

Debra L. Boutin

Samuel F. Pratt Professor of Mathematics
Hamilton College
Clinton, NY 13323

EDUCATION

Cornell University, Ithaca, NY
Ph.D. in Mathematics, 1998

Smith College, Northampton, MA
A.B. in Mathematics, 1991
Summa cum laude, Phi Beta Kappa, Sigma Xi

Springfield Technical Community College, Springfield, MA
A.S. in Data Processing, 1987

PROFESSIONAL EMPLOYMENT

Hamilton College, Clinton, NY
Samuel F. Pratt Professor of Mathematics, 2019 to present.
Professor, 2010 to 2019.
Associate Professor, 2005 to 2010.
Assistant Professor, 1999 to 2005.

Trinity College, Hartford, CT
Visiting Assistant Professor, 1998/1999.

ADDITIONAL EXPERIENCE

Research Adjunct, IDA/CCR, Summer 2010, 2012, 2013, 2016, 2017, 2018, and Spring semester 2015.

Consultant, Office of Naval Research, May-June 1996.
Naval Aviation Warfare Center, Warminster, PA

Research Fellow, Office of Naval Research, Summer 1992.
Naval Aviation Warfare Center, Warminster, PA

Chief Petty Officer, U.S. Navy/U.S. Naval Reserve, 1975-1995.

HONORS, AWARDS

Awarded **Samuel F. Pratt Professorship**, June 2019.

Inaugural recipient of **Dean's Scholarly Achievement Award for Early Career Achievement**, from Hamilton College, 2008.

National Defense Science and Engineering Graduate Fellowship, a competitive fellowship program funded through the Office of Naval Research. 1991-94.

RESEARCH PUBLICATIONS

[32] *Symmetry Parameters of Various Hypercube Families*, with Sally Cockburn, Lauren Keough, Sarah Loeb, and Puck Rombach, submitted.

[31] *Paint Cost and the Frugal Distinguishing Number*, *The Art of Discrete and Applied Mathematics*, in press.

[30] *Determining Number and Cost of Generalized Mycielskian Graphs*, with Sally Cockburn, Lauren Keough, Sarah Loeb, K.E. Perry, and Puck Rombach, *Discussiones Mathematicae Graph Theory*, in press.

[29] *Distinguishing Generalized Mycielskian Graphs* with Sally Cockburn, Lauren Keough, Sarah Loeb, K.E. Perry, and Puck Rombach, *Australasian Journal of Combinatorics*, in press.

[28] *The Cost of 2-Distinguishing Hypercubes*, *Discrete Mathematics*. 344 (2021), no. 9, Paper No. 112512, 11 pp.

[27] *Symmetry Parameters for Mycielskian Graphs*, with Sally Cockburn, Lauren Keough, Sarah Loeb, K.E. Perry, and Puck Rombach, *Research trends in graph theory and applications*, 99–117, *Assoc. Women Math. Ser.*, 25, Springer, 2021.

[26] *Distinguishing Orthogonality Graphs*, with Sally Cockburn, *Journal of Graph Theory* 98 (2021), no. 3, 389–404.

[25] *Identifying Codes on Directed de Bruijn Graphs*, with Victoria Horan and Mikko Pelto, *Discrete Applied Mathematics*, 262, 29-41, 2019.

[24] *The Cost of Distinguishing Graphs*, with Wilfried Imrich, *London Mathematical Society Lecture Note Series*, 436, Cambridge University Press, 2017.

[23] *Infinite Graphs with Finite 2-Distinguishing Cost*, with Wilfried Imrich, *Electronic Journal of Combinatorics*, 21, no. 4, Paper 4.52, 2014.

[22] *The Cost of 2-Distinguishing Selected Kneser Graphs and Hypercubes*, *Journal of Combinatorial Mathematics and Combinatorial Computing*, 85, 161-171, 2013.

