

MONIQUE GUIGNARD-SPIELBERG

Place of birth: Clermont-Ferrand, Puy-de-Dôme, France

Address: 38 Knollwood Drive
Cherry Hill, NJ 08002, USA

Research Areas:

Mathematical Programming:

Large scale integer programs.

Relaxation methods, especially for nonlinear integer programming. Convexification and deconvexification.

Stochastic integer optimization.

Operations Research:

Scheduling, especially production scheduling and timetabling.

Management of natural resources. Mining.

Applications in chemical manufacturing, finance and banking.

Applied Mathematics.

STUDIES and DIPLOMAS

Université des Sciences et Techniques de Lille, France:

Licence ès-Sciences Mathématiques Pures.

Diplôme d'Etudes Supérieures de Mathématiques Pures.

Licence ès-Sciences Mathématiques Appliquées.

Diplôme d'Etudes Approfondies de Mathématiques Appliquées, Très Bien.

Thèse de Doctorat de Spécialité en Mathématiques Appliquées, Très Bien avec Félicitations du Jury, 1967.

Advisor: Professeur Pierre Huard.

Thèse de Doctorat ès-Sciences Mathématiques, Très Honorable avec Félicitations du Jury, 1980. Advisor:

Professeur Pierre Huard.

TEACHING POSITIONS

Université des Sciences et Techniques de Lille, France:

Assistante, then Maître-assistante 1965-72,

Maître de Conférences, 1979-1980.

University of Pennsylvania, the Wharton School:

Department of Statistics:

Assistant Professor, then Associate Professor 1972-81; Professor 1981-1987.

Department of Operations and Information Management

Professor, 1987-.

Université de Paris-Orsay, Université de Valenciennes, Université de Paris-Nord, and Université de Versailles,

Visiting Professor,

One month each summer, 1989-1996, 1998, 2000 and 2001, 2003, 2004, 2005, 2007,

2008. Plus fall 1993, December 1994, May-June 1999.

Universidad de Chile, Santiago:

Department of Industrial Engineering
Visiting Professor, August-November 1994,
also November 2002, February-March 2006, March 2008.
Department of Mathematical Engineering
Visiting Professor, March 1999.

Universidad de Concepción, Chile:
Magister en Ingeniería Industrial, Profesor Visitante.

EDITORSHIPS

Edited *Mathematical Programming Study* 19, "Optimality and Stability in Mathematical Programming," North Holland Pub. Co., 1982.

Associate editor of the journal "*Computational Optimization and Applications*," Kluwer Pub. Co., 1991-1997.

Associate editor of *TOP*, journal of the Spanish Operational Research Society (2000- 2007)

Co-editor with Kurt Spielberg of three special issues of *Annals of Operations Research*: "Integer Programming: State of the Art and Recent Advances", two volumes appeared in October and November 2005, the third one in February 2007.

Associate Editor, *Operations Research*, 2003- 2005.

PROFESSIONAL AFFILIATIONS

INFORMS.

Mathematical Programming Society.

Société Mathématique de France.

Société de Mathématiques Appliquées et Industrielles (France).

ROADEF (French Operations Research Society).

ICHIO (Chilean Operations Research Society).

RECENT PROFESSIONAL ACTIVITIES

Cluster Chair (Integer Programming) for the INFORMS Meeting in Miami Beach, fall 2001.

Member of the program committee for several recent meetings, in particular the CLAIO meeting in Mexico City, September 2000, the FRANCORO Meeting, Quebec City, May 2001, the CLAIO meeting in Concepción, Chile, November 2002, the APMOD conference in Madrid, June 2006, and the XIII CLAIO, Montevideo, Uruguay, November 2006.

Member of the Advisory Committee for the PhD Program in Operations Management, Department of Industrial Engineering, University of Chile, Santiago, Chile (2002-).

Member of the Editorial Board "Global World", GAMS World, Washington, DC.

Session organizer and chair, EURO Meetings in Reykjavik, Iceland (2006), Prague, Czech Republic (2007), Bonn, Germany, 2009, Lisbon, Portugal, 2010.

Session organizer and chair, ECCO (European Chapter on Combinatorial Optimization) Meeting in Dubrovnik, Croatia, 2008.

Session organizer and chair, ALIO-INFORMS Conference, Buenos Aires, Argentina, 2010.

GRANTS

IBM Research Support Program, Palo Alto Scientific Center, joint grant with Matthew J. Liberatore, Villanova University, "A Dynamic Production Scheduling System for the Process Industries," August 1984 - January 1987.

NSF Grant No. ECS-8508142, "A New Approach to Relaxation in Integer Programming," September 1985 - February 1989.

A hardware grant from NSF, jointly with several professors from the Department of Statistics, 1987.

NSF Grant No. DDM-9014901, "Study of Lagrangean Decompositions," 1991-1995.

Grant from the University of Pennsylvania Research Foundation, 12/1991-4/1993, "Efficient Solution of 0-1 Knapsack Problems with Logical Constraints."

A grant from Fundación Andes, Chile, August-November 1994.

NSF International Grant INT-525435, in parallel with a grant from FONDECYT, Chile, to Professor Andres Weintraub, University of Chile, 1994-1996, "Solution Approaches to Forest Management."

Grant from the University of Pennsylvania Research Foundation, 5/1995-4/1996, "Branch-and-Bound for Lagrangean Relaxation."

Grant from the University of Pennsylvania Research Foundation, 1/1998-12/1998, with Chun Hung Chen, "Ordinal Optimization."

