

## Curriculum Vitae

August 2019

DAVID HARTVIGSEN

Professor: Department of IT, Analytics, and Operations  
Concurrent Professor: Department of Applied and Computational Mathematics and Statistics  
University of Notre Dame  
354 Mendoza College of Business  
Notre Dame, IN 46556-5646  
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### **Education**

Colgate University, Hamilton, NY (1975-79);  
B.A. in Mathematics (Magna Cum Laude; Phi Beta Kappa);

Carnegie Mellon University (1979-84);  
M.S. in Mathematics (1980);  
Ph.D. in Mathematics (1984);

CORE, University de Louvain la Neuve, Belgium (Spring 1982);  
Visiting student.

### **Professional Experience, Academic Positions**

Postdoctoral Fellow at University of Waterloo, Department of Combinatorics and Optimization: Fall 1984 to Summer 1985.

Lecturer and Assistant Professor of Decision Sciences, Kellogg Graduate School of Management, Northwestern University: Fall 1985 to Summer 1993.

Associate Professor, Mendoza College of Business, University of Notre Dame: Fall 1993 to Summer 2001.

Professor, Mendoza College of Business, University of Notre Dame: Fall 2001 to present.

John W. Berry Sr. Chairman of the Management Department, Mendoza College of Business, University of Notre Dame: Summer 2012 to Summer 2015. (The ITAO Dept. split from the Man. Dept. in 2016.)

Concurrent Professor, Department of Applied and Computational Mathematics and Statistics, University of Notre Dame: Fall 2010 to present.

### **Courses Taught**

Operations Management (Undergrad., MBA, and Exec. MBA), Spreadsheet Decision Modeling (Undergrad. and MBA), Computer-aided Decision Making (Undergrad. and MBA), Analysis of Operations and Logistics (MBA), Statistics (Exec. MBA), Scheduling (MBA), Linear Programming (Undergrad. and Ph.D.), Linear Algebra (Undergrad.), Calculus (Undergrad.).

### **Research Interests**

Operations Research, Combinatorial Optimization, Network Flows, Integer Programming, Graph Theory.

### **Publications, Journals (all appear alphabetically by author)**

1. "Packing Subgraphs in a Graph" (with G. Cornuejols and W.R. Pulleyblank), *Operations Research Letters*, V. 1, No. 4 (Sept. 1982), 139-143.
2. "An Extension of Matching Theory" (with G. Cornuejols), *Journal of Combinatorial Theory, Series B* (1986), 285-296.
3. "Recognizing Max-Flow Min-Cut Path Matrices" (with D. Wagner), *Operations Research Letters*, V. 7, No. 1 (Feb. 1988), 37-42.
4. "Is Every Cycle Basis Fundamental?" (with E. Zemel), *Journal of Graph Theory*, V. 13, No. 1 (1989), 117-137.
5. "Path-isomorphic Networks," *Journal of Graph Theory*, V. 14, No. 6 (1990), 709-722.
6. "The Prism-free Planar Graphs and Their Cycle Bases" (with R. Mardon), *Journal of Graph Theory*, V. 15, No. 4 (1991), 431-441.
7. "Cycle Bases from Orderings and Coverings" (with R. Mardon), *Discrete Mathematics*, 94 (1991), 81-94.
8. "The Complexity of Lifted Inequalities for the Knapsack Problem" (with E. Zemel), *Discrete Applied Mathematics*, 39 (1992) 113-123.
9. "Recognizing Voronoi Diagrams with Linear Programming," *ORSA Journal on Computing*, V. 4, No. 4 (Fall 1992).
10. "When Do Short Cycles Generate the Cycle Space?" (with R. Mardon), *Journal of Combinatorial Theory, Series B*, V. 57, No. 1 (Jan. 1993) 88-99.

