal Referee Service

*Problems, Resources, and Issues in Mathematics Undergraduate Studies*, 2017.

*Journal of Combinatorial Mathematics and Combinatorial Computing*, 2016.

*Rose-Hulman Undergraduate Math Journal*, 2015.

*The Electronic Journal of Combinatorics*, 2013, 2014, 2015.

*Discrete Mathematics* (with L.A. Székely), 2011, 2012.

*Combinatorics, Probability, and Computing* (with L.A. Székely), 2012.

*Discrete Applied Mathematics*, 2011.

*European Journal of Mathematics* (with L.A. Székely), 2010.

## Grant Support

Center for Undergraduate Research in Mathematics Undergraduate Research Mini-Grant, *Generalizations of Stirling Numbers of the Second Kind*, Fall 2018 - Spring 2019.

Nebraska Wesleyan University Professional Development Grant, *Travel Funds for Joint Mathematics Meeting*, Fall 2017.

Nebraska Wesleyan University Reassigned Time Grant, *Refining the Lopsided Lovász Local Lemma*, Spring 2017.

Nebraska Wesleyan University Development Grant, *Travel Funds for MAA MathFest*, Summer 2016.

Nebraska Experimental Program to Stimulate Competitive Research, *Spanning Subgraph Isomorphism Using Cut Vertices* (NSF EPS-1004094), Summer 2016.

Nebraska Wesleyan University Professional Development Grant, *Travel Funds for Southern Illinois University Mathematics Conference*, Spring 2016.

Nebraska Wesleyan University Reassigned Time Grant, *Undergraduate Research in General Topology*, Spring 2016.

Nebraska Wesleyan University Professional Development Grant, *Travel Funds for Joint Mathematics Meeting*, Fall 2015.

Nebraska Wesleyan University Student-Faculty Collaborative Research Grant, *Travel Funds for Joint Mathematics Meeting*, Fall 2015.

Nebraska Wesleyan University Archway Curricular Development Grant, *Speaking and Writing Instruction in Mathematics Senior Capstone*, Summer 2015.

Nebraska Wesleyan University Professional Development Grant, *Travel Funds for Midwest Conference in Combinatorics and Combinatorial Computing*, Fall 2014.

Nebraska Wesleyan University Provost's Strategic Development Grant, *Model-Based College Algebra Curriculum Design*, Summer 2014.

Nebraska Wesleyan University Professional Development Grant, *Travel Funds for AMS Section Meeting*, Spring 2014.

USC Graduate Student Travel Grant to 2013 Joint Mathematics Meetings, Fall 2012.

Travel support for AMS Sectional Meeting, Fall 2012.

Travel support for 8th Annual Graduate Student Combinatorics Conference, Spring 2012.

National Science Foundation, *Research Assistantship in Extremal and Probabilistic Combinatorics* (DMS-1000475 supported by László Székely), Summer 2011.

National Science Foundation, *Research Assistantship in Phylogenetics* (DMS-1000475 supported by László Székely), Summer 2010.

## Honors and Awards

- American Mathematical Society Mathematics Research Communities Fellow, Summer 2017.
- Mathematical Association of America Project NExT Fellow, 2014–2015.
- Preparing Future Faculty Credential, 2013.
- Dean’s Dissertation Fellowship, University of South Carolina at Columbia, 2012–2013.
- Outstanding Graduate Student Instructor, University of South Carolina at Columbia, 2012.
- Presidential Doctoral Recruiting Fellowship, University of South Carolina at Columbia, 2008–2011.
- NSF Graduate Research Fellowship Honorable Mention, 2007.
- Master’s Fellowship, Southern Illinois University at Carbondale, 2007–2008.
- Outstanding Senior in Computer Science, Southern Illinois University at Carbondale, 2007.
- Carl G. Townsend Memorial Scholarship in Mathematics, Southern Illinois University at Carbondale, 2005, 2006, 2007.
- Barry M. Goldwater Scholarship, 2006.
- Chancellor’s Scholarship, Southern Illinois University at Carbondale, 2003–2007.
- Dean’s List, Southern Illinois University at Carbondale, 2003–2008.