- [21] *The Cost of 2-Distinguishing Cartesian Powers*, Electronic Journal of Combinatorics, 20(1): Research Paper 74 (electronic), 2013.
- [20] *Posets of Geometric Graphs*, with Sally Cockburn, Alice M. Dean, and Andrei M. Margea, Ars Mathematica Contemporanea, 5(2):265-284, 2012.
- [19] *Geometric Graph Homomorphisms*, with Sally Cockburn, Journal of Graph Theory, 69(2):97-113, 2012.
- [18] *More Results on r -inflated Graphs: Arboricity, Thickness, Chromatic Number, and Fractional Chromatic Number*, with Michael O. Albertson and Ellen Gethner, Ars Mathematica Contemporanea, 4:5-24, 2011.
- [17] *The Thickness and Chromatic Number of r -Inflated Graphs*, with Michael O. Albertson and Ellen Gethner, Discrete Math. 310(20): 2725–2734, 2010.
- [16] *Determining sets, resolving sets, and the exchange property*, Graphs and Combinatorics, 25(6):789-806, 2009.
- [15] *The Determining Number of a Cartesian Product*, Journal of Graph Theory, 61(2):77-87, 2009.
- [14] *Small Label Classes in 2-distinguishing Labelings*, Ars Mathematica Contemporanea, 1(2):154-164, 2008.
- [13] *Automorphisms and Distinguishing Numbers of Geometric Cliques*, with Michael O. Albertson, Discrete and Computational Geometry, 39(4):778-785, 2008.
- [12] *Thickness-two Graphs. I. New Nine-critical Graphs, Permuted Layer Graphs, and Catlin's Graphs*, with Ellen Gethner and Thom Sulanke, Journal of Graph Theory, 57(3):198-214, 2008.
- [11] *Structure and Properties of Locally Outerplanar Graphs*, Journal of Combinatorial Mathematics and Combinatorial Computing, 60:169-180, 2007.
- [10] *Using Determining Sets to Distinguish Kneser Graphs*, with Michael O. Albertson, Electronic Journal of Combinatorics, 14(1):Research Paper 20 (electronic), 2007.
- [9] *Identifying Graph Automorphisms Using Determining Sets*, Electronic Journal of Combinatorics, 13(1):Research Paper 78 (electronic), 2006.
- [8] *Distinguishing Geometric Graphs*, with Michael Albertson, Journal of Graph Theory, 53(2):135-150, 2006.
- [7] *Isometrically Embedded graphs*, Ars Combinatoria, 77:97-108, 2005.

[6] *Convex Geometric Graphs with No Short Self-intersecting Paths*, Proceedings of the Thirty-Fourth Southeastern International Conference on Combinatorics, Graph Theory and Computing. Congressus Numerantium 160 (2003).

[5] *The Isometry Dimension and Orbit Number of a Finite Group*, with Michael Albertson, Proceedings of the Thirty-second Southeastern International Conference on Combinatorics, Graph Theory and Computing. Congressus Numerantium 150 (2001).

[4] *Realizing Finite Groups in Euclidean Space*, with Michael Albertson, Journal of Algebra, 225(2):947-956, 2000.

[3] *When are Centralizers of Finite Subgroups of $Out(F_n)$ Finite?*, Groups, languages and geometry, volume 250 of Contemporary Mathematics., pages 3758. American Mathematical Society, 1999.

[2] *Wedge Theory/Compound Matrices: Properties and Applications*, with Ronald F. Gleeson and Robert M. Williams, Office of Naval Research Report No: NAWCADPAX-96-220-TR, 2 August 1996.

[1] *Lower Bounds for Constant Degree Independent Sets*, with Michael Albertson, Discrete Mathematics, 127 (1-3):15-21, 1994.

RECENT PROFESSIONAL PRESENTATIONS

Efficient Graph Distinguishing

Society for Industrial and Applied Mathematics Discrete Math Conference, July 2021.

Distinguishing Cube Families

Canadian Discrete and Algorithmic Mathematics Conference, May 2021.

Distinguishing Hypercubes

Illinois Institute of Technology's Discrete Mathematics Seminar, February 2021.