11. "Minimum Path Bases," *Journal of Algorithms* 15 (1993) 125-142.
12. "The All-pairs Min Cut Problem and the Min cycle Basis Problem on Planar Graphs" (with R. Mardon), *SIAM Journal on Discrete Mathematics*, V. 7, No. 3 (Aug. 1994) 403-418.
13. "Outer-facial Graphs and the Traveling Salesman Problem" (with W.R. Pulleyblank), *SIAM Journal on Optimization* V. 4, No. 3 (Aug. 1994) 676-689.
14. "Multiterminal Flows and Cuts" (with F. Margot), *Operations Research Letters* V. 17 (1995) 201-204.
15. "Generalizing the All-pairs Min Cut Problem," *Discrete Mathematics* V. 147 (1995) 151-169.
16. "The Planar Multiterminal Cut Problem," *Discrete Applied Mathematics* V. 85 (1998) 203-222. Selected as an *Editor's Choice* paper for 1998 by the editors of *Discrete Applied Mathematics*.
17. "The Submodular Optimization Problem with Side Constraints," *Mathematics of Operations Research* V. 23, No. 3 (August 1998) 661-679.
18. "Crossing Properties of Multiterminal Cuts" (with Robert F. Easley) *Networks* V. 34, No. 3 (October 1999) 215-220.
19. "The Conference Paper-Reviewer Assignment Problem" (with J. Wei and R. Czuchlewski) *Decision Sciences Journal* V. 30, No. 3 (Summer 1999) 865-876.
20. "A Strongly Polynomial Time Algorithm for a Constrained Submodular Optimization Problem," *Discrete Applied Mathematics*, V. 113 (2-3) (2001) 183-194.
21. "Compact Representations of Cuts," *SIAM Journal on Discrete Mathematics* V. 14, No. 1 (2001) 49-66.
22. "Characterizing the Flow Equivalent Trees of a Network," *Discrete Applied Mathematics*, V. 128 (2003) 387-394.
23. "Representing the Strengths and Directions of Pairwise Comparisons," *European Journal of Operational Research*, V. 163:2 (June 1, 2005) 357-369.
24. "The S-digraph Optimization Problem and the Greedy Algorithm," *Discrete Optimization*. V. 2:4 (December 2005) 320-334.
25. "Finding Maximum Square-free 2-matchings in Bipartite Graphs," *Journal of Combinatorial Theory, Series B*, V. 96 (2006) 693-705.

26. "The k-piece Packing Problem" (with P. Hell and J. Szabo), *Journal of Graph Theory*, V. 52, Issue 4 (August 2006) 267-293.
27. "Vote Trading in Public Elections," *Mathematical Social Sciences*, V. 52 (2006) 31-48.
28. "Maximum Cardinality 1-Restricted Simple 2-Matchings," *Electronic Journal of Combinatorics* 14 (2007), #R73.
29. "The Manipulation of Voting Systems," *Journal of Business Ethics*, V. 80, No. 1 (June 2008) 13-21. (Invited paper).
30. "Polyhedral Results for 1-restricted Simple 2-Matchings," (with Y. Li), *SIAM Journal on Optimization*, V. 19, No. 3 (2008), 1131-1149.
31. "The Action Gambler and Equal-Sized Wagers," *Journal of Applied Probability*, V. 46 (2009), 35-54.
32. "Optimal Electronic Musical Instruments," *European Journal of Operational Research* 206 (2010) 614-622.
33. "Neighbor Systems and the Greedy Algorithm," *SIAM Journal on Discrete Mathematics*. V. 24, No. 4 (2010) 1638-1661.
34. "Maximum Cardinality Simple 2-matchings in Subcubic Graphs," (with Y. Li), *SIAM Journal on Optimization*, V. 21, No. 3 (2011) 1027-1045.
35. "Polyhedron of Triangle-free Simple 2-matchings in Subcubic Graphs," (with Y. Li), *Mathematical Programming, Series A*. V. 138, No. 1-2 (2013) 43-82.
36. "Fingering Systems for Electronic Musical Instruments," *Mathematics and Music*, V. 8, No. 1 (2014) 41-58.
37. "Packing k-matchings and k-critical Graphs," *SIAM Journal on Discrete Mathematics*. V. 32, No. 1 (2018) 320-351.

