Nelson MACULAN

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PERMANENT POSITIONS

Full Professor of Optimization, Dept. of Systems Engineering and Computer Science, Graduate School of Engineering – COPPE, Federal University of Rio de Janeiro – UFRJ, P.O. BOX 68511, 21941-972 – Rio de Janeiro, Brazil, phone: +55 21 2562-8708, fax: +55 21 2562-8676, e-mail: maculan@cos.ufrj.br

Full Member of the Brazilian Academy of Sciences
Full Member of the National Academy of Engineering (Brazil)
Full Member of the European Academy of Arts, Sciences and Humanities (Paris)
Fellow of the TWAS – the Academy of Sciences for the Developing World (Italy)
Full researcher (1-A) in Computer Science at CNPq (the National Council for Research, Brazil)

DIPLOMAS

Diplôme d'Habilitation à Diriger des Recherches, Management Sciences, Université Paris-Dauphine (Paris IX), 1988.
Livre Docência in Optimization (L.D.), Federal University of Rio de Janeiro – UFRJ , Brazil, 1988.
Ph.D., Operations Research, Federal University of Rio de Janeiro – UFRJ, Brazil, 1975.
Diplôme d'Etudes Approfondies (Statistics), Faculté des Sciences de l'Université de Paris (Sorbonne), France,1967.
B.Sc., Mining and Metallurgy Engineering, School of Mines, Ouro Preto, Brazil, 1965.

PROFESSIONAL EXPERIENCE

Main position held since 1971:
Professor at the Dept. of Systems Engineering and Computer Science, COPPE/UFRJ, and the Institute of Mathematics/UFRJ.

OTHER POSITIONS

State Secretary for Education, Rio de Janeiro State, Brazil (2007 to 2008).
National Secretary of Higher Education, Ministry of Education (SESu-MEC), Brasília, Brazil (2004 to 2006).
President, Federal University of Rio de Janeiro – UFRJ, Brazil (1990 to 1994).
Visiting Professor at the Dipartimento di Elettronica e Informazione (DEI), Politecnico di Milano, Italy (2002 to 2003).
Visiting Professor, CNRS, Laboratoire d'Informatique de Paris Nord (LIPN), Institut Galilée, Université Paris-Nord (Paris XIII), France (2001 to 2002).
Scientific Advisor at France Télécom, France (1996 to 1998).
Visiting Professor, Department of Industrial Engineering and Operations Research, University of Massachusetts, Amherst, MA, USA (1994 to 1995).
Visiting Professor, Département d'Informatique et de Recherche Opérationnelle, Université de Montréal, Canada (1982 to 1984).
President, National Association of Presidents of Federal Institutions of Higher Education – ANDIFES, Brazil (1992 to 1994).
Director, Graduate School of Engineering (COPPE/UFRJ), Brazil (1990).
Deputy Director for Research, COPPE/UFRJ, Brazil (1984 to 1989).
Deputy Director for Research, the Institute of Mathematics/UFRJ (1977).
Head of Department, Applied Mathematics, the Institute of Mathematics/UFRJ, (1986 to 1988).
Head of Department, Systems Engineering and Computer Science, COPPE/UFRJ, (1973 to 1977).
President of the Brazilian Society for Operations Research – SOBRAPO (1974 to 1976).

Vice-President of the International Federation of Operational Research Societies – IFORS (1983 to 1986).
President of the Association of Latin-Iberoamerican Operational Research Societies – ALIO (1988 to 1990 and 1998 to 2000).
Head of the Committee for Scientific Societies, Brazil (1987 to 1989).
Council Member (elected) of the Brazilian Society of Mathematics, the Brazilian Society of Computational and Applied Mathematics, and the Institute of Management Science (USA).
Chief Editor of *Investigación Operativa* (1986 to 2002).
Associate Editor of the European Journal of Operational Research – EJOR (1986 to 1992), *Pesquisa Operacional* (since 1982), *Revista Portuguesa de Investigação Operacional* (since 1987), Annals of Operations Research (since 1994), Journal of Global Optimization (1999 to 2006), Top (since 2000), Discrete Optimization (since 2004).
Computer Science Engineer, Société de Traitement Automatique des Données, Paris, France (1969 to 1971).
Research Assistant in Statistics, School of Mines, Paris, France (1968 to 1969).
Invited Professor for short periods: Université Paris-Nord (7 times), Université Paris-Dauphine (3 times), Université Pierre et Marie Curie (2 times), Université de Namur (2 times), Ecole Polytechnique Fédérale de Lausanne (once), University of Tokyo (once), Universidad de Buenos Aires (once), UNAM-Mexico (once), Carnegie-Mellon University (once), University of Sheffield (once), Université de Montréal (4 times), France Télécom (4 times).

