John Engbers
Curriculum Vitae

Department of Mathematics, Statistics and Computer Science   Work: 414.288.6880
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EDUCATION

Ph.D. Mathematics, University of Notre Dame, May 2013
> Thesis Title: *Some problems involving H-colorings of graphs*
> Thesis Adviser: David Galvin

M.S. Mathematics, University of Tennessee, August 2008

B.S. Mathematics (Secondary Education), Calvin College, May 2006

ACADEMIC EMPLOYMENT

Department of Mathematics, Statistics and Computer Science, Marquette University
> Assistant Professor, 2013-present

PUBLICATIONS

19. "Extremal colorings and independent sets" (with A. Erey),
    Submitted

18. "Maximizing and minimizing the number of generalized colorings of trees" (with C. Stocker),
    Submitted

17. "The n-children problem" (with A. Hammett),
    to appear in *College Math. J.*

16. "Restricted Stirling and Lah numbers and their inverses" (with D. Galvin and C. Smyth),
    to appear in *J. Combin. Theory Ser. A*

15. "Combinatorial proofs of identities of Alzer and Prodinger and some generalizations" (with C. Stocker),
    Integers **18** (2018), #A49.

14. "On comparability of bigrassmannian permutations" (with A. Hammett),
    Australas. J. Combin. **71(1)** (2018), 121–152.

13. "Merging peg solitaire on graphs" (with R. Weber[1]),
    Involve **11-1** (2018), 53–66.

12. "Maximizing H-colorings of connected graphs with fixed minimum degree,"
    J. Graph Theory **85** (2017), 780–787.

11. "Extremal H-colorings of trees and 2-connected graphs" (with D. Galvin),
    J. Combin. Theory Ser. B **122** (2017), 800–814.

10. "A direct proof of the integral formulae for the inverse hyperbolic functions" (with A. Hammett),
    College Math. J. **47(4)** (2016), 297-299.

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[1]Undergraduate student

9. "Two combinatorial proofs of identities involving sums of powers of binomial coefficients"
    (with C. Stocker),
    Integers **16** (2016), #A58.

8. "Reversible peg solitaire on graphs" (with C. Stocker),
    Discrete Math. **338** (2015), 2014-2019.

7. "Extremal *H*-colorings of graphs with fixed minimum degree,"
    J. Graph Theory **79** (2015), 103-124.

6. "Combinatorially interpreting generalized Stirling numbers" (with D. Galvin and J. Hilyard),
    European J. Combin. **43** (2015), 32-54.

5. "Trivial meet and join within the lattice of monotone triangles" (with A. Hammett),
    Electronic J. Combin. **21(3)** (2014), #P3.13.

4. "Counting indepedent sets of a fixed size in graphs with a given minimum degree"
    (with D. Galvin),
    J. Graph Theory **76** (2014), 149-168.

3. "*H*-coloring tori" (with D. Galvin),
    J. Combin. Theory Ser. B **102** (2012), 1110-1133

2. "*H*-colouring bipartite graphs" (with D. Galvin),
    J. Combin. Theory Ser. B **102** (2012), 726-742

1. "Constructing PL 2-knot complements" (with J. Dent and G. Venema),
    Proceedings of the 22nd Workshop in Geometric Topology, Colorado College (2005)

SELECTED PRESENTATIONS

Conference Presentations

  Invited

       5th Lake Michigan Workshop on Combinatorics and Graph Theory, University of
              Notre Dame, Notre Dame, IN
              Maximizing colorings of graphs, April 2018

       AMS Fall Western Sectional Meeting, Special Session on Recent Advances in Structural
              and Extremal Graph Theory, University of Denver
              Maximizing colorings of graphs, October 2016

       AMS Spring Central Sectional Meeting, Special Session on Probabilistic and
              Extremal Combinatorics, North Dakota State University
              Extremal H-colorings of graphs with fixed minimum degree, April 2016

       AMS Fall Southeastern Sectional Meeting, Special Session on Probabilistic Combinatorics,
              University of Memphis
              How often do two monotone triangles meet in the minimal element?, October 2015

       AMS Fall Central Sectional Meeting, Special Session on Graphs/Hypergraphs,
              University of Notre Dame
              The Typical Structure of H-colorings of the Hamming Cube, November 2010

  Contributed

       MIGHTY LVIII (58th Midwest Graph Theory Conference), GVSU
              Extremal colorings and independent sets in k-chromatic graphs, October 2017

       MIGHTY LVI (56th Midwest Graph Theory Conference), IPFW
              Reversible peg solitaire on graphs, October 2014

       MAA MathFest, Portland, OR

Extremal H-colorings of trees, August 2014

9th Graduate Student Combinatorics Conference, University of Minnesota - Twin Cities
Extremal H-colorings of forests and trees, April 2013

MIGHTY LIV (54th Midwest Graph Theory Conference), Miami (OH) University
Extremal H-colorings of forests and trees, April 2013

MIGHTY LIII (53rd Midwest Graph Theory Conference), Iowa State University
Counting Graph Homomorphisms, September 2012

MIGHTY LII (52nd Midwest Graph Theory Conference), Indiana State University
Counting Independent Sets of a Fixed Size in Graphs with Given Minimal Degree,
April 2012

Graduate Student Combinatorics Conference, University of Illinois - Urbana Champaign
Counting Independent Sets of a Fixed Size in Graphs with Given Minimal Degree,
April 2012

Michigan Undergraduate Mathematics Conference, Grand Valley State University
Knotted Spheres in Four Dimensions, October 2003

Seminars and Colloquia

Colloquium, Marquette University
Variations on Peg Solitaire on Graphs, October 2015

Colloquium, Calvin College
Graph Theory — to the Extreme!, April 2014

Colloquium, Marquette University
Extremal questions for H-colorings of graphs, December 2012

Graph Theory Seminar, Western Michigan University
Extremal questions for H-colorings, November 2012

New York Combinatorics Seminar, CUNY Graduate Center
Extremal questions for H-colorings of graphs, October 2012

Discrete Mathematics Seminar, University of Notre Dame
Extremal questions for H-colorings of graphs, September 2012

Colloquium, Ferris State University
Graph Theory — to the Extreme!, January 2012

Graduate Student Seminar, University of Notre Dame
Graph Theory — to the Extreme!, September 2011
Conway's Solitaire Army Problem, March 2010

Combinatorics & Logic Seminar, University of Notre Dame
Roth's Theorem on 3-term Arithmetic Progressions, March 2011
Random Graphs & Threshold Functions I, II, and III, October - November 2010

Colloquium, Calvin College
Conway's Solitaire Army, April 2010

Poster Presentations

EXCILL2: Extremal Combinatorics at Illinois, University of Illinois - Urbana Champaign
Extremal H-colorings of graphs, March 2013

2013 Joint Mathematics Meetings, YMN/Project NExT Poster Session, San Diego, CA
Extremal H-colorings of graphs, January 2013

GSU Graduate Student Research Symposium, University of Notre Dame

The Typical Structure of Proper Colorings of the Discrete Hypercube, February 2011

TEACHING EXPERIENCE

Marquette University, 2013-present

       Math 1450 — Calculus 1, Fall 2017
       Math 2100/2350 — Discrete Mathematics/Foundations of Mathematics, Fall 2017
       Math 1451 — Calculus 2, Spring 2017
       Math 2350 — Foundations of Mathematics, Spring 2017
       Math 1450 — Calculus 1, Fall 2016
       Math 4120 — Abstract Algebra 1, Fall 2016
       Math 4995 — Explorations in Combinatorics and Graph Theory (Ind. Study), Fall 2016
       Math 1451 — Calculus 2, Spring 2016
       Math 2350 — Foundations of Mathematics, Spring 2016
       Math 1451 — Calculus 2, Fall 2015
       Math 4420 — Foundations of Geometry, Fall 2015
       Math 1451 — Calculus 2, Spring 2015
       Math 2350 — Foundations of Mathematics, Spring 2015
       Math 1450 — Calculus 1, Fall 2014
       Math 4420 — Foundations of Geometry, Fall 2014
       Math 4995 — Variations on Peg Solitaire in Graphs (Independent Study), Fall 2014
       Math 1450 — Calculus 1, Spring 2014
       Math 2350 — Foundations of Mathematics, Spring 2014
       Math 1450 — Calculus 1, Fall 2013
       Math 2350 — Foundations of Mathematics, Fall 2013

University of Notre Dame, 2009-2013

       Linear Algebra (SUMR) [co-instructor with Martha Precup], Summer 2011
       Boeing Academic Excellence Workshop - Calculus, Summer 2011
       ACMS 20350 — Statistics for Life Sciences, Spring 2011
       Math 10260 — Elements of Calculus II for Business, Fall 2010
       Linear Algebra (SUMR), Summer 2010
       Book Proofs: Aesthetic Mathematics (Undergraduate Reading Seminar), Fall 2009

University of Tennessee - Knoxville, 2007-2008

       Math 119 — College Algebra (2 sections), Fall 2007

The Potter's House Christian High School, 2006

       High School AP Calculus/Pre-Calculus Teacher, January-June 2006

TEACHING AWARDS/CERTIFICATIONS

Kaneb Center Outstanding Graduate Student Teacher Award, University of Notre Dame, 2012

Kaneb Center Striving for Excellence in College and University Teaching Certificate,
    University of Notre Dame, 2011

Dorothea & Edgar D. Eaves Teaching Award, University of Tennessee - Knoxville, 2007

Michigan Provisional Secondary Teaching Certificate (Mathematics, Chemistry), 2006-2014

GRANTS

Principal Investigator, Simons Foundation Collaboration Grant for Mathematicians
      Project title: *Investigating Graph Colorings*
      09/01/2017–08/31/2022, $42,000

Summer Faculty Fellowship, Marquette University
      Project title: *Extremal Colorings of Graphs*
      06/2014-07/2014, $5,500

HONORS, AWARDS, AND MEMBERSHIPS

Honors & Awards

    Project NExT Fellow (Brown13 Dot), 2013-2014

    Notebaert Professional Development Award, The Graduate School, University of Notre Dame, 2013

    First place, GSU Symposium Poster Presentation (Science Division), University of Notre Dame, 2011

    Richard Sady Prize (Outstanding Mathematics Graduate Student in First-Year Courses), University of Notre Dame, 2009

    Yueh-er, Hong-hsu & Clarence Cheng Kuo Fellowship (Outstanding Mathematics Master's Student), University of Tennessee - Knoxville, 2008

    Rinck Memorial Prize (Outstanding Mathematics Student), Calvin College, 2006

Memberships

    American Mathematical Society, 2006-Present

    Mathematical Association of America, 2011-Present

CONFERENCES ATTENDED

5th Lake Michigan Area Workshop on Combinatorics and Graph Theory, University of Notre Dame, April 2018

PME Undergraduate Math Conference, St. Norbert College, November 2017 (with 3 students)

MIGHTY LVIII (58th Midwest Graph Theory Conference), GVSU, October 2017

4th Lake Michigan Area Workshop on Combinatorics and Graph Theory, Western Michigan University, April 2017

AMS Central Spring Sectional Meeting, Indiana University, April 2017

AMS Western Fall Sectional Meeting, University of Denver, October 2016

AMS Central Spring Sectional Meeting, North Dakota State University, April 2016

AMS Southeastern Fall Sectional Meeting, University of Memphis, October 2015

AMS Central Fall Sectional Meeting, Loyola University Chicago, October 2015

2nd Lake Michigan Workshop on Combinatorics and Graph Theory, University of Notre Dame, March 2015

