

Giacomo Zambelli

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Research Interests

Integer Programming, Combinatorial Optimization, Polyhedral Combinatorics, Graph Theory.

Education

- Tepper School of Business - Carnegie Mellon University** *Pittsburgh, PA, USA*
Ph.D. in Algorithms, Combinatorics, and Optimization - May 2004
Thesis Title: *On Perfect Graphs and Balanced Matrices*
Thesis advisor: Prof. G. Cornuéjols
- GSIA - Carnegie Mellon University** *Pittsburgh, PA, USA*
M.S. in Algorithms, Combinatorics, and Optimization - May 2001
- University of Padova** *Padova, Italy*
B.S. in Mathematics - March 1999
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Experience

- University of Padova** *Padova, Italy*
Assistant professor. February, 2006 -
- University of Waterloo** *Waterloo, ON, Canada*
Postdoctoral Fellowship. September, 2004 - December, 2005.
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Teaching Experience

- University of Padova** *Padova, Italy*
Fall 2006, 2007, 2008: Instructor for the course *Mathematical Programming* for the undergraduate program in Mathematics.
Fall 2008: Instructor for part of the course *Methods and Models in Combinatorial Optimization* for the undergraduate program in Computer Science.
Spring 2006: Instructor for the course *Operations Research* for the undergraduate program in Mathematics.
- University of Waterloo** *Waterloo, ON, Canada*
Fall 2004: Instructor for the course *Algebra* for the undergraduate program in Mathematics and Computer Science.
- Carnegie Mellon University** *Pittsburgh, PA, USA*
Fall 2003: Instructor for the course *Mathematical Models for Consulting* for the undergraduate program in Business Administration.

Ph.D. students supervision

Alberto Del Pia: Ph.D. in Computational Mathematics, University of Padova - March 2009.

Honors

Aug. 1999 – Jul. 2002: William Larimer Mellon Fellowship at GSIA, Carnegie Mellon University.

Publications

Published Research Papers

- [1] M. Conforti, G. Zambelli, The mixing set with divisible capacities: a simple approach, *Operations Research Letters* (2009) doi:10.1016/j.orl.2009.07.001].
- [2] A. Del Pia, G. Zambelli, Half-integral vertex covers on bipartite bidirected graphs: total dual integrality and cut-rank, *SIAM Journal on Discrete Mathematics* **23** (2009), 1281-1296.
- [3] G. Zambelli, On degenerate multi-row Gomory cuts, *Operations Research Letters* **37** (2009), 21-22.
- [4] M. Conforti, B. Gerards, G. Zambelli, Mixed-integer vertex covers on bipartite graphs, in *Integer Programming and Combinatorial Optimization* (M. Fischetti and D.P. Williamson eds.), IPCO 2007, LNCS Vol. 4513, Springer, 2007, pp. 324-336.
- [5] G. Zambelli, Colorings of k -balanced matrices and integer decomposition property of related polyhedra, *Operations Research Letters* **35** (2007), 353-356.
- [6] M. Conforti, M. Di Summa, G. Zambelli, Minimally Infeasible Set Partitioning Problems with Balanced Constraints, *Mathematics of Operations Research* **32** (2007), 497-507.
- [7] M. Conforti, G. Cornuéjols, G. Zambelli, Decomposing Berge Graphs Containing no Proper Wheels, Long Prisms or Their Complements, *Combinatorica* **26** (2006), 533-558.
- [8] M. Conforti, G. Cornuéjols, X. Liu, K. Vušković, G. Zambelli, Odd Hole Recognition in Graphs of Bounded Clique Size, *SIAM Journal on Discrete Mathematics* **20** (2006), 42-48.
- [9] M. Conforti and G. Zambelli, Recognizing Balanceable Matrices, *Mathematical Programming B* **105** (2006), 161-179.
- [10] L. Colussi, M. Conforti, G. Zambelli, Disjoint Paths in Arborescences, *Discrete Mathematics* **292** (2005), 187-191.
- [11] G. Zambelli, A Polynomial Recognition Algorithm for Balanced Matrices, *Journal of Combinatorial Theory Series B* **95** (2005), 49-67.
- [12] M. Conforti, G. Cornuéjols, G. Zambelli, Bicolorings and Equitable Bicolorings of Matrices, *The Sharpest Cut, MPS/SIAM Series on Optimization* (M. Groetschel, ed.) (2004), 33-36.

Book chapters

- [13] M. Conforti, G. Cornuéjols, G. Zambelli, Polyhedral Approaches to Mixed Integer Linear Programming, to appear in *50 Years of Integer Programming 1958-2008*, M. Juenger, T. Liebling, D. Naddef, W. Pulleyblank, G. Reinelt, G. Rinaldi, and L. Wolsey (eds.), Springer.

Papers submitted or in preparation

- [14] A. Del Pia, A. Musitelli, G. Zambelli, A class of matrices with the Edmonds-Johnson property arising from bidirected graphs, 2009, manuscript.
- [15] M. Conforti, G. Cornuéjols, G. Zambelli, Every nontrivial facet-defining inequality for the corner polyhedron is an intersection cut, 2009, submitted.
- [16] M. Conforti, G. Cornuéjols, G. Zambelli, A geometric perspective on lifting, 2009, submitted.
- [17] A. Basu, M. Conforti, G. Cornuéjols, G. Zambelli, Minimal inequalities for an infinite relaxation of integer programs, 2009, submitted.
- [18] A. Basu, M. Conforti, G. Cornuéjols, G. Zambelli, Maximal lattice-free convex sets in linear subspaces, 2009, submitted.
- [19] A. Basu, G. Cornuéjols, G. Zambelli, Convex Sets and Minimal Sublinear Functions, 2009, submitted.
- [20] A. Basu, M. Conforti, G. Cornuéjols, G. Zambelli, A Counterexample to a Conjecture of Gomory and Johnson, 2008, submitted.
- [21] M. Conforti, L.A. Wolsey, G. Zambelli, Projecting an extended formulation for mixed-integer covers on bipartite graphs, 2008, submitted.

Thesis

- [22] G. Zambelli, On Perfect Graphs and Balanced Matrices, Ph.D. Thesis, Tepper School of Business, Carnegie Mellon University (2004).

Selected Talks

- Aug. 2008: Carnegie Mellon University, Pittsburgh, PA, USA, *Extended formulations in Integer Programming and Combinatorial Optimization*.
- June 2007: IPCO 2007, Cornell University, Ithaca, New York, USA, *Mixed-integer vertex covers on bipartite graphs*.
- May 2007: Otto-von-Guericke Universität Magdeburg, Germania, *Mixed-integer vertex covers on bipartite graphs*.
- Aug. 2006: 19th International Symposium on Mathematical Programming, Rio de Janeiro, *Minimally Infeasible Set Partitioning Problems with Balanced Constraints*.
- June 2006: Mixed Integer and Integer Programming - The Way Forward, CORE, *On certain mixed-integer vertex covering problems on bipartite graphs*.
- Feb. 2005: Tutte Seminar, University of Waterloo, *Minimally Infeasible Set Partitioning Problems with Balanced Constraints*.
- Oct. 2003: INFORMS annual meeting, Atlanta, *A Polynomial Recognition Algorithm for Balanced Matrices*.
- March 2003: 7th Combinatorial Optimization Workshop, Aussois, *On the strong perfect graph conjecture*.
- Nov. 2002 AARC Workshop: The Perfect Graph Conjecture, Palo Alto, *Decomposing Berge graphs containing no proper wheels, long prisms or their complements*.
- Jul. 2002: Conference on Matroid Structure Theory, OSU, Columbus, *Decomposing Berge graphs containing no proper wheels, long prisms or their complements*.
- Sep. 2001 Workshop on Graph Coloring and Decomposition, Princeton, *A class of graphs for which the Strong Perfect Graph Conjecture Holds*.