Grant from Wharton International Programs, (\$10,000), for joint research with Professor Andres Weintraub (U. of Chile) and Professor Luis Contesse (PUC, Santiago, Chile), 1999-2000.

NSF International Grant INT-9900376 (1999-2004), with Peter Hahn, in parallel with a grant from INRIA to Catherine Roucairol (U. of Versailles, France), "Impact of parallelism on the solution of the Quadratic Assignment Problem," (\$21,000).

NSF Grant DMI-9900183 (1999-2004), "Integer Programming Methods for Short Term Scheduling of Batch Operations in Process Industries," (\$248,000).

NSF Grant DMI-0400155 (2004-2009) "Hybrid ARQ Symbol Mapping in Digital Wireless Communication Systems Based on the Quadratic 3-Dimensional Assignment Problem (Q3AP)", (co-PI's: Peter Hahn (U Penn) and Zhi Ding (UC Davis)) (\$355,000 + \$10,000).

THESIS AND DISSERTATION SUPERVISION

D. Richard-Barthet: M.S., On the job-shop scheduling problem, 1970.

D. Wertheimer: M.S., On scheduling problems solved by network flow techniques, 1972.

M. Posner: Ph.D., On a collapsing generalized knapsack problem, 1974.

D. Wertheimer: Ph.D., Three level location problems, 1976.

Kun Yuan Chen: Ph.D., On a class of stochastic programming problems, 1978.

J. Adler: Ph.D., On special dual algorithms and sparsity, 1979.

K. Opaswongkarn: Ph.D., Single and Multi-Commodity plant location problems, 1984.

M. Rosenwein: Ph.D., Design And Application of Solution Methodologies To Optimize Problems In Transportation Logistics, 1986.

C. Heller: M. S., Coefficient Reduction In Integer Programming, 1986.

R. de Matta: Ph.D., On Some Production Scheduling Problems Solved By Integer Programming Techniques, 1989.

Jae Sik Lee: Ph.D., Representation And Automatic Structure Recognition Of Integer Programming Problems, 1989.

Ho Chang Lee: Ph.D., Several Problems in Scheduling, 1990.

Yiu-Tsan (Eric) Mack: Ph.D., Decomposition Methods for Solving Discrete-Continuous Facility Location Models with Nonlinear Objective Function Costs, 1992 (Dept. of City and Regional Planning).

Choonho Ryu, Ph.D., Capacity-Oriented Planning and Scheduling in Production and Distribution Systems, 1993.

Emmanuel Chajakis, Ph.D., Scheduling and Lagrangean Approximations, 1993.

Shunping Zhu, Ph.D., Hybrid Methods for Solving Lagrangean Duals and Applications to Mixed-Integer Programming, 1995.

Huan Yan, Ph.D., Solving Some Difficult Mixed-Integer Programming Problems In Production And Forest Management, October 1996.

Xiaopei Wang, Ph.D., Improving Planning for Railroad Yard, Forestry and Distribution, June 1997.

Seongje Ahn, Ph.D., On Solving Some Optimization Problems in Stochastic and Integer Programming with Applications in Finance and Banking, June 1997.

Hang Qian, M.S., On solving some multi-items capacitated lot sizing problems by column generation, 2001.

Sonia Wang, Ph.D., On solving some hard combinatorial optimization problems, 2003.

Alex Ornatsky, Ph.D., On solving Lagrangean problems to optimality using an improved bundle method, with application to lotsizing and forest management, 2007.

MEMBERSHIPS IN INTERNATIONAL DISSERTATION COMMITTEES

June 1996: Anass Nagih, University of Paris 13 (Gérard Plateau, advisor). Ph.D.

February 1997: Stéphane Krau, University of Montreal (Brigitte Jaumard, Pierre Hansen, advisors). Ph.D.

June 1997: Renaldo Veiga, University of Paris 13. HDR (Habilitation à Diriger des Recherches).

December 1997: Frédéric Semet, University of Valenciennes, France. HDR.

March 1998: Victor Albornoz, PUC, Santiago, Chile. (Luis Contesse, advisor). Ph.D.

December 2002: Said Hanafi, University of Valenciennes and Hainaut-Cambrésis, France (Arnaud Fréville, advisor). HDR.

December 2002: Van Dat Cung, University of Versailles and Saint-Quentin-en-Yvelines (Catherine

Roucairol, advisor). HDR.

February 2003: Babacar Thiongane, University of Paris-North (Paris 13) (Gérard Plateau, advisor). PhD.

December 2003: rapporteur for the Habilitation of Alain Faye, University of Paris North (Gerard Plateau and Alain Billionet, co-advisors).

December 2004: rapporteur for the Habilitation of Anass Nagih, University of Paris North. HDR.

June 2006: Abdelaziz Djerrah, University of Versailles (Catherine Roucairol, advisor). PhD.

November 2006: rapporteur for the Habilitation of Frédéric Roupin, University of Paris North. HDR.

November 2006: Nicolas Marcos, University of Paris-North (Paris 13) (Gérard Plateau, advisor). PhD.

January 2009: rapporteur for Christophe Louat, University of Versailles (Catherine Roucairol, advisor). PhD.

UNIVERSITY COMMITTEES

Past:

Elected member of the Senate Executive Committee, 1990-1992,1992-1994.

University Council, 1990-1994.

Ph.D. Coordinator, Operations and Information Management Department, 1992-2001.

GRANT PROPOSAL REVIEWS

Panelist for NSF, 1996, 1997, 2004. Invited in spring 2006, declined for health reasons.