PUBLISHED BOOKS

Otimização Linear (N. Maculan & M. Fampa), Editora da Universidade de Brasília (UnB), 2006.
Uma introdução à computação quântica (N.Maculan, R. Portugal, C.C. Lavor and L.M. Carvalho) Notas em Matemática Aplicada (SBMAC), vol. 8, São Carlos (SP), setembro 2004, 62 p.
Algoritmos e Heurísticas: Desenvolvimento e Avaliação de Performance (N. Maculan & R. E. Campello), Editora da Universidade Federal Fluminense (EDUFF / FURNAS), Rio de Janeiro, 1994.
Programação Linear (Nelson Maculan & M.V.F. Pereira), ATLAS, São Paulo, 1980.
Programação Linear Inteira, Editora COPPE/UFRJ, Rio de Janeiro, 1978.

EDITED BOOKS

Applications of combinatorial optimization, C. Ribeiro & N. Maculan (éds), *Annals of Operations Research*, vol. 50, J.C. Baltzer AG, 1994.
Global optimization: from theory to implementation, L. Liberti & N. Maculan (éds), Springer, 2006.

SCIENTIFIC PAPERS ON JOURNALS

Optimization Letters, Annals of Operations Research, Journal of Discrete Applied Mathematics, INFOR, RAIRO, Annals of Discrete Mathematics, COAP, Physical Review E, Operations Research Letters, Journal of Global Optimization, NETWORKS, Management Science, Journal of Combinatorics Information and System Sciences, EJOR, Mathematical Programming, Numerical Algorithms, OR Spektrum, Logique et Analyse, JOTA, Computational and Applied Mathematics, Europhysics Letters, ITOR, Pesquisa Operacional, Revista Brasileira de Computação, Investigación Operativa, Revista Brasileira de Engenharia, Revista Portuguesa de Investigação Operacional, Revista del Instituto Chileno de Investigación Operativa, CERES, Experientiae, Informática e Investigación Operativa.

INVITED CONFERENCES

France: Université Paris-Nord (Paris 13), Université Pierre et Marie Curie (Paris 6), Université Paris-Dauphine (Paris 9), Université Joseph Fourier (Grenoble), CNET – France Télécom, INRIA, Université Paul Sabatier (Toulouse), CERFACS (Toulouse), Université d'Avignon, Université de Versailles, Université Paris-Sud (Orsay), Université de Bordeaux, Université Blaise Pascal (Clermont Ferrand), Université Technologique de Troyes.
Belgium: Université de Namur, Université de Mons, Université de Liège.
Italy: Politecnico di Milano, Università degli studi di Modena e Reggio Emilia, Università di Roma 1, Università di Pisa.
Germany: University of Bonn, University of Hamburg.
Holland: Eindhoven University of Technology.
Switzerland: Université de Genève, Ecole Polytechnique Fédérale de Lausanne.
Portugal: Universidade de Coimbra, Universidade de Aveiro, Universidade de Lisboa.

Canada: Université de Montréal, McGill University, Concordia University, Université d'Ottawa, Université du Québec à Montréal, Ecole Polytechnique de Montréal, Université de Sherbrooke, HEC de Montréal, Technical University of Halifax.
USA: Massachusetts Institute of Technology, University of Massachusetts at Amherst, Rutgers University, Carnegie Mellon University, NYU, Columbia University.
Brazil: Universidade Federal de Minas Gerais (UFMG), UNICAMP, USP, UNESP, Universidade Federal Fluminense (UFF), Universidade Federal do Espírito Santo, Universidade de Brasília (UnB), Universidade Federal de Mato Grosso do Sul, Universidade do Estado do Rio de Janeiro, Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio), IMPA, INPE, ITA, IME, LNCC, CBPF, Universidade Federal do Ceará (UFC), Universidade Estadual do Ceará (UECE), Universidade Federal da Santa Catarina, Universidade Federal de Pernambuco, Universidade Federal do Pará, UENF, Universidade Federal de Goiás, Universidade Federal de Sergipe, Universidade Federal de Lavras, Universidade Estadual do Rio de Janeiro (UERJ).
Argentina: Universidad de Buenos Aires, Universidad de La Plata.
Chile: Universidad de Chile, Universidad Católica de Chile, Universidad de Concepción, Universidad de Tarapacá, Universidad Católica de Valparaíso, Universidad de Talca.
Mexico: UNAM.
Japan: University of Tokyo, Kyoto University, Nagaoka University of Technology.
England: University of Sheffield, Imperial College (London).
Peru: Universidad Nacional Mayor de San Marcos (Lima).