## Publications & Manuscripts

- Reducing the Search Space for SUBGRAPH ISOMORPHISM Using Matchings and Vertex Cuts (with A. Meier and T. Schuler), In Progress.
- Combinatorial Proof with the Lopsided Lovász Local Lemma, In Progress.
- Enumeration of Regular Uniform Hypergraphs by Girth (with L. Lu and L.A. Székely), In Progress.
- Analogies Between the Crossing Number and the Tangle Crossing Number (with many others), Submitted to Discrete Applied Mathematics.
- Mastery-Based Exams in Undergraduate Mathematics (with many others), Submitted to PRIMUS.
- Connected Balanced Subgraphs in Random Regular Multigraphs Under the Configuration Model (with L. Lu and L.A. Székely), *Journal of Combinatorial Mathematics and Combinatorial Computing* **86**, 2013.
- Applications of the Lopsided Lovász Local Lemma Regarding Hypergraphs, *Ph.D. dissertation, University of South Carolina*, 2013.
- Quest for Negative Dependency Graphs (with L. Lu and L.A. Székely), *Recent Advances in Harmonic Analysis and Applications* (in honor of Konstantin Oskolkov), Springer Proceedings in Mathematics & Statistics **25**, 2013.
- Negative Dependency Graphs in Spaces of Random Matchings, *Unpublished manuscript*, 2011.

Applications of Chromatic Polynomials Involving Stirling Numbers (with T.D. Porter), *Journal of Combinatorial Mathematics and Combinatorial Computing* **70**, 2009.

Partitioning the Labeled Spanning Trees of an Arbitrary Graph into Isomorphism Classes, *M.S. thesis, Southern Illinois University at Carbondale*, 2008.

Some Applications of Spanning Trees in  $K_{s,t}$  (with L.H. Clark and T.D. Porter), *Journal of Combinatorial Mathematics and Combinatorial Computing* **62**, 2007.

A Survey of Zero-Knowledge Proofs with Applications to Cryptography, *Unpublished manuscript*, 2007.

## Presentations

### *The Probabilistic Method*

Lincoln Memorial University Invited Address, Spring 2018.

Illinois-Missouri Regional Undergraduate Mathematics Conference Keynote Address, Fall 2017.

Doane College Symposium in Undergraduate Mathematics Keynote Address, Spring 2016.

Nebraska Wesleyan University Math Club Talk, Fall 2014.

MAA Nebraska-Southeast South Dakota Sectional Meeting, Spring 2014.

### *Using Mastery-Based Exams to Recast Failure and Battle Math Anxiety*

Project NExT Workshop, Fall 2016.

### *Mastery-Based Exams Are Self-Evidently Better Than Traditional Exams*

MAA MathFest, Fall 2016.

Nebraska - Southeast South Dakota MAA Section Meeting, Spring 2016.

Joint Mathematics Meetings, Spring 2016.

### *Introducing $\pi$ -Base: An Interactive Encyclopedia of Topological Spaces*

MAA MathFest, Fall 2015.

Joint Mathematics Meetings, Spring 2015.

### *Checking Hats with the Lopsided Lovász Local Lemma*

Southern Illinois University Mathematics Conference, Spring 2016.

Nebraska - Southeast South Dakota MAA Section Meeting, Spring 2015.

Joint Mathematics Meetings, Spring 2015.

University of Nebraska at Lincoln Discrete Mathematics Seminar, Fall 2014.

Midwest Conference on Combinatorics, Cryptography, and Computing, Fall 2014.

*Order from Chaos (Ramsey Theory)*

Nebraska Wesleyan University High School Student Mathematics Circle, Spring 2014.

Culler Middle School Mathematics Teachers Circle, Spring 2014.

University of Nebraska at Lincoln Discrete Mathematics Seminar, Spring 2014.

North Carolina Governor's School East, Summer 2013.

*Asymptotic Enumeration Using the Lopsided Lovász Local Lemma*

AMS Southeastern Spring Sectional Meeting, University of Knoxville, Spring 2014.

University of Nebraska at Lincoln Discrete Mathematics Seminar, Fall 2013.

*Quest for Negative Dependency Graphs*

Joint Mathematics Meetings, Spring 2013.

AMS Central Fall Sectional Meeting, University of Akron, Fall 2012.

University of South Carolina at Columbia, Spring 2012.

*Diamonds in the Rough (The Lopsided Lovász Local Lemma)*

Georgia Southern University Graduate Student Conference, Spring 2013.

Southern Illinois University at Carbondale Discrete Mathematics Seminar, Fall 2012.

8th Annual Graduate Student Combinatorics Conference, University of Illinois at Urbana-Champaign, Spring 2012.