### **Publications, Proceedings**

(These publications are all extended abstracts from full versions of the papers; most have been published in journals elsewhere.)

(Extended abstracts for IPCO (there are four of these below) are reviewed by a panel of top researchers in the field. The acceptance rate is typically 1 in 3.)

“Generalized Max Flows and Augmenting Paths,” (extended abstract) in *Integer Programming and Combinatorial Optimization*, Eds.: E. Balas, J. Clausen, Springer, Lecture Notes in Computer Science 920, Berlin (1995) 185-197.

“The Submodular Optimization Problem with Side Constraints,” (extended abstract) in *Integer Programming and Combinatorial Optimization*, Eds.: W.H. Cunningham, S.T. McCormick, M. Queyranne, Springer, Lecture Notes in Computer Science 1084, Berlin (1996) 249-259.

“The Conference Paper Assignment Problem” (with J. Wei and R. Czuchlewski), *Proceedings of the Asia Pacific Decision Sciences Institute Annual Meeting*, Taipei, Taiwan (June 1998).

“The Square-free 2-factor Problem in Bipartite Graphs,” (extended abstract) in *Integer Programming and Combinatorial Optimization*, Eds.: G. Cornuejols, R.E. Burkard, G. Woeginger, Springer, Lecture Notes in Computer Science 1610, Berlin (1999) 234-241.

“1-restricted Simple 2-matchings (extended abstract),” in *Electronic Notes in Discrete Mathematics*, Vol 18, Elsevier (2004) 145-149.

“Triangle-free Simple 2-matchings in Subcubic Graphs (extended abstract)” (with Yanjun Li), in *Integer Programming and Combinatorial Optimization*, Eds.: M. Fischetti and D.P. Williamson, Springer, Lecture Notes in Computer Science 4513, Berlin (2007) 43-52.

“Neighbor Systems and the Greedy Algorithm (extended abstract),” in *Proceedings of the Research Institute for Mathematical Sciences Workshop on Combinatorial Optimization and Discrete Algorithms*, June 2008, Kyoto University, B23 (2010) 63-79.

### **Publications, Education**

“Using the Web in the Teaching of Operations Management,” *Decision Line* December/January 1998, 13-14 (see also <http://dsi.gsu.edu/>)

“Operations Management Software,” on the Web site of Prentice Hall as a supplement to *Operations Management, Fifth Edition* (1999) by Krajewski and Ritzman,

*SimQuick: Process Simulation with Excel*, Prentice Hall, 2001; 100 page text plus a software package.

*SimQuick: Process Simulation with Excel, 2nd Edition*, Prentice Hall, 2004; 120 page text plus a software package.

*SimQuick: Process Simulation with Excel, 3rd Edition*, Printed by CreateSpace, January 2016 (updated 6/15/16); 125 page text plus a software package.

## **Publications, Reviews**

Review of text: *Graphs, Networks and Algorithms* by Dieter Jungnickel (Springer, 2002), *Operations Research Letters*, V. 32, No. 4 (July 2004) 391-2.

## **Working Papers**

“A class of rank 2 facets for the 1-restricted simple 2-matching polytope,” (with Y. Li).

“Generalized Max Flows and Augmenting Paths.”

“Recognizing Classes of Path-Arc Incidence Matrices.”

“Whitney-Type Theorems for s-t Networks.”

“The Cardinality Triangle-Free 2-Factor Problem” (with G. Cornuejols and W.R. Pulleyblank), contained in Ph.D. thesis, 1984.

## **Work in Progress**

Preparing for submission: “The Cardinality Triangle-Free 2-Factor Problem” (with G. Cornuejols and W.R. Pulleyblank)

“Optimal Wagering for Sequential Bets with Piece-wise Linear Utility.”

## **Grants and Summer Funding**

Awarded summer research support from Kellogg: 1985-1991 (except 1987).