SUPERVISED THESES

55 Ph.D. theses.
112 M.Sc. dissertations.

RESEARCH INTERESTS

Mathematical Programming, Operations Research, Computer Science, Numerical Analysis, Applied Mathematics, Bioinformatics.

HONORS & AWARDS

Medalha da Ordem Nacional do Mérito Educativo, Grau de Comendador (a national medal for Education awarded by the President of Brazil), Brazil, October 14, 1994.
Chevalier dans l'Ordre des Palmes Académiques, République Française, September 3, 1998.
IFORS Distinguished Lecturer, September 04, 2000.
Medalha da Ordem Nacional do Mérito Científico, Grau de Comendador, (a national medal for scientific acknowledgement awarded by the President of Brazil), August 15, 2002.
Doctor Honoris Causa, Universidad Nacional Mayor de San Marcos, Lima, Peru, January 27, 2004.
Giulio Massarani Academic Merit Medal, COPPE/UFRJ, Brazil, May 20, 2005.
Docteur Honoris Causa, Université Paris 13, December 13, 2005.
Doctor Honoris Causa, Universidad Ricardo Palma, Lima, Peru, April 19, 2006.
Honoris Causa Professor, Universidade Federal de Lavras, September 04, 2006.
Chevalier dans l'Ordre National du Mérite, République Française, November 09, 2006.
Medalha Bernardo Pereira de Vasconcellos (awarded by the Cit y Council of Ouro Preto, Minas Gerais), August 25, 2007.
Grand Cross for scientific merit, Brazil, November 2007.

LANGUAGES

Portuguese (mother tongue), French (reads, speaks, writes), English (reads, speaks, writes), Spanish (reads, speaks, writes), Italian (reads, speaks, writes).

<div align="right">April 2009</div>

NELSON MACULAN PUBLICATIONS

BOOKS

1- L. Liberti & N. Maculan (eds), *Global optimization: from theory to implementation*, Springer, ISBN: 0-387-28260-2, 428 p, March 2006.

2-N. Maculan & M. Fampa, *Otimização Linear*, Editora da Universidade de Brasília (UnB), ISBN: 85-230-0927-2, 310 p, 2006.

3-R. Portugal, C.C. Lavor, L.M. Carvalho & N. Maculan, *Uma introdução à computação quântica*, Notas em Matemática Aplicada (SBMAC), vol. 8, São Carlos (SP), September 2004, 62 p.

4-R. E. Campello & N. Maculan, *Algoritmos e Heurísticas: Desenvolvimento e Avaliação de Performance*, Editora da Universidade Federal Fluminense (EDUFF / FURNAS), Rio de Janeiro,   227 p, 1994.

5-N. Maculan, M.V.F. Pereira, *Programação Linear*, ATLAS, São Paulo, 1980.

6-N. Maculan, *Programação Linear Inteira*, Editora COPPE, Universidade Federal do Rio de Janeiro, 1978.

PAPERS IN JOURNALS

1-J.N. Figueiredo, C.C. Gonzaga and N. Maculan, Localização Ótima de Torres de Transmissão Utilizando Teoria dos Grafos, *Pesquisa Operacional*, v.2, n.2, pp.12-22, (1979).

2-F.E. Vaca-Obando, M.L. Villares and N. Maculan, Soluções Aproximadas do Problema de Programação Bivalente Utilizando Dualidade em Programação Inteira, *Revista de Informática e Investigación Operativa*, SADIO, Buenos Aires, n.40, pp.53-85, (1980).