Reviewer for NSERC (Canada) and FCAR (Canada) (1996-2005).

Reviewer for Fonds de Recherche sur la Nature et les Technologies (Québec, 2003).

PRESENTATIONS SINCE 2000

"Column generation and Lagrangean relaxation: two powerful related tools for Integer Programming," with Arnaud Fréville and Shunping Zhu, INFORMS, Philadelphia, PA, November, 1999.

Also ROADEF Meeting, Nantes, France, January 2000.

Also ECCO, Capri, Italy, May 2000.

"Impact of lower bounds based on linear formulations in the exact solution of QAP," with Van dat Cung, Thierry Mautor, Catherine Roucairol and Peter Hahn,

"A Sequential (Pseudo) Hot Start Method For BB (0,1) MIP," with Kurt Spielberg, EURO Meeting, Budapest, Hungary, July 2000.

"A Benders Decomposition Approach To Solve A Forest Machine Location Problem," with Andres Weintraub and Elena Stephens, EURO Meeting, Budapest, Hungary, July 2000..

"Parallelization of an Efficient Branch-And-Bound QAP Algorithm," with Catherine Roucairol, Van-Dat Cung, Peter Hahn and Thierry Mautor, EURO Meeting, Budapest, Hungary, July 2000.

"Redefinition of Event Variables in Continuous-Time Batch Processing Models," with S. Wang, ISMP (International Symposium on Mathematical Programming), Georgia Tech, Atlanta, GA, August 2000.

"Redefinition of Event Variables in Continuous-Time Batch Processing Models," with S. Wang, X Congreso Latino-Iberoamericano de Investigación de Operaciones y Sistemas (CLAIO), México, D.F., MEXICO, September 2000.

"A Proximal Augmented Lagrangean Relaxation For Linear And Nonlinear Integer Programming," with Luis Contesse and Seongje Ahn, X Congreso Latino-Iberoamericano de Investigación de Operaciones y Sistemas (CLAIO), México, D.F., MEXICO, September 2000.

"An Intelligent Hybrid System for Integer Programming Based on Genetic Algorithms, Linear Programming and Ordinal Optimization", with Yuh-Chyun Luo and Chun-Hung Chen, X Congreso Latino-Iberoamericano de Investigación de Operaciones y Sistemas (CLAIO), México, D.F., MEXICO, September 2000.

"A Linear Continuous-Time Model in Batch Sizing/Scheduling with a minimum number of events," with S. Wang, INFORMS Meeting, San Antonio, November 2000.

"Hot Starts for (0, 1) MIP with Logical Programming," with Kurt Spielberg, INFORMS Meeting, San Antonio, November 2000.

"Exploiting the Relationships between Column Generation, Constraint Generation and Lagrangean Relaxation," with Arnaud Fréville, INFORMS Meeting, San Antonio, November 2000.

"Problèmes de tailles de lots avec produits et périodes multiples, capacités, et possibilité de rupture de stocks: bornes et heuristique lagrangiennes," with Choonho Ryu and Hang Qian, FRANCORO III, Quebec City, Canada, May 2001.

"Revisiting Lower Bounds Based on Linear Formulations in the Exact solution of the Quadratic Assignment Problem," C. Roucairol, Van-Dat Cung, Thierry Mautor, Peter Hahn, Monique Guignard, presented at the Workshop on Novel Approaches to Hard Discrete Optimization, at the University of Waterloo, Ontario, Canada, April 2001.

"Modeling with Quadratic Constraints to Improve Exam Timetabling Solutions," Siqun Wang, Monique Guignard, Michael Bussieck, INFORMS Meeting, Miami Beach, Nov. 2001.

"Integer Programming Approaches for Batch Sizing & Scheduling," Siqun Wang, Monique Guignard, INFORMS Meeting, Miami Beach, Nov. 2001.

"Latest trends in the parallel exact solution of the QAP", with Van-Dat Cung, Peter Hahn and Catherine Roucairol, First International Conference on Optimization and Optimal Control in Ulaanbaatar, Mongolia in August, 2002.

"Modeling and solving batch scheduling problems," with Sonia Wang, XI Latin-Iberian American Congress of Operations Research (CLAIO), University of Concepción, Chile, October 2002.

"A Modular Approach for Batch Sizing and Scheduling in Chemical Manufacturing", with Sonia Wang, Depto. de Ingeniería Industrial y de Sistemas, PUC (Catholic Univ.), Santiago, Chile, Nov. 2002; also Depto. de Ingeniería Industrial, U. of Chile, Santiago, Chile, Nov. 2002.

"A Modular Decomposition Approach for Batch Sizing and Scheduling in Chemical Manufacturing," with Sonia Wang, Laboratoire d'Informatique de Paris-Nord (LIPN), Université de Paris 13, December 2002.

«Décomposition modulaire appliquée à un problème d'ordonnancement, » with Sonia Wang, ROADEF (French OR Society) Meeting in Avignon, France, February 2003.

"Batch scheduling in integer programming," Sonia Wang, Monique Guignard, INFORMS, Atlanta, October 2003.

"Exam Scheduling at USMA," with M. Bussieck, A. Meeraus, F. O'Brien, CORS/INFORMS Meeting, Banff, Canada, May 2004.

"Branch-and-Fix," Andres Weintraub, Monique Guignard, Laureano Escudero, Vladimir Marianov, Martin Quinteros, Patricio Hernandez, IFORS Meeting, Honolulu, Hawaii, July 2005.