Taught for Kellogg program in Bangkok, Thailand, 1987.

Awarded three Kellogg research grants from IBM Research Chairs.

Awarded summer research support from Notre Dame, College of Business, 1994-present (except 2017).

## **Awards**

### **Teaching**

Outstanding Teacher Award, Executive MBA Program, 2000; U. of Notre Dame.

Outstanding Teacher Award, Executive MBA Program, 1996; U. of Notre Dame.

Faculty Honor Role: Spring 1988, Spring 1989, Fall 1989; Northwestern U.

Four Star Rating: Winter 1989, Fall 1989, Spring 1993; Northwestern U.

Nominated for TMP Outstanding Teacher Award: Spring 1989; Northwestern U.

### **Editorial Work**

Certificate of Excellence in Reviewing; Operations Research Letters 2014.

"Only awarded once a year to a small hand-picked selection of reviewers, as identified by our journal Editors and Editor-in-Chiefs, this accolade is recognition of your hard work and contribution to the publication of scientific and medical research."

### **Teaching for Special Programs in Executive Education**

Sports Management Institute (Project Management), University of Notre Dame, 1994, 1996.

Management Development Program, Bayer Corp. (Operations Management and Decision Processes), University of Notre Dame, 1995, 1996, 2000.

APPA Executive Institute (Project Management), University of Notre Dame, 1996, 1997.

Management Development Program, Owens-Illinois. (Operations Management), University of Notre Dame, 2002.

Chicago Executive MBA Program (Quantitative Analysis in Business), University of Notre Dame, 2002-present.

Chicago Executive MBA Program (Operations Management, guest speaker), University of Notre Dame, 2004.

Quantitative Skills for Lawyers, University of Notre Dame, 2012.

### **Consulting**

Consultant in Marketing Research Department of Pfizer Pharmaceuticals (New York City): Fall 1978, Summer 1979.

Consultant for Moore, Business Communication Services on project scheduling, 1992.

Consultant for Rand McNally on project scheduling, 1993.

Consultant for National Steel on facility location, 1995.

Consultant for Whirlpool on quality control, 1997.

### **Ph.D. Students**

Primary Ph.D. thesis advisor: Russell Mardon, Kellogg (defended, Summer 1990).

External examiner on Ph.D. committee: K. Srinivasan, Mathematics, University of Illinois, Chicago (Winter 1989); and Joe Tama, GSIA, Carnegie Mellon University (Winter 1989).

### **Refereeing**

I have refereed for the following journals, organizations, and conferences: Academic Press, Inc.; *Algorithmica*; *Ars Combinatorial*; *Discrete Applied Mathematics*; *Discrete Mathematics*; *Discrete Optimization*; *Electronic Journal on Combinatorics*; *European Journal of Operational Research*; *IMA Journal of Math. App. in Bus. and Ind.*; *INFORMS Transactions on Education*; *Integer Programming and Combinatorial Optimization (IPCO) Conference*; *International Workshop on Graph Theoretic Concepts in Computer Science*; *International Transactions in Operations Research*; John Wiley & Sons, Inc.; *Journal of Business Ethics*; *Journal of Combinatorial Mathematics and Combinatorial Computing*; *Journal of Combinatorial Theory, Series B*; *Journal of Discrete Algorithms*; *Journal of Economic Theory*; *Journal of Graph Theory*; *Journal of Optimization Theory and Applications*; *Linear Algebra and Its Applications*; *Mathematical Programming*; *Mathematical Social Sciences*; *Mathematics of Operations Research*; Natural Sciences and Engineering Research Council of Canada (grant proposal); National Science Foundation (grant panel); *Naval Research Logistics Quarterly*; *Networks*; *Operations Research*; *Operations Research Letters*; *ORSA Journal on Computing*; *SIAM Journal on Computing*; *SIAM Journal on Discrete Mathematics*; Southwestern Publishing/ITP; *STOC Conference*.