University of South Carolina at Columbia Discrete Mathematics Seminar, Spring 2012.

*Beyond Infinity (The Uncountability of the Reals)*

North Carolina Governor's School East, Summer 2013.

North Carolina Governor's School East, Summer 2012.

North Carolina Governor's School East, Summer 2011.

University of South Carolina at Columbia Pi Mu Epsilon Talk, Spring 2011.

North Carolina Governor's School West, Summer 2010.

*Miscellaneous Talks*

*Major Event: Mathematics*, Nebraska Wesleyan University, Fall 2017.

*Major Event: Mathematics*, Nebraska Wesleyan University, Fall 2015.

*New Faculty Panel*, University of Nebraska at Lincoln Preparing Future Faculty Event, Summer 2014.

*Priestley's Representation Theorem*, University of South Carolina at Columbia General Topology Seminar, Spring 2010.

*Isomorphism Classes of Spanning Trees*, Southern Illinois University at Carbondale Discrete Mathematics Seminar, Spring 2007.

## Student Presentations and Honors

Carter Lyons

Barry Goldwater Scholarship, *Classification of Algebraically Defined Graphs by Girth*, Spring 2018.

IL-MO Regional Undergraduate Mathematics Conference, *Classification of Algebraically Defined Graphs by Girth*, Spring 2018.

Joint Mathematics Meetings Oral Presentation, *Classification of Algebraically Defined Graphs by Girth*, Spring 2018.

MAA Student Travel Grant for Joint Mathematics Meetings, Fall 2017

NSF Research Experience for Undergraduates (Algebraically Defined Graphs), LaFayette College, Summer 2017.

Mackenzie Maschka

Nebraska Conference for Undergraduate Women in Mathematics Poster Presentation, *Kirkman Packing Designs*, Spring 2018.

Joint Mathematics Meetings Poster Presentation, *Kirkman Packing Designs*, Spring 2018.

MAA Student Travel Grant for Joint Mathematics Meetings, Fall 2017.

Andrew Meier

Nebraska Wesleyan University Phi Kappa Phi Scholar Award, Spring 2017.

Nebraska Wesleyan University Outstanding Senior in Mathematics, Spring 2017.

Joint Mathematics Meetings, *Spanning Subgraph Isomorphism Using Cut Vertices*, Spring 2017.

National Science Foundation Graduate Research Fellowship Proposal, Spring 2017.

MAA MathFest, *Spanning Subgraph Isomorphism Using Cut Vertices*, Summer 2016.

Nebraska Experimental Program to Stimulate Competitive Research, *Spanning Subgraph Isomorphism Using Cut Vertices* (NSF EPS-1004094), Summer 2016.

Joint Mathematics Meetings Oral Presentation, *Classification of Spanning Trees by Isomorphism*, Spring 2016.

MAA Student Travel Grant for Joint Mathematics Meetings, Fall 2015.

Math Horizons Problem 322 Published Solution, Spring 2015.

Math Horizons Problem 308 Published Solution, Fall 2014.

Independent Research, *Enumeration of Nonisomorphic Trees*, Fall 2014.

Ann Marie Murray

Joint Mathematics Meetings Poster Session Presentation, *Palindromic  $n$ th Power Sums*, Spring 2016.

MAA Student Travel Grant for Joint Mathematics Meetings, Fall 2015.

Thomas Schuler

Joint Mathematics Meetings, *Spanning Subgraph Isomorphism Using Cut Vertices*, Spring 2017.

MAA MathFest, *Spanning Subgraph Isomorphism Using Cut Vertices*, Summer 2016.

MAA Student Travel Grant for MAA MathFest, Summer 2016.



Nebraska Experimental Program to Stimulate Competitive Research, *Spanning Subgraph Isomorphism Using Cut Vertices* (NSF EPS-1004094), Summer 2016.

Joint Mathematics Meetings Poster Session Presentation, *Subgraph Isomorphism: Spanning Trees in Graphs*, Spring 2016.

MAA Student Travel Grant for Joint Mathematics Meetings, Fall 2015.

Keenan Hawekotte

Barry M. Goldwater Scholarship Honorable Mention, *Bar Code Localization*, Fall 2013.

Leanne Hinrichs

Barry M. Goldwater Scholarship Research Proposal, *Three-Dimensional Bin Packing with Applications to Truck Loading*, Fall 2013.

Last updated: April 18, 2018  
<http://www.austinmohr.com/cv/>