3-N. Maculan, Algoritmo de Khachiyan para a Resolução de Problemas de Programação Linear, *Noticiário da Sociedade Brasileira de Matemática*, n.2, pp.28-37, (1981).

4-N. Maculan and M.L. Villares, Comentários sobre um Algoritmo para a Solução Aproximada do Problema da Mochila, *Pesquisa Operacional*, v.1, n.1, pp.23-28, (1981).

5-T.G. Rocha, R. Almeida, A. Moreno and N. Maculan, The Administration of Standard Length Telephone Cable Reels, *Annals of Discrete Mathematics*, v.11, pp.109-123, (1981).

6-L.P.V. Braga and N. Maculan, Aspectos Computacionais em Programação Linear, *Revista Brasileira de Computação*, v.1,n.1, pp.19-39, (1981).

7-M.L. Villares and N. Maculan, Variáveis Ordenadas por Grupos, *Pesquisa Operacional*, v.2, n.2, pp.29-48, (1982).

8-N. Maculan, Relaxation Lagrangienne: le Problème du Knapsack 0-1, *INFOR (Canadian Journal of Operational Research and Information Processing)*, v.21, n.4, pp.315-327, (1983).

9-A.G. Alvarenga and N. Maculan, Um Método Aproximado para a Solução do Problema de Cortes de Placas a Duas Dimensões, *RBE (Revista Brasileira de Engenharia)*, Caderno de Engenharia Naval, v.3,n.1, pp.79-90, (1986).

10-N. Maculan, A New Linear Programming for the Shortest s-Directed Spanning Tree Problem, *Journal of Combinatorics, Information and System Sciences*, v.11, ns.2-4, pp.53-56, (1986).

11-N. Maculan, Steiner Problem in Graphs, *Annals of Discrete Mathematics*, v.31, pp.185-212, (1987).

12-R.E. Campello and N. Maculan, Lagrangean Relaxation for a Lower Bound to a Set Partitioning Problem with Side Constraints, *Discrete Applied Mathematics*, v.18, pp.119-136, (1987).

13-R.E. Campello and N. Maculan, An $O(n^3)$ Worst Case Bounded Special LP Knapsack (0-1) with Two Constraints, *RAIRO - Operations Research*, v.22, n.1, pp.27-32, (1988).

14-N. Maculan, D. Arpin and S. Nguyen, Le Problème de Steiner sur un Graphe Orienté: Formulations et Relaxations, *Computational and Applied Mathematics*, v.7, n.2, pp.109-118, (1988).

15-L.F. Lomba Rosa and N. Maculan, Algoritmo O(n) para o Problema de Programação Linear da Mochila (Knapsack) 0-1, *Pesquisa Operacional*, v.8, n.1, pp.1-19, (1988).

16-N. Maculan, Linear Programming Problem for which Karmarkar's Algorithm is Strongly Polynomial, *Pesquisa Operacional*, v.8, n.1, pp.52-55, (1988).

17-G.G de Paula Jr. and N. Maculan, Análise do Aspecto Combinatório da Localização Dinâmica de Carvoarias em Plantações de Eucaliptos, *Revista Ceres*, v.35, n.200, pp.388-399, (1988).

18-N. Maculan and G.G. de Paula Jr., A Linear-Time Median-Finding for Projecting a Vector on the Simplex of R^n, *Operations Research Letters*, v.8, n.4, pp.219-222, (1989).

19-G.G de Paula Jr. & N. Maculan, Uma Heurística de Decomposição Primal para a Solução de Problemas Não Capacitados de Localização de p-Medianas, *Experientiae*, vol.30, n.10, pp.123-134, (1989).

20-N. Maculan, P.M. Souza and A. Candia-Vejar, An Approach for the Steiner problem in directed graphs, *Annals of Operations Research*, v.33, pp.471-480, (1991).

21-N. Maculan and J.J.C. Salles, A lower bound for the shortest Hamiltonean path in directed graphs, *OR Spektrum*, v.13, pp.99-102, (1991).

22-Ph. Michelon and N. Maculan, Lagrangean decomposition for integer nonlinear programming with linear constraints, *Mathematical Programming*, v.52, n.2, pp.303-313, (1991).