### **Service to Professional Organizations**

Organized Cluster and Session for ORSA/TIMS Conference, Nashville, May 1991.

Judge for 1992 George E. Nicholson Jr. Memorial Award (Best student paper in OR).

Organized Session for ORSA/TIMS Conference, Chicago, May 1993.

Organized Session for ORSA/TIMS Conference, Phoenix, November 1993.

Organized Session for INFORMS Conference, New Orleans, November 1995.

Organized Session for INFORMS Conference, San Diego, May 1997.



Handled assignment of papers to reviewers (with Jerry Wei and Richard Czuchlewski; using a network flow algorithm) for the POM track of the DSI Annual Meeting, 1998.

Organized Cluster for INFORMS Conference, Salt Lake City, May 2000.

Organized Session for Mathematical Programming Conference, Atlanta, August 2000.

Member of National Science Foundation Panel for the Small Business Innovation Research Program, Arlington, VA, September 2001.

Organized Two Sessions for INFORMS Conference, Miami, November 2001.

Co-organized Cluster for IFORS (International Federation of Operational Research Societies) Conference, Hawaii, July 2005.

Submission reviewer for International Network Optimization Conference, Pisa, Italy 2009.

Organized (with Don Wagner) a minisymposium on Combinatorial Optimization for the 2011 Joint Meetings of the American Mathematical Association, the Mathematics Association of America, and the Society for Industrial and Applied Mathematics.

### **Editorial Work**

Associate Editor, Operations Research Letters, 2002 to Jan. 2014.

### **Professional Memberships**

INFORMS (Institute for Operations Research and the Management Sciences).

American Mathematical Society.

Mathematical Association of America.

Mathematical Optimization Society.

### **Presentations**

1. Carnegie Mellon University, Graduate School of Industrial Administration, Fall 1982, "Packing Subgraphs in a Graph" (joint with G. Cornuejols and W. R. Pulleyblank).
2. Johns Hopkins University, Department of Mathematical Sciences, Spring 1983, "Packing Subgraphs in a Graph" (joint with G. Cornuejols and W. R. Pulleyblank).

3. ORSA/TIMS Conference, Orlando, Spring 1983, "Recognizing Classes of Path-arc Incidence Matrices" (joint with E. Balas).
4. University of Waterloo, Department of Combinatorics and Optimization, Spring 1984, "Packing Subgraphs in a Graph." (joint with G. Cornuejols and W. R. Pulleyblank).
5. ORSA/TIMS Conference, San Francisco, May 1984, "The Cardinality Triangle-Free 2-Factor Problem" (joint with G. Cornuejols and W. R. Pulleyblank).
6. University of Waterloo, Department of Combinatorics and Optimization, Fall 1984, "The Cardinality Triangle-Free 2-Factor Problem" (joint with G. Cornuejols and W. R. Pulleyblank).
7. Cornell University, Department of Operations Research, Spring 1985, "The Cardinality Triangle-Free 2-Factor Problem" (joint with G. Cornuejols and W. R. Pulleyblank).
8. Northwestern University, MEDS Department, Spring 1985, "The Cardinality Triangle-Free 2-Factor Problem" (joint with G. Cornuejols and W. R. Pulleyblank).
9. 12th Mathematical Programming Symposium, Boston, August 1985, "Outer-facial Graphs and the Traveling Salesman Problem" (joint with W. R. Pulleyblank).
10. ORSA/TIMS Conference, Los Angeles, May 1986, "Outer-facial Graphs and the Traveling Salesman Problem" (joint with W. R. Pulleyblank).
11. 3eme Colloque International: Theorie des Graphes et Combinatoire, Marseille, France, June 1986, "Equivalent Objective Functions and the Greedy Heuristic for the Traveling Salesman Problem" (joint with E. Zemel).
12. ORSA/TIMS Conference, Miami, Florida, October 1986, "Recognizing Classes of Path-Arc Incidence Matrices" (joint with E. Balas).
13. Purdue University, Industrial Engineering Department, March 1987, "Recognizing Classes of Path-Arc Incidence Matrices."
14. ORSA/TIMS Conference, St. Louis, October 1987, "Is Every Cycle Basis Fundamental?" (joint with E. Zemel).
15. ORSA/TIMS Conference, St. Louis, October 1987, "On the Complexity of Lifted Inequalities for the Knapsack Problem" (joint with and presented by E. Zemel with another paper of his).

