

Paul Wollan

CONTACT INFORMATION

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RESEARCH INTERESTS

Structural Graph Theory, Combinatorial Optimization, Graph Algorithms

PERSONAL INFORMATION

I was born September 21, 1976 in Seattle, WA, USA. I completed my high school education at Mayo High School in Rochester, MN, receiving my diploma in June, 1995.

EDUCATION

Georgia Institute of Technology, Atlanta, Georgia, USA

Ph.D. in Algorithms, Combinatorics, and Optimization, Awarded December, 2005.

- Dissertation title: “Extremal Functions for Graph Linkages and Rooted Minors”
- Advisor: Dr. Robin Thomas

University of Chicago, Chicago, Illinois USA

B.A., Mathematics, June, 1999

ACADEMIC EXPERIENCE

University of Rome “La Sapienza”, Rome, Italy

Assistant Professor (ricercatore)

January, 2009 - present

University of Hamburg, Hamburg, Germany

Humboldt Research Fellow

January, 2007 - December 2008

University of Waterloo, Waterloo, Ontario, Canada

Postdoctoral Research Fellow

January, 2006 - January, 2007

Georgia Institute of Technology, Atlanta, Georgia USA

Graduate Research Assistant

September, 2001 - January 2005

Los Alamos National Laboratory, Los Alamos, New Mexico USA

Graduate Research Assistant

September 2000 - June, 2001

TEACHING EXPERIENCE

University of Rome, Rome, Italy

Assistant Instructor

July 2009 - present

Co-taught the first year introductory programming course. Teaching in Italian. Duties included: some lecture presentation and preparing and overseeing laboratory work.

University of Hamburg, Hamburg, Germany

Lead Instructor

March - July, 2009

Organized and taught a graduate research-oriented course on the theory of Graph Minors. Teaching in English.

University of Waterloo, Waterloo, Ontario, Canada

Instructor

August - December, 2006

Taught one section of a 10-section first year course on linear algebra. Duties included: organizing course material, presenting course lectures, co-ordinating with the other course sections.

Georgia Institute of Technology, Atlanta, Georgia USA

Lead Instructor

January - May, 2004

Prepared and taught a junior-level computer science course introducing concepts of discrete mathematics. Duties included: organizing course material, presenting all course lectures, preparation of homework and exams, grading homework and exams.

PUBLICATIONS

- [1] An Improved Linear Edge Bound for Graph Linkages. (with R. Thomas) *European J. of Combinatorics* **26**, (2005) 309-324.
- [2] Generation of Simple Quadrangulations of the Sphere. (with G. Brinkmann, S. Greenberg, C. Greenhill, B. McKay, and R. Thomas) *Discrete Math.* **305**, (2005) 33 - 54.
- [3] Non-zero Disjoint cycles in Highly Connected Group Labeled Graphs. (with K. Kawarabayashi) *J. Combin. Theory, Ser. B* **96**, (2006) 296 - 301.
- [4] Proper Minor-Closed Families are Small. (with S. Norine, P. Seymour, and R. Thomas). *J. Combin. Theory, Ser. B* **96**, (2006) 754-757.
- [5] Extremal Functions for Shortening Sets of Paths. *Combinatorics, Probability, and Computing* **15**, (2006) 927 - 932.
- [6] The Extremal Function for 3-linked Graphs. (with R. Thomas). *J. Combin. Theory, Ser. B* **98**, (2008) 939 - 971.
- [7] A Weaker Version of Lovász' Path Removal Conjecture. (with K. Kawarabayashi, O. Lee, and B. Reed). *J. Combin. Theory, Ser. B* **98**, (2008) 972 - 979.
- [8] Extremal Functions for Rooted Minors. *J. Graph Theory* **58** vol. 2, (2008) 159 - 178.
- [9] Packing Non-zero A -paths in an Undirected Model of Group Labeled Graphs. *J. Combin. Theory, Ser. B* **100**, (2010) 141-150.
- [10] Voting in Agreeable Societies. (with D. Berg, S. Norine, F. E. Su, and R. Thomas). *AMS Math. Monthly* **117**, (2010) 27 - 39.
- [11] A Shorter Proof of the Graph Minors Algorithm - The Unique Linkage Theorem. *accepted to Symposium on the Theory of Computing (STOC) 2010*.
- [12] Packing Cycles with Modularity Constraints. *to appear: Combinatorica*.