23-D.J. Aloise & N. Maculan, Uma Classe de Algoritmos Aproximativos Decrescentes para o Problema "bin-packing", *Revista Brasileira de Computação*, v.6, n.3, pp.3-12, (1991).

24-N. Maculan, P. Souza and A. Candia, "Reduction Tests for the Steiner Problem in Directed Graphs". *Pesquisa Operacional*, v.11, n.2, pp.48-56, (1991).

25-H. Reinoso and N. Maculan, Lagrangean decomposition in integer linear programming: a new scheme, *INFOR* (Information Systems and Operations Research), v.30, n.1, pp.1-5, (1992).

26-N. Maculan, Ph. Michelon & G. Plateau, Column-generation in Linear Programming with Bounding Variable Constraints and its Application in Integer Programming, *Pesquisa Operacional*, v.12, n.2, pp.45-57, (1992).

27-Ph. Michelon & N. Maculan, Lagrangean methods for 0-1 quadratic problems, *Discrete Applied Mathematics*, v.42, pp. 257-269, (1993).

28-L. Pradenas-Rojas & N. Maculan, Un Método de Solución para el Problema de Camino Mínimo con Múltiples Objetivos, *Investigación Operativa*, v.3, pp.191-200, (1993).

29-I.R. de Farias Jr., N. Maculan & Ph. Michelon, Branch & Bound Schemes using Lagrangean Decomposition Techniques for 0-1 Quadratic Knapsack Problems, to be published in *Logique et Analyse,* (1995).

30-V. Parada-Daza & N. Maculan, Un Nuevo Método de Solución para el Problema de Equilibrio de Tráfico Generalizado, *Revista del Instituto Chileno de Investigación de Operaciones (ICHIO)*, v.4, n.2, pp. 29-41, (1995).

31-M.H. Jardim Campos & N. Maculan, Optimization Problems Related to the Cut of Paper Reels: a Dual Approach, *Investigación Operativa.*, v. 5, n. 1, pp. 45-53, (1995).

32-M.J. Negreiros Gomes, N. Maculan & L.S. Ochi, "O Problema de Compras", *Pesquisa Operacional*, v. 14, n.2, pp. 73-86, (1996).

33-D. Mauricio & N. Maculan, A trust region method for zero-one nonlinear programming, *RAIRO - Operations Research*, v.31, n.4, pp. 331-341, (1997).

34-N. Maculan, M. Minoux & G. Plateau, A O(n) algorithm for projecting a vector on the intersection of a hyperplane and R^n_+, *RAIRO - Operations Research*, v. 31, n.1, pp. 07-16, (1997).

35-D. Mauricio & N. Maculan, A relationship between global optimization and 0-1 nonlinear programming, *Pesquisa Operacional*, v.17, n.2, pp. 165-172, (1997).

36-R. Mondaini, D. Freire-Mondaini & N. Maculan, The study of Steiner points associated with the vertices of regular tetrahedra joined together at common faces, *Investigación Operativa*, v. 6, pp.103-110, (1998).

37-C. Ortiz, N. Maculan & J. Szwarcfiter, Characterizing and edge-coloring split-indifference graphs, *Discrete Applied Mathematics*, v. 82, pp. 209-217, (1998).

38-N. Maculan, C.C. Ribeiro, S.C.S. Porto & C.C. de Souza, A new formulation for scheduling unrelated processors under precedence constraints, *RAIRO- Operations Research,* v. 33, n. 1, pp. 87-92, (1999).

39-N. Maculan, P. Michelon & A.E. Xavier, The Euclidean Steiner tree problem in R^n: A mathematical programming formulation, *Annals of Operations Research*, vol. 96, pp. 209-220, (2000).

40-D. Mauricio & N. Maculan, A Boolean penalty method for zero-one nonlinear programming, *Journal of Global Optimization* , vol. 16, pp. 343-354, (2000).

41- M. Rozenthal, L.A. V. Carvalho, J. Laks, N. Maculan & E. Engelhardt, Searching and analysing neuropsychological patterns in schizophrenia with artificial neural networks*, Jornal Brasileiro de Psiquiatria*, vol. 49, n. 1-2, pp. 5-12, (2000).

42-R. Figueiredo & N. Maculan, O Problema do Caixeiro Viajante Assimétrico: Limites Inferiores e um novo Algoritmo de Separação, *Investigação Operacional*, vol. 20, n. 2, pp. 127-146, (2000).