"Three practical optimization problems in manufacturing and vehicle routing," Pontifical University of Valparaiso, Valparaiso, Chile, 9 March 2006.

"A Student-centric Class and Exam Scheduling System at West Point," Pontifical University of Santiago, 10 March 2006.

"A Level-2 Reformulation-Linearization Technique Bound for the Quadratic Assignment Problem," EURO 2006 Conference in Reykjavik, Iceland, July 2006 (also invited to organize a session).

"Prison Location under Uncertainty," Patricio Hernández, Andrés Weintraub, Laureano Escudero, Antonio Alonso, Monique Guignard, XXII CLAIO, Montevideo, Uruguay, Nov. 2006.

"Linearizations and relaxations for several extensions of the QAP: the Generalized Quadratic Assignment Problem and the Quadratic Three-Dimensional Assignment Problem," University of Chile, Department of Industrial Engineering, March 14, 2007.

"Relaxations for NLIP problems," EURO XXII Meeting, Prague, July 2007 (was also invited to organize a session).

"Une nouvelle relaxation primale pour la programmation non linéaire en nombres entiers. Application à un problème d'implantation avec capacités", LIPN, Séminaire OCAD, Université Paris 13, June 26, 2007.

"Primal and convex hull relaxations for nonlinear integer programming," with Aykut Ahlatcioglu, Séminaire PRISM, Université de Versailles, January 2008.

"Primal and convex hull relaxations for nonlinear integer programming," with Aykut Ahlatcioglu, DII, Universidad de Chile, March 2008.

"Primal and convex hull relaxations for nonlinear integer programming problems," Monique Guignard and Aykut Ahlatcioglu, ECCO Meeting, Dubrovnik, 29-31 May 2008.

Zhu, Y-R., Hahn, P.M., Liu, Y. and M. Guignard-Spielberg, "New Approach for the Cross-Dock Door Assignment Problem," presented at the XLI Brazilian Symposium on Operations Research, Porto Seguro, Bahia, Brazil, September 2-5, 2009.

Mining, Santiago, Chile,

M. Guignard, Aykut Ahlatcioglu, "The Convex Hull Relaxation for Nonlinear Integer Programs with Convex Objective and Linear Constraints," European Workshop in Mixed-Integer Nonlinear Programming, Marseille, France, April 12-16, 2010.

INVITED TUTORIALS AND PLENARIES

"Lagrangian Methods for Integer Programming," CORS Meeting, Halifax, Nova Scotia, Canada, May 1993.

"Primal Relaxations for Integer Programming," VII CLAIO, July 1994, Santiago, Chile.

"Lagrangian Relaxation: State of the Art," FRANCORO, Namur, Belgium, June 1995.

"Lagrangian Relaxation, Extensions & Applications," INFORMS Meeting, Dallas, October 1997.

"A few counterintuitive facts about Lagrangian relaxation," OPTIMA, 5th Chilean Operations Research Conference, Valparaiso, Chile, September 2003.

"Relaxation et décompositions lagrangiennes : trois questions et trois réponses surprenantes, » Journées Franciliennes de Recherche Opérationnelle, Paris, Juin 2004.

Invited as plenary speaker at APMOD 2006 in Madrid, Spain, with expenses covered, but declined for health reasons.

<http://bayes.escet.urjc.es/~apmod2006/index.php?action=committees>

Invited as plenary speaker at XIII CLAIO, in Montevideo, November 2006. "Relaxations and linearizations of nonlinear integer programming problems"

<http://www.fing.edu.uy/inco/eventos/clai06/eng/>

Invited as plenary speaker at the "International Workshop on Operations Research in Honour of Professor Laureano F. Escudero" (IWOR2008-Escudero), Madrid, Spain, June 5-7, 2008.

Invited as plenary speaker at the ECCO Meeting in Malaga, Spain, May 2010.

Invited speaker at the Workshop in honor of Catherine Roucairol, Versailles, France, May 18, 2010.

REPORTS (since 2000)

"A branch-and-bound algorithm for the setup knapsack problem," with Manos Chajakis, latest revision 1/2000.

"Modeling work-seeking and opportunistic autonomous agents in market-based systems," with P. Harker and J.-C. Tan.

"A Benders Decomposition Approach to Solve a Harvest Machine Location Problem," with Andrés Weintraub, Elena Stephens.

"A Sequential (Pseudo) Hot Start Method for BB (0,1) Mixed Integer Programming," with Kurt Spielberg.

"The Multi-Item Capacitated Lot-Sizing Problem," with Hang Qian, Department Report, April 2001.

"Modeling with quadratic constraints to improve exam timetabling solutions," Siqun Wang, Michael Busseick, M. Guignard, Department of OPIM working Report 01-07-02 (latest revision April 2003).

"Integer Programming Approaches for Batch Sizing and Scheduling," Siqun Wang, Monique Guignard, Department of OPIM working Report 01-11-02 (Latest revision: April 2003).

"A Note on the Systematic Generation of Benders Inequalities of Type II," Monique Guignard, OPIM Report 02-06-03.

"A modular decomposition approach for integer programming with application to a batch sizing and scheduling problem," Siqun Wang, Monique Guignard, OPIM Report 03-02-03.

"Optimization of Bank Check Sorting and Clearing Operations," Seongje Ahn, Uday M. Apte, Monique Guignard, August 2003.

"Lagrangian Decomposition and Lagrangian Substitution for Stochastic Integer Programming," OPIM Report 03-12-02.

"An integer programming based formulation of the U-line balancing problem," V. Deshpande, M. Guignard and K. Rajaram.

"A forcing short start search method for BB (0-1) mixed-integer programming," Monique Guignard, Kurt Spielberg, OPIM Report 04-10-02.

"An Information Management System for Batch Scheduling," by Antoine Saure and Monique Guignard, August 2004, OPIM Report 04-08-01.

"An integrated solution approach for batch scheduling in chemical manufacturing," Monique Guignard, Antoine Saure, Siqun Wang, August 2004.

"Una Aplicacion de Programacion Estocastica en un Problema de Gestion Forestal," (preliminary version in Spanish), with Andres Weintraub and Martin Quinteros, January 2006

"Building Systems For Non-OR Users: A System for Planning Production in Batches," Monique Guignard, Antoine Saure and Siqun Wang, April 2006.

"Lagrangian subproblems for an RLT-1 form of the GQAP," Research Report, July 2006, latest revision April 2007.

"Application of primal relaxation for nonlinear integer programs solved by the method of multipliers to generalized quadratic assignment problem," Aykut Ahlatcioglu and Monique Guignard, OPIM Department Report, September 2007.

"A New, Solvable, Primal Relaxation For Nonlinear Integer Programming Problems with Linear Constraints," OPIM Department Working Paper 070901, University of Pennsylvania, September 2007. Available on *Optimization Online*.

"Deconvexification: improving objective functions for convex 0-1 models and getting tighter continuous bounds," OPIM Department Working Paper, April 2008

"Selection of jail locations under uncertainty," Patricio Hernandez, Antonio Alonso, Laureano Escudero, Monique Guignard, Vladimir Marianov, Andres Weintraub, Research report, March 2006.

NSF CONFERENCES

Hybrid ARQ Symbol Mapping in Digital Wireless Communication Systems Based on the Quadratic 3-dimensional Assignment Problem (Q3AP).

Monique Guignard, Peter Hahn, Zhi Ding, Bum-Jin Kim, Harvind Samra, Thomas Stützle, and Sebastian Kanthak.

In Proceedings of the 2005 NSF Design, Service and Manufacturing Grantees and Research Conference, 2005.

Improved Algorithms for the Generalized Quadratic Assignment Problem.

Monique Guignard, Peter M. Hahn, Artur Alves Pessoa, Yi-Rong Zhu

In Proceedings of the 2009 NSF DMMI Grantees and Research Conference, 2009, Hawaii.

ARTICLES ALMOST READY FOR SUBMISSION

"Solving a Forest Planning and Road Building Model with Adjacency Restrictions," Antoine Saure, Gerardo Reyes, Monique Guignard and Andres Weintraub.

"A Branch-and-Cluster Coordination scheme for Selection of Prison Facility Sites under Uncertainty," Patricio Hernandez, Antonio Alonso-Ayuso, Fernanda Bravo, Laureano F. Escudero, Monique Guignard, Vladimir Marianov, Andres Weintraub.

"A New, Solvable, Primal Relaxation For Convex Nonlinear Integer Programming Problems," Monique Guignard.

ARTICLES SUBMITTED FOR PUBLICATION

"A Level-3 Reformulation-linearization Technique Bound for the Quadratic Assignment Problem," Peter M. Hahn, Yi-Rong Zhu, Monique Guignard, William L. Hightower, Research Report, April 2008, submitted to *JOC*, under third revision.

"Convex Hull Relaxation (CHR) For Convex And Nonconvex MINLP Problems With Linear Constraints," Aykut Ahlatçioğlu and Monique Guignard, submitted to *Discrete Applied Mathematics*, special issue on Combinatorial Optimization.

"Combining QCR and CHR for Convex Quadratic MINLP Problems with Linear Constraints," Aykut Ahlatçioğlu, Michael Bussieck, Mustafa Esen, Monique Guignard, Jan Jagla and Alexander Meeraus, submitted to the special issue of *Annals of Operations Research* for the ALIO-INFORMS meeting in Buenos Aires, June 2010.

PUBLICATIONS

"Conditions d'Optimalité en Programmation Mathématique dans un Espace de Banach," *Comptes Rendus de l'Académie des Sciences de Paris*, 1968, Ser. A, (267), pp. 223-225.

"Search Techniques with Adaptive Features for Certain Integer and Mixed Integer Programming Problems," with Kurt Spielberg, *Proceedings, IFIPS Congress*, Edinburgh, 1968, North Holland Publishing Company, Amsterdam, 1969, pp. 238-244.

"Generalized Kuhn-Tucker Conditions for Mathematical Programming Problems in a Banach Space," *SIAM. J. Control*, 1969, vol. 7, n. 2, pp. 232-241.

"Conditions d'Optimalité et Dualité en Programmation Mathématique," *Cahiers du Bureau Universitaire de Recherche Opérationnelle*, Série Recherche, Cahier n. 14, Institut de Statistique de l'Université de Paris, 1970, 62 pages.

"Une Condition d'Optimalité en Programmation en Nombres Entiers," *Revue Francaise d'Informatique et de Recherche Opérationnelle*, R2, 1971, pp. 108-113.

"Mixed-Integer Algorithms for the 0-1 Knapsack Problem," with Kurt Spielberg, *IBM Journal of Research and Development*, Vol. 16, no. 4, 1972, pp. 424-430.

"Zero-one Zero-one Programming and Enumeration," with Kurt Spielberg, in *Nonlinear Programming 2*, ed. O.L. Mangasarian, R.R. Meyer, S.M. Robinson, Academic Press, 1975, pp. 333-360.

"Integer Programming in APL," with Kurt Spielberg, *Proceedings of the 1976 IBM Symposium on Mathematics and Computation*, pp. 39-50.

"Reduction Methods for State Enumeration Integer Programming," with Kurt Spielberg, *Annals of Discrete Mathematics*, 1 (1977) Studies in Integer Programming, pp. 273-285.

"Algorithms for Exploiting the Structure of the Simple Plant Location Problem," with Kurt Spielberg, *Annals of Discrete Mathematics*, 1 (1977), Studies in Integer Programming, pp. 247-271.

"Propagation, Penalty Improvement and Use of Logical Inequalities in Interactive (0-1) Programming," with Kurt Spielberg, *Meth. Opns. Res.* 25, pp. 157-171.

"An Experimental Interactive System for Integer Programming" in "Computers and Mathematical Programming," with Kurt Spielberg, *Proceedings of the Bicentennial Conference on Mathematical Programn-dng*, Sigmap, 1976, William W. White, ed., National Bureau of Standards, U.S. Department of Commerce, February 1978, pp. 328-337.

"Survey of Enumerative Methods for Integer Programming," *Proceedings of SHARE 51*, Boston, 1978, ACM, pp. 2161-2170.

"The Collapsing 0-1 Knapsack Problem," Monique Guignard and Marc E. Posner, *Mathematical Programming* 15 (1978), pp. 155-161.

"A Direct Dual Method for the Mixed Plant Location Problem with Some Side Constraints," Monique Guignard and Kurt Spielberg, *Mathematical Programming*, 17 (1979) pp. 198-228.

"Branch and bound/implicit enumeration," with E. Balas, *Annals of Discrete Math.*, 5, pp. 185-191.

"Fractional Vertices, Cuts and Facets of the Simple Plant Location Problem," *Mathematical Programming Study* 12, "Combinatorial Optimization," M.W. Padberg, ed., pp. 150-162, 1980.

"Maintenance Scheduling" in "Survey of Mathematical Programniing," with Kurt Spielberg, *Proceedings of International Math. Prog. Symposium*, Budapest, 1976, Vol. 2, 1980, pp. 491-504.

"Logical Reduction Methods in 0-1 Programming," Monique Guignard and Kurt Spielberg, *Operations Research*, 29 (1) 1981, pp. 49-74.

"Optimality and Stability in Mathematical Progranuning," *Mathematical Programming Study* 19, North Holland Pub. Co., 1982, Monique Guignard, ed.

"Preprocessing and Optimization in Network Flow Problems with Fixed Charges," *Methods of Operations Research*, Vol. 45, 1983, pp. 235-255.

"Dual and Primal Heuristics for Network Location Problems," *Methods of Operations Research*, Vol. 51, 1984, pp. 257-270.

"Separable - Lagrangean Relaxation for Weakly - Linked Mixed - Integer Programming Problems," with Kurt Spielberg, *Methods of Operations Research*, Vol. 49, 1985, pp. 239-253.

"Décomposition Lagrangienne: un modèle fournissant de meilleures bomes," with Siwhan Kim, *Comptes Rendus de l'Académie des Sciences*, Paris, France, t. 303, Serie 1, No. 14, 1986, pp. 667-670.

"Lagrangean Decomposition: A Model Yielding Stronger Bounds," with Siwhan Kim, *Mathematical Programming*, 39(2), 1987, pp. 215-228.

"Lagrangean decomposition for integer programming: theory and applications," with Siwhan Kim, *RAIRO - RO - Operations Research* 21 (4),1987, pp. 307-323.

"On Combining Lagrangean relaxation, Benders inequalities and Lagrangean dual ascent," with Kurt Spielberg, *Methods of Operations Research*, 57,1987, pp. 131-142.

"An Approximate Algorithm for Multidimensional Zero-one Knapsack Problems - A Parametric Approach," with Jae Sik Lee, *Management Science* Special Issue on "Design and Analysis of Heuristics," 34(3),1988, pp. 402-410.

"A Lagrangean Dual Ascent Algorithm for Simple Plant Location Problems," *European Journal of Operational Research*, 35(2),1988, pp. 193-200.

"Décomposition Lagrangienne et Facettes de Polytopes Entiers," *Comptes Rendus de l'Académie des Sciences, Paris*, 1988, 307, Série I, pp. 225-230.

"An Improved Dual-Based Algorithm for the Generalized Assignment Problem," with Moshe Rosenwein, *Operations Research*, 1989, pp. 658-663.

"An Application-Oriented Guide for Designing Lagrangean Dual Ascent Algorithms," with Moshe Rosenwein, *European Journal of Operational Research* 43 (1989), pp. 197-205.

"Lagrangean Dual Ascent Algorithms for Computing Bounds in Capacitated Plant Location Problem," with Kongkiat Opaswongkarn, *European Journal of Operational Research*, 46 (1990), pp. 73-83.

"On Solving Structured Integer Programming Problems with Lagrangean Relaxation and/or Decomposition", *Operational Research* 90, 1990, pp. 725-738.

"An Application of Lagrangean Decomposition to the Resource-Constrained Minimum Weighted Arborescence Problem," with Moshe Rosenwein, *Networks*, 1990, 20, pp. 345-359.

"MAPNOS (Mathematical Programming Formulation Normalization System)," Jae Sik Lee, Monique Guignard and Christopher Jones. In *Expert Systems with Applications: An International Journal*," Vol. I, No. 4,1990, pp. 368-381.

"Multicommodity Nonlinear Distribution Planning," with Siwhan Kim and Kurt Spielberg, *Methods of Operations Research*, 1992, pp.191-202.

"Applying a Modified Coefficient Reduction Method to a Dynamic Production Scheduling Problem," with Matthew Liberatore, *European Journal of Operational Research*, 56(1), 1992, pp. 119-130.

"Variations in Model Formulations," with J.S. Lee and C. Jones, *Annals of Operations Research*, Vol. 38, pp. 1992 .

"Solving Makespan Minimization Problems with Lagrangean Decomposition," *Discrete Applied Mathematics*, 42 (1993), pp.17-29.

"Model Tightening for Integrated Timber Harvest and Transportation Planning," with C. Ryu and K. Spielberg, *Proceedings of Symposium on Systems Analysis and Forest Management Problems*, Valdivia, Chile, March 1993, (1994), pp. 364-369.

"Lagrangean Bounds and Heuristics for Integrated Resource Planning in Forestry," with E. Chajakis and C. Ryu, *Proceedings of Symposium on Systems Analysis and Forest Management Problems*, Valdivia, Chile, March 1993, (1994), pp. 350-363.

"Habitat Connection Problem in Forest Planning," with Xiaopei Wang, *Proceedings of Symposium on Systems Analysis and Forest Management Problems*, Valdivia, Chile, March 1993, (1994), pp. 225-230.

"Dynamic Production Scheduling for a Process Industry," with Renato de Matta, *Operations Research*, (1994), 42, pp. 492-503.

"A Lagrangean Relax-and-Cut Approach for the Sequential Ordering Problem with Precedence

Relationships," Laureano Escudero, Monique Guignard and Kavindra Malik, *Annals of Operations Research*, 50, (1994), Applications of Combinatorial Optimization, C. Ribeiro, ed., pp. 219-237.

"The setup Knapsack Problem," with E. Chajakis, *INFOR*, Special Issue on Knapsack Problems, (S. Martello, ed.), (1994), pp. 124-142.

"Relaxations for Minimax Problems," with A. Fréville, *Investigacion Operativa*, (1994), pp. 119-138.

"The Effects of Production Loss in Dynamic Production Scheduling for Process Industries," with R. de Matta, *European Journal of Operational Research*, (1994), 72, pp. 62-73.

"A Hybrid Algorithm for Solving Lagrangean Duals in Mixed-Integer Programming," with S. Zhu, in *Proceedings of the VI CLAIO*, Santiago, Chile, (1994), M. Bosch, C. Ortiz, (eds.), pp. 399-410.

"On Modeling Robust Policies for Financial Trading," with S. Ahn and L. Escudero, in *Optimization in Industry 2*, Mathematical Programming and Modeling Techniques in Practice, T. Ciriani and R. Leachman, ed., John Wiley, (1994), pp. 163-184.

"The Performance of Rolling Production Schedules in a Process Industry," with R. de Matta, *IIE Transactions*, (1995), 27, pp. 564-573.

"Lagrangean Relaxation: A Short Course," *JORBEL* (Bulletin of the Belgian Operations Research Society), special issue FRANCORO, vol. 35, (1995), pp. 5-21.

"Selection of Capacity Expansion Projects," with Hochang Lee, *J. Operational Research Society*, 46, (1995), pp. 1418-1432.

"On Modeling Financial Trading under Interest Rate Uncertainty," with S. Ahn and L. Escudero, in *Optimization in Industry 3*, Mathematical Programming and Modeling Techniques in Practice, A. Sciomachen, ed., (1995), pp. 127-144.

"A Hybrid Bounding Procedure for the Workload Allocation Problem on Parallel Unrelated Machines with Setups," Hochang Lee and Monique Guignard, *J. Operational Research Society*, 47, (1996), pp. 1247-1261.

"Efficient Cuts in Lagrangean Relax-and-Cut Schemes," *European Journal of Operational Research*, 105(1), (1998), pp. 216-223.

"Polyhedral Analysis and Decompositions for Capacitated Plant Location-Type Problems," with Bintong Chen, *Discrete Applied Mathematics*, 82 (1998), pp. 79-91.

"Model Tightening for Integrated Timber Harvest and Transportation Planning," Monique Guignard, Choonho Ryu and K. Spielberg, *European J. of Operational Research*, 111 (1998) , pp. 448-460.

"Forest Management Models And Combinatorial Algorithms: Analysis Of State Of The Art," with Andrés Weintraub, Richard L. Church and Alan Murray, *Annals of Operations Research*. 96, (2000), pp. 271-285.

"Tree Elaboration Strategies in Branch and Bound Algorithms for Solving the Quadratic Assignment Problem," P. Hahn, W.L. Hightower, T. Johnson, M. Guignard, C. Roucairol, *Yugoslav Journal of Operations Research*, 11(1), (2001), pp. 41-60.

"A Hybrid Approach for Integer Programming Combining Genetic Algorithms, Linear Programming and Ordinal Optimization," Yuh-Chyun Luo, Monique Guignard, Chun-Hung Chen, *Journal of Intelligent Manufacturing*, 12(5-6), (2001), pp. 509-519.

"An Efficient Approach Integrating Genetic Algorithm, Linear Programming, and Ordinal Optimization for Linear Mixed Integer Programming Problems," Y.C. Luo, C.H. Chen, M. Guignard, *International Journal of Smart Engineering System Design*, 3, (2001), pp. 279-287.

"Lagrangean Relaxation," M. Guignard, (OPIM Report 03-09-01), in *Handbook of Applied Optimization*, P.M. Pardalos and M.G.C. Resende (Eds.), Oxford University Press, New York, (2002), ISBN 0-19-512594-0, p. 465-473.

"Redefining Event Variables for Efficient Modeling of Continuous Time Batch Processing," S. Wang, M. Guignard, *Annals of Operations Research* 116, 113-126, 2002.

"A Lagrangean relaxation approach for a machinery location problem in forest harvesting," Jorge Vera, Andres Weintraub, Manfred Koenig, Gaston Bravo, Monique Guignard, Francisco Barahona, (OPIM Dept. Report 97-01-05), *Pesquisa Operacional*, vol.23, no.1, p.111-128. ISSN 0101-7438, special issue in honor of Nelson Maculan, Jan./Apr. 2003.

"Scheduling Deliveries for Vehicles with Multiple Compartments," with Emmanuel Chajakis, *Journal of Global Optimization*, special issue on Supply Chain Optimization, Volume 26, No.1, 43-78, May 2003.

"A Problem of Forest Harvesting and Road Building," with Nicolas Andalaft, Pablo Andalaft, Adrian Magendzo, Alexis Wainer and Andres Weintraub, *Operations Research*, 51(4), July-August 2003.

"Lagrangean Relaxation," invited survey, *TOP*, vol. 11, no. 2, 151-228, December 2003.

"School redistricting: embedding GIS tools with integer programming," F. Caro, T. Shirabe, M. Guignard, A. Weintraub, *Journal of the Operational Research Society* 55, 836 – 849, August 2004.

"Integer Programming: State of the Art and Recent Advances," *Annals of Operations Research*, volume 139, October 2005, Monique Guignard-Spielberg and Kurt Spielberg, ed., 388 pages.

"Integer Programming: State of the Art and Recent Advances," *Annals of Operations Research*, volume 140, November 2005, Monique Guignard-Spielberg and Kurt Spielberg, ed., 410 pages.

"Logical Processing for Integer Programming," Monique Guignard, Ellis L. Johnson and Kurt Spielberg, *Annals of Operations Research*, 140(1) 263 – 304, November 2005.

"Hybridizing Discrete- and Continuous-Time Models for Batch Sizing and Scheduling Problems," Sonia Wang and Monique Guignard, *Computers and Operations Research* 33(4), 971-993, April 2006.

"History of integer programming: distinguished personal notes and reminiscences," *Annals of Operations Research*, 149 (February 2007), Kurt Spielberg and Monique Guignard-Spielberg, ed., 216 pages.

"En hommage à Joseph-Louis Lagrange et à Pierre Huard, " Invited Distinguished Note, *Annals of Operations Research* 149 (2007) 103–116.

"A level-2 reformulation–linearization technique bound for the quadratic assignment problem." Warren P. Adams, Monique Guignard, Peter M. Hahn, William L. Hightower, *European Journal of Operational Research*, Volume 180, Issue 3, 1 August 2007, Pages 983-996

"The quadratic three-dimensional assignment problem: Exact and approximate solution methods," Peter M. Hahn, Bum-Jin Kim, Thomas Stützle, Sebastian Kanthak, William L. Hightower, Harvind Samra, Zhi Ding, Monique Guignard, *European Journal of Operational Research*, Volume 184, Issue 2, 16 January 2008, Pages 416-428.

"An Algorithm for the Generalized Quadratic Assignment Problem," Peter M. Hahn, Bum-Jin Kim, Monique Guignard, J. MacGregor Smith and Yi-Rong Zhu, *Computational Optimization and Applications*, July 2008, Vol. 40, Iss. 3, 351-372. Received the 2008 COAP Best Paper Award.

"Forestry management under uncertainty," Antonio Alonso-Ayuso, Laureano F. Escudero, Monique Guignard, Martin Quinteros, Andres Weintraub, forthcoming, *Annals of Operations Research*, special issue devoted to Agriculture and Forest Management, Lluís M. Plà, editor, *Ann Oper Res*, DOI 10.1007/s10479-009-0561-0.

"Term-End Exam Scheduling at United States Military Academy/West Point," Siqun Wang, Michael Bussieck, Monique Guignard, Alexander Meeraus, Fred O'Brien, in a special issue of the *Journal of Scheduling* on "Application and Methodologies for Planning and Scheduling," (2010) 13: 375–391.

"Exact solution of emerging quadratic assignment problems," Peter M. Hahn, Yi-Rong Zhu, Monique Guignard and J. MacGregor Smith, *International Transactions in Operational Research*, September 2010, Volume 17, Issue 5, 525-552.

"Algorithms for the generalized quadratic assignment problem combining Lagrangean decomposition and the Reformulation-Linearization Technique," Artur Alves Pessoa, Peter M. Hahn, Monique Guignard and Yi-Rong Zhu, *European Journal of Operational Research*, October 2010, vol. 206, issue 1, 54-63. Received the first prize at the SOBRAPO meeting, Brazil, 2008.

"Uncertainty in forest production planning," Antonio Alonso-Ayuso, Laureano Escudero, Monique Guignard, Martin Quinteros and Andres Weintraub, in *Wiley Encyclopedia of Operations Research and Management Science*, ed. by James J. Cochran, 2010, Wiley and Sons, Inc.

October 17, 2010.¹

¹ Guignard-CV_2010_October.doc