SUBMITTED
ARTICLES

- K_6 Minors in 6-connected Graphs of Bounded Treewidth. (with K. Kawarabayashi, S. Norine, and R. Thomas) *submitted to: J. Combin. Theory, Ser. B*.
- K_6 Minors in Large 6-connected Graphs. (with K. Kawarabayashi, S. Norine, and R. Thomas) *submitted to: J. Combin. Theory, Ser. B*.
- Bridges in Highly Connected Graphs. *submitted to: SIAM J. Disc. Math.*

- On the Excluded Minor Structure Theorem for Graphs of Large Tree-width. (with R. Diestel, K. Kawarabayashi, and T. Müller) *submitted to: J. Combin. Theory, Ser. B.*
- The Erdős-Pósa Property for Clique Minors in Highly Connected Graphs. (with R. Diestel, and K. Kawarabayashi) *submitted to: J. Combin. Theory, Ser. B.*
- Finite Connectivity in Infinite Matroids. (with H. Bruhn-Fujimoto) *submitted to: European J. of Combinatorics.*
- Axioms for Infinite Matroids. (with H. Bruhn-Fujimoto, R. Diestel, and M. Kriesell). *submitted to: Inv. Math.*
- A shorter proof and simpler algorithm for the graph minors decomposition (with K. Kawarabayashi) *submitted to: Foundations of Computer Science (FOCS).*

INVITED
PRESENTATIONS

A shorter proof of the unique linkage theorem, Department of Mathematics, University of Tokyo, April 2010.

A shorter proof of the unique linkage theorem, Oberwolfach Workshop, Oberwolfach, Germany, March 2010.

Removable paths conjectures, National Institute for Informatics, Tokyo, Japan, September 2009.

Linking vortices, Workshop on Graph Theory, Princeton, May 2009.

Non-zero cycles in group labeled graphs, Department of Mathematics, Princeton, Princeton December 2009.

Non-zero cycles in group labeled graphs, Banf Workshop, Banf, Canada, September 2008.

Packing disjoint clique minors, Sittard, Netherlands, July 2008.

Complete minors in large six connected graphs, Department of Computer Science, University of Rome "La Sapienza", Department seminar, March 2008.

Complete minors in large six connected graphs, Graph Theory 2007, Fredericia, Denmark, December 2007.

Progress on removable paths conjectures Department of Computer Science, Humboldt University, Berlin, June 2007.

Progress on removable paths conjectures Oberwolfach Workshop, Oberwolfach, Germany, March 2007.

K_6 minors in large six connected graphs, SIAM Conference on Discrete Mathematics, Victoria, Canada, June 2006.

Extremal functions for linkages and rooted minors, ACCOTA, Combinatorial and Computational Aspects of Optimization, Topology, and Algebra, Guanajuato, Mexico, October, 2004.

Utilizing connectivity in extremal theory, SIAM Student Chapter Meeting, Emory University, GA, October, 2004.

The extremal function for 3-linked graphs, SIAM Conference on Discrete Mathematics, Nashville,

TN, June, 2004.

Extremal functions for graph linkages, Combinatorics Seminar, University of Illinois Champaign-Urbana, IL, April, 2004.

PROFESSIONAL
ACTIVITIES

- Refereed articles for: Journal of Graph Theory, SIAM Journal of Discrete Mathematics, Discrete Mathematics, Combinatorica, Journal of Combinatorial Theory, ser. B, Ars Combinatorica, Graphs and Combinatorics, Electronic Journal of Operations Research, Discrete Optimization, Symposium on Discrete Algorithms (SODA), Integer Programming and Combinatorial Optimization (IPCO), Scandinavian Workshop on Algorithmic Theory (SWAT), Symposium on the Theoretical Aspects of Computer Science (STACS), European Symposium on Algorithms (ESA).
- Reviewer for NSA Young Investigator grants, 2008 and 2010.
- Organizer for Bertinoro Workshop on Algorithms and Graphs, 2009.

HONORS AND
AWARDS

- Humboldt Fellow, 2-year post-doctoral fellowship awarded by Alexander von Humboldt Foundation. 2007-2008.
- “Graduate Student of the Year” 2004-2005, Department of Mathematics, Georgia Institute of Technology.
- NSF VIGRE research fellowship 2004 - 2005, Department of Mathematics, Georgia Institute of Technology
- Presidential Fellow, Georgia Institute of Technology, 2000 - 2005.
- NSF Summer Research Experience for Undergraduates (REU) grant, 1997.