Distinguishing and Determining Graph Symmetry

Invited plenary address, International Conference on Algebraic Graph Theory and its Applications, organized by Presidency University, Kolkata, India. November 2020.

Determining Number and Cost of Distinguishing Graphs

Virginia Commonwealth University Discrete Mathematics Seminar. November 2020.

The Cost of 2-Distinguishing Hypercubes

University of Victoria, British Columbia, Discrete Mathematics Seminar. October 2020.

New Techniques in the Cost of 2-Distinguishing Hypercubes

Special Session on Graph Symmetry at the Canadian Discrete and Algorithmic Mathematics Conference in Vancouver, British Columbia. May 2019.

Geometric Homomorphisms and the Geochromatic Number

Special Session on Graph Colouring at the Canadian Discrete and Algorithmic Mathematics Conference in Vancouver, British Columbia. May 2019.

The Cost of 2-Distinguishing in Cartesian Products

Society for Industrial and Applied Mathematics, Discrete Math Meeting, Denver, CO. June 2018.

Parameters for Graph Symmetries

Center for Communications Research. La Jolla, CA. January 2016.

Symmetry Parameters for the Lexicographic Product

Special session on Product Graphs at the Joint Mathematics Meeting, Seattle, WA. January 2016.

Network Symmetries

Colgate University mathematics colloquium. October 2015.

Determining and Distinguishing in Cartesian Products

Special session on Product Graphs at the 8th Slovenian International Conference on Graph Theory at Lake Bled, Slovenia. June 2015.

Distinguishing Costs for Graphs

Bordeaux Graph Theory Workshop in Bordeaux, France. November 2014.

Geometric Homomorphisms and the Geochromatic Number

Mini-symposium on Graph Theory at the Society of Industrial and Applied Mathematics Discrete Math Conference in Minneapolis, MN. June 2014.

The Cost of 2-Distinguishing Cartesian Powers

Mini-symposium on Graphs and Groups at the Society for Industrial and Applied Mathematics Conference on Discrete Mathematics in Halifax, Nova Scotia. June 2012.

The Cost of 2-Distinguishing Selected Kneser Graphs and Hypercubes

Special Session on Graph Theory at the American Mathematical Society Southeastern Section Meeting at the University of Southern Florida in Tampa, Florida. March 2012.

Automorphisms of Geometric Graphs

Mini-symposium on Emeddings and Geometric Representations of Graphs at the Canadian Discrete and Algorithmic Mathematics at the University of Victoria. May 2011.

Graphs and Symmetry

St. Michael's College, VT. March 2011.

The Cost of 2-Distinguishing

Special Session on Graph Theory at the Society of Industrial and Applied Mathematics Southeastern Atlantic Section Conference at the University of North Caroline at Charlotte. March 2011.

MAJOR COLLEGE COMMITTEE SERVICE

Chair, Campus Budget Committee, 2021-2022.

Faculty Chair, 2019-2020.

Retirement Investment Committee, 2019-2022.

Budget Committee, 2018 - 2019

Committee On Appointments, 2015-2016

Chair, Campus Planning Committee, 2013 - 2014.

Campus Planning Committee, 2012 - 2013.

Academic Council, 2010 - 2011.

Committee on Academic Policy, 2006 - 2009.

RECENT COLLEGE/DEPARTMENT SERVICE

Faculty mentor to five tenure track faculty (Physics (twice), Philosophy, Women's Studies, Classics) at Hamilton. Since 2006.

Organizer of weekly NSF (New(ish) Science Faculty) Lunches at Hamilton. 1999 - 2017.

Departmental Colloquium Organizer Since 2016.

Academic Advisor to approximately twenty undergraduates per year since 2000.

RECENT PROFESSIONAL SERVICE

Reviewer for outside review of the Department of Mathematics at Occidental College, October 2021.

Secretary for the Discrete Math Activity Group, Society of Industrial and Applied Mathematics, for term January 1, 2012 - December 31, 2013.

Reviewer for Mathematical Reviews.

Referee for approximately 20 refereed mathematical journals.