43-H.H. Yanasse, N.Y. Soma & N. Maculan, An algorithm for determining the k-best solutions of the one-dimensional knapsack problem, *Pesquisa Operacional*, vol. 20, n. 1, pp. 117-134, (2000).

44-M.J.F. Souza, N. Maculan & L.S. Ochi, Melhorando Quadros de Horário de Escolas através de Caminhos Mínimos, *Tendências em Matemática Aplicada e Computacional*, vol.1, n.2,   pp.515-524, (2000).

45-M. Rozenthal, D.D. Lages, E. Engelhardt & N. Maculan, Desenvolvimento de aplicativo usando inteligência artificial para classificação de pacientes esquizofrênicos segundo perfis neuropsicológicos, *Arquivos Brasileiros de Psiquiatria, Neurologia e Medicina Legal*, ano 95, n. 74, pp. 39-42, (2000).

46-Ph. Michelon, S. Ripeau & N. Maculan, Un algorithme pour la bipartition d'un graphe en sous-graphes de cardinalité fixée, *RAIRO - Operations Research*, v. 35, n. 4, pp. 401-414, (2001).

47-M.J.F. Souza, N. Maculan & L.S. Ochi, Uma heurística para o problema de programação de horários em escolas, *Tendências em Matemática Aplicada e Computacional*, vol. 2, pp. 213-222, (2001).

48-M. Fampa & N. Maculan, A new relaxation in conic form for the Euclidean Steiner Problem in R^n, *RAIRO-Operations Research*, v. 35, n. 4, pp. 383-394, (2001).

49-P.L. Antonelli, N. Maculan, R. Portugal, S.F. Rutz & S. Sabau, Transient-states analysis of a 2-species dynamical ecological model via KCC-theory, *Nonlinear Studies*, vol. 8, n. 3, pp. 283-296, (2001).

50-L. Bahiense, N. Maculan & C. Sagastizábal, The volume algorithm revisited: relation with bundle methods, *Mathematical Programming*, vol. 94, Issue 1, pp. 41-69, (2002).

51-R. Hoto, N. Maculan, M. Arenales & F. Marques, Um novo procedimento para o cálculo de mochilas compartimentadas, *Investigação Operacional*, vol. 22, pp. 213-234, (2002).

52-N. Maculan, C. Prata Santiago, E.M. Macambira & M.H.C. Jardim, An O(n) algorithm for projecting a vector on the intersection of a hyperplane and a box in R^n, *Journal of Optimization Theory and Applications (JOTA)*, vol. 117, n. 3, pp. 553-574, (2003).

53-N. Maculan, G. Plateau & A. Lisser, Integer linear models with a polynomial number of variables and constraints for some classical combinatorial optimization problems, *Pesquisa Operacional*, vol. 23, n.1, pp. 161-168, (2003).

54-T. Bonates & N. Maculan, Performance evaluation of a family of criss-cross algorithms for linear programming, *ITOR (International Transaction in Operations Research)*, vol. 10, issue 1, pp. 53-64, (2003).

55-R. Hoto, N. Maculan, F. Marques & M. Arenales, Um problema de corte com padrões compartimentados, *Pesquisa Operacional*, vol. 23, n. 1, pp. 169-187, (2003).

56-J. L. de Castro Silva, N.Y. Soma & N. Maculan, A greedy search for the three-dimensional bin packing problem: the packing static stability case", *ITOR (International Transaction in Operations Research),* vol. 10, Issue 2, pp. 141-153, (2003).

57-F. Montenegro, J.R.A. Torreão & N. Maculan, Microcanonical optimization for the Euclidean Steiner Problem in R^n with application to phylogenetic inference, *Physical Review E*, vol. 68, pp. 056702-1-- 056702-5, (2003).

58-N. Maculan, M.M. Passini, J.A. de Moura Brito & I. Loiseau, Column-generation in integer linear programming, *RAIRO-Operations Research*, vol. 37, n. 2, pp. 67-83, (2003).

59-C.C. Lavor & N. Maculan, A function to test methods applied to global minimization of potential energy of molecules, *Numerical Algorithm,* vol. 35, n. 2-4, pp.287-300, (2004).

60-M. Fampa & N. Maculan, Using a conic formