

MICHAEL D. BARRUS

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EDUCATION

University of Illinois at Urbana-Champaign, Urbana, Illinois

PhD in Mathematics, anticipated graduation date: May 2009

Dissertation Title: On induced subgraphs, degree sequences, and graph structure

Dissertation Advisor: Professor Douglas B. West

MS in the Teaching of Mathematics, December 2008

Brigham Young University, Provo, Utah

MS in Mathematics, April 2004

Thesis Title: A forbidden subgraph characterization problem and a minimal-element subset of universal graph classes

Thesis Advisor: Professor Wayne W. Barrett

BS in Mathematics, April 2002

RESEARCH INTERESTS AND EXPERIENCE

Graph theory, combinatorics, and number theory; in particular, structural and extremal graph theory, graph classes, and matroids.

Publications

- Michael D. Barrus, Stephen G. Hartke, and Mohit Kumbhat. *Graph classes characterized both by forbidden subgraphs and degree sequences*. Journal of Graph Theory, vol. 57 (2008), no. 2, pp. 131-148.
- Michael D. Barrus. *Antimagic labeling and canonical decomposition of graphs*. Submitted.
- Michael D. Barrus, Stephen G. Hartke, and Mohit Kumbhat. *Non-minimal degree-sequence-forcing triples*. Submitted.
- Michael D. Barrus. *Chair- and kite-free pseudosplit graphs*. In preparation.
- Michael D. Barrus, Stephen G. Hartke, Kyle Jao, and Douglas B. West. *Length thresholds for graphic lists with fixed maximum and minimum entries*. In preparation.
- Michael D. Barrus, Stephen G. Hartke, and Mohit Kumbhat. *Minimal degree-sequence-forcing triples*. In preparation.
- Michael D. Barrus and Douglas B. West. *The A_4 -structure of a graph*. In preparation.
- Michael D. Barrus and Douglas B. West. *On the degree-associated reconstruction number of a graph*. In preparation.

Invited Conference Presentation

- January 2009. *On A_4 -balanced graphs*. SIAM Minisymposium on Graph Theory, Joint Mathematics Meetings, Washington, D.C.

Contributed Talks

- January 2009. *Reconstructing graphs given only a few marked cards*. MAA General Contributed Paper Session, Joint Mathematics Meetings, Washington, D.C.
- November 2008. *A_4 -structures, decomposition, and balanced graphs*. Forty-seventh Midwest Graph Theory Conference, Chicago, IL.
- October 2008. *Canonical decomposition of graphs and antimagic labeling*. Contributed Paper Session, 2008 Fall Central Section Meeting, AMS, Kalamazoo, MI.
- June 2008. *The A_4 -structure of a graph*. SIAM Conference on Discrete Mathematics, Burlington, VT.
- October 2007. *Pseudo-split graphs, a decomposition method, and the chair graph*. Forty-fifth Midwest Graph Theory Conference, Detroit, MI.
- May 2007. *The degree-associated reconstruction number of a graph*. Forty-fourth Midwest Graph Theory Conference, Dayton, OH.
- November 2006. *Graph classes characterized by both degree sequences and forbidden subgraphs*. Forty-Third Midwest Graph Theory Conference, Fort Wayne, IN.
- June 2006. *Graph families characterized by both degree sequences and forbidden subgraphs*. SIAM Conference on Discrete Mathematics, Victoria, BC, Canada.
- April 2006. *Degree-sequence-forcing sets II*. Graduate Student Combinatorics Conference, Madison, WI.
- Four talks in seminars at the University of Illinois and Illinois State University, 2005-2008.

Grants and Positions

- *Graduate Student Travel Grant*, awarded by the American Mathematical Society for travel to the January 2009 Joint Mathematics Meetings.
- *SIAM Student Travel Award*, awarded by the Society for Industrial and Applied Mathematics for travel to the June 2008 Conference on Discrete Mathematics.
- *Conference Travel Awards*, awarded by the UIUC Graduate College for travel to the June 2008 SIAM Conference on Discrete Mathematics and the January 2009 Joint Mathematics Meetings.
- *Research assistant*, University of Illinois, 2005 and 2006 summer terms.

TEACHING EXPERIENCE

University of Illinois at Urbana-Champaign, Urbana, Illinois, 2004-2009.

- Instructor for Calculus I (1 semester) and Calculus II (2 semesters). Fully responsible for all aspects of the course.
- Teaching assistant for Calculus I (4 semesters), Calculus II (2 semesters), Calculus for Business (1 semester), and Fundamental Mathematics (a course on proofs, 2 semesters).

- Courses taught include sections in the Merit Workshop Program for Emerging Scholars in Mathematics, a discovery-based mode of instruction emphasizing group work. Led workshops in Calculus I (2 semesters) and Calculus II (2 semesters).

Brigham Young University, Provo, Utah, 1997-1999, 2001-2004.

- Instructor for Calculus I, Spring 2003. Fully responsible for all aspects of the course.
- Teaching assistant for Intermediate Algebra, Calculus II, Mathematics for Engineering I, Ordinary Differential Equations, and Abstract Algebra.
- Tutor at the BYU Mathematics Tutorial Laboratory for 3 years. Provided conceptual review and homework assistance for students in all undergraduate mathematics courses.

Department TA Instructional Award, April 2008. One of two awarded annually by the Mathematics Department at UIUC for exemplary teaching, based on classroom observation, comments from students, and a written description of teaching goals.

Named on UIUC's *List of Teachers Ranked as Excellent by Their Students* each semester taught (9 semesters), achieving the "Outstanding" rating 4 times (Fall '04, Fall '05, Fall '06, Spring '08).

PROFESSIONAL SERVICE

Mentor, UIUC Mathematics Department TA Peer Mentoring Program, August 2008-present. Provide support and improvement opportunities to new teaching assistants through classroom observations, seminars, and personalized counsel.

Member, Graduate Teaching Awards Committee, UIUC Mathematics Department, Spring 2009.

Referee, Discrete Applied Mathematics (since July 2006), Discrete Mathematics (since November 2008).

REFERENCES

Professor Douglas B. West
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Professor Alexandr Kostochka
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