PME Undergraduate Math Conference, St. Norbert College, November 2014 (with 2 students)

MIGHTY LVI (56th Midwest Graph Theory Conference), IPFW, October 2014

2014 MAA MathFest, Portland, OR, August 2014

1st Lake Michigan Area Workshop on Combinatorics and Graph Theory, Western Michigan University, March 2014

2014 Joint Mathematics Meetings, Baltimore, MD, January 2014

2013 MAA MathFest, Hartford, CT, August 2013

9th Graduate Student Combinatorics Conference, University of Minnesota, April 2013

MIGHTY LIV (54th Midwest Graph Theory Conference), Miami (OH) University, April 2013

EXCILL2: Extremal Combinatorics at Illinois, University of Illinois - Urbana Champaign,
    March 2013

2013 Joint Mathematics Meetings, San Diego, CA, January 2013

MIGHTY LIII (53rd Midwest Graph Theory Conference), Iowa State University, September 2012

MIGHTY LII (52nd Midwest Graph Theory Conference), Indiana State University, April 2012

8th Graduate Student Combinatorics Conference, University of Illinois - Urbana Champaign,
    April 2012

AMS Central Fall Sectional Meeting, University of Notre Dame, November 2010

CONFERENCE ORGANIZATION

(2018 AMS Central Fall Sectional Meeting, Special Session on Graph Theory, Hypergraphs,
    and Set Systems, University of Michigan (with C. Smyth))

2017 AMS Central Spring Sectional Meeting, Special Session on Topics in Extremal, Probabilistic,
    and Structural Graph Theory, Indiana University (with D. Galvin)

2015 AMS Central Fall Sectional Meeting, Special Session on Graph Theory, Hypergraphs,
    and Set Systems, Loyola University Chicago (with D. Galvin)

UNIVERSITY SERVICE

Marquette MSCS Calculus Online Homework Coordinator, Spring 2018-

Marquette MSCS Graudate Committee, Fall 2018-Spring 2019

Marquette MSCS Teacher Education Committee, Spring 2016-Spring 2017

Marquette Math Assessment Update Committee Member, Spring 2017

Marquette Math Calculus Textbook Selection Committee Member, Spring 2017

Marquette MSCS Search Committee Member, 2016-2017

Marquette MATH Transfer Course Evaluator, Spring 2015-Spring 2016

Program Assessment Leader (PALS) for Mathematics Major Assessment, 2014-2016

Marquette MSCS Undergraduate Committee, Fall 2014-Spring 2016

Marquette Scholarship Competition Browsing Session Volunteer (MSCS), February 2015

OTHER SERVICE AND OUTREACH

Reviewer, *Discrete Mathematics*, *Involve*, *Journal of Combinatorial Mathematics and
    Combinatorial Computing*, *Journal of Graph Theory*, *Minnesota Journal of
    Undergraduate Mathematics*, *Rocky Mountain Journal of Mathematics*, 2014-present

Reviewer, Math Reviews (14 papers), 2014-present

Ph.D. defense examiner (Zac Buelow), Spring 2016

Judge, MAA Student Paper Session, MathFest, August 2014

Judge, MAA Undergraduate Student Poster Session, JMM, January 2014

Co-organizer/Speaker, TA Orientation Session for Science, Math, and Engineering (through the

Kaneb Center for Teaching and Learning), University of Notre Dame, August 2012

Judge, GSU Symposium Poster Presentation (Science Division), University of
Notre Dame, February 2012

Poster Presentation for the Graduate Studies and Research Advisory Council, University of
Notre Dame, October 2011

Judge, Northern Indiana Regional Science and Engineering Fair, February 2010

Volunteer, Pro2Serve Math Competition, University of Tennessee - Knoxville,
October 2006, October 2007