16. 20th Southeastern International Conference on Combinatorics, Graph Theory and Computing, Boca Raton, Florida, February 1989, "Cycle Bases from Orderings and Coverings" (joint with R. Mardon).
17. Northwestern University, Combinatorial Optimization Seminar, Spring 1988, "Is Every Cycle Basis Fundamental?" (joint with E. Zemel).
18. SIAM Conference on Discrete Mathematics, San Francisco, February 1988, "On the Complexity of Lifted Inequalities for the Knapsack Problem" (joint with and presented by E. Zemel with another paper of his).
19. 13th International Symposium on Mathematical Programming, Tokyo, Japan, September 1988, "On the Complexity of Lifted Inequalities for the Knapsack Problem" (joint with and presented by E. Zemel with another paper of his).
20. Northwestern University, Combinatorial Optimization Seminar, Fall 1988, "Path-isomorphic Networks."
21. Purdue/Calumet University, Mathematics Department, Winter 1989, "Recognizing Voronoi Diagrams with Linear Programming" and "Outer-facial Graphs and the Traveling Salesman Problem" (joint with W. R. Pulleyblank).
22. Belcore Symposium on Polyhedral Combinatorics, Morristown, New Jersey, June 1989, "Recognizing Voronoi Diagrams with Linear Programming."
23. Northwestern University, Combinatorial Optimization Seminar, Spring 1990, "The All-pairs Min Cut Problem and the Minimum Cycle Basis Problem on Planar Graphs" (joint with and presented by R. Mardon).
24. University of Waterloo, Department of Combinatorics and Optimization, Spring 1990, "The All-pairs Min Cut Problem and the Minimum Cycle Basis Problem on Planar Graphs" (joint with R. Mardon).
25. ORSA/TIMS Conference, Las Vegas, May 1990, "Path-isomorphic Networks."
26. 4th Colloque International: Theorie des Graphes et Combinatoire, Marseille, France, July 1990, , "The All-pairs Min Cut Problem and the Minimum Cycle Basis Problem on Planar Graphs" (joint with R. Mardon).
27. Northwestern University, Combinatorial Optimization Seminar, Spring 1990, "Outer-facial Graphs and the Traveling Salesman Problem" (joint with W. R. Pulleyblank).
28. ORSA/TIMS Conference, Philadelphia, October 1990, "Recognizing Voronoi Diagrams with Linear Programming."

29. ORSA/TIMS Conference, Philadelphia, October 1990, "The All-pairs Min Cut Problem and the Minimum Cycle Basis Problem on Planar Graphs" (joint with and presented by R. Mardon).
30. Northwestern University, Combinatorial Optimization Seminar, Fall 1990, "Minimum Path Bases."
31. Cornell University, Applied Mathematics Seminar, Spring 1991, "Minimum Path Bases."
32. ORSA/TIMS Conference, Nashville, May 1991, "Minimum Path Bases."
33. TIMS/SOBRAPO Meeting, Rio de Janeiro, Brazil, July 1991, "Minimum Path Bases."
34. 14th Mathematical Programming Symposium, Amsterdam, August 1991, "Minimum Path Bases."
35. ORSA/TIMS Conference, Anaheim, November 1991, "The Planar Multiterminal Cut Problem."
36. Northwestern University, Industrial Engineering Seminar, January 1992, "The Planar Multiterminal Cut Problem."
37. Loyola University of Chicago, Department of Mathematics, February 1992, "The Planar Multiterminal Cut Problem."
38. SIAM Conference on Optimization, Chicago, May 1992, "Generalizing the All-pairs Min Cut Problem."
39. University of Kentucky, Department of Mathematics, September 1992, "The Planar Multiterminal Cut Problem."
40. Oberwolfach, Germany, Combinatorial Optimization Symposium, January 1993, "Generalizing the All-pairs Min Cut Problem."
41. University of Notre Dame, Department of Management, February 1993, "The Planar Multiterminal Cut Problem."
42. Northwestern University, Combinatorial Optimization Seminar, Spring 1994, "Generalized Max Flows and Augmenting Paths."
43. 15th Mathematical Programming Symposium, Ann Arbor, August 1994, "Generalized Max Flows and Augmenting Paths."

44. University of North Carolina, Department of Operations Research, February 1995, "The Planar Multiterminal Cut Problem."
45. Integer Programming and Combinatorial Optimization Symposium, Copenhagen, May 1995, "Generalized Max Flows and Augmenting Paths."
46. INFORMS Conference, New Orleans, November 1995, "Max Profit Flows."
47. Northwestern University, Operations Seminar, January 1996, "A Submodular Optimization Problem with Side Constraints."
48. Integer Programming and Combinatorial Optimization Symposium, Vancouver, June 1996, "A Submodular Optimization Problem with Side Constraints."
49. INFORMS Conference, San Diego, May 1997, "Compact Representations of Cuts."
50. 16th Mathematical Programming Symposium, Lausanne, Switzerland, August 1997, "Compact Representations of Cuts."
51. University of Waterloo, Department of Combinatorics and Optimization, Combinatorial Optimization Seminar, November 1997, "The All  $k$ -cut Problem."
52. Indiana University, Operations Seminar, January 1998, "Cut Problems and Their Applications."
53. Carnegie Mellon University, Graduate School of Industrial Administration, Combinatorial Optimization Seminar, January 1998, "The All  $k$ -cut Problem."
54. INFORMS Conference, Montreal, May 1998, "Crossing Properties of Multiterminal Cuts."
55. Asia Pacific Decision Sciences Institute Annual Meeting, June 1998, "The Conference Paper Assignment Problem," (joint with J. Wei and R Czuchlewski; presented by J. Wei).
56. INFORMS Conference, Seattle, October 1998, "The Multi-commodity Cut Problem."
57. Carnegie Mellon University, Graduate School of Industrial Administration, Combinatorial Optimization Seminar, February 1999, "Generalized Network Problems."
58. Indiana University, Operations Seminar, March 1999, "Generalized Network Problems."

59. Production and Operations Management Society Conference, Charleston, S.C., March 1999, "The Conference Paper Assignment Problem," (joint with J. Wei and R Czuchlewski; presented by J. Wei).
60. Integer Programming and Combinatorial Optimization Symposium, Graz, Austria, June 1999, "The Square-free 2-factor Problem in Bipartite Graphs."
61. Northwestern University, Operations Seminar, October 1999, "A Relaxation of the Hamilton Tour Problem."
62. INFORMS Conference, Philadelphia, November 1999, "Characterizing the Flow Equivalent Trees of a Network."
63. Conference on Matchings, Matroids, and Extensions, University of Waterloo, December 1999, "Finding a Square-free 2-factor in a Bipartite Graph."
64. 17th Mathematical Programming Symposium, Atlanta, August 2000, "The k-piece Packing Problem," (joint with P. Hell).
65. INFORMS Conference, San Antonio, November 2000, "Process Simulation in Excel with SimQuick."
66. INFORMS Conference, Hawaii, June 2001, "Representing the Strengths and Directions of Pairwise Comparisons."
67. INFORMS Conference, Miami, November 2001, "The k-piece Packing Problem," (joint with P. Hell).
68. Integer Programming Conference in Honor of Egon Balas, Carnegie Mellon University, June 2002, "A Greedy Algorithm for Multi-jump Systems."
69. IFORS Conference, Edinburgh, Scotland, July 2002, "A Generalized Greedy Algorithm."
70. INFORMS Conference, San Jose, November 2002, "SimQuick: Process Simulation with Excel."
71. European Conference on Combinatorics, Graph Theory and Applications, Prague, September 2003, "The k-piece Packing Problem," (joint with P. Hell and J. Szabo; presented by Szabo).
72. Latin-American Conference on Combinatorics, Graphs and Applications, University of Chile, Santiago, Chile, August 2004, "The 1-restricted Simple 2-matching Problem."

73. IFORS Conference, Hawaii, July 2005, "Maximum 1-restricted Simple 2-matchings."
74. Northwestern University, Operations Seminar, November 2005, "Optimal Vote Trading."
75. American Mathematical Society, Central Region Meeting, April 2006, "Recent Developments in Matching Theory."
76. 19th Mathematical Programming Symposium, Rio de Janeiro, August 2006, "Edge-free Simple 2-matchings in Trees," (joint with Y. Li).
77. McGill University, Discrete Mathematics Seminar, February, 2007, "A Greedy Algorithm for Multi-jump Systems."
78. Integer Programming and Combinatorial Optimization Symposium, Cornell University, June 2007, "Triangle-free Simple 2-matchings in Subcubic Graphs" (joint with Yanjun Li).
79. INFORMS Conference, Seattle, November 2007, "Polyhedral Results for 1-restricted Simple 2-matchings" (joint with and presented by Yanjun Li).
80. RIMS Workshop on Combinatorial Optimization and Discrete Algorithms, Kyoto, Japan, June 2008, "Neighbor Systems and the Greedy Algorithm."
81. INFORMS Conference, Washington, D.C., October 2008, "Optimal Vote Trading."
82. 20th Mathematical Programming Symposium, Chicago, August 2009, "Triangle-free Simple 2-matchings in Subcubic Graphs," (joint with Y. Li).
83. INFORMS Conference, San Diego, October 2009, "The Maximum Weight Triangle-free Simple 2-matching Problem in Subcubic Graphs (joint with and presented by Yanjun Li).
84. INFORMS Conference, Austin, TX, November 2010, "The Action Gambler and Equal-Sized Wagering."
85. 2011 Joint Meetings of the American Mathematical Association, the Mathematics Association of America, and the Society for Industrial and Applied Mathematics, New Orleans, "Polyhedral and Algorithmic Results for 1-restricted Simple 2-matchings," (joint with Y. Li).

86. INFORMS Midwest Regional Conference, Columbus, OH, August 2011, "Maximum Cardinality Simple 2-matchings in Subcubic Graphs," (joint with and presented by Yanjun Li).
87. 12<sup>th</sup> Modeling and Optimization: Theory and Application Conference, Lehigh University, July 2012, "A Class of Rank 2 Facets for the 1-Restricted Simple 2-Matching Polytope," (joint with and presented by Yanjun Li).
88. 21st Mathematical Programming Symposium, Berlin, August 2012, "A Generalized k-matching Problem," (joint with Y. Li).
89. INFORMS Conference, Minneapolis, MN, October 2013, "Valid Inequalities for the 1-Restricted Simple 2-Matching Polytope," (joint with and presented by Yanjun Li).
90. 18<sup>th</sup> Combinatorial Optimization Workshop, CNRS Centre Paul Langevin, Aussois, France, January 2014, "Valid Inequalities for the 1-Restricted Simple 2-Matching Polytope," (joint with and presented by Yanjun Li).
91. 21<sup>st</sup> Conference of the International Federation of Operational Research Societies, Quebec City, Canada, July 2017, "Process Simulation in the Classroom."
92. Workshop on Discrete Optimization in Honor of William Pulleyblank, IBM T.J. Watson Research Center, Yorktown Heights, NY, May 2018, "Packing k-matchings and k-critical Graphs."
93. 7<sup>th</sup> Canadian Discrete and Algorithmic Mathematics Conference, Vancouver, Canada, May 2019, "Finding triangle-free simple 2-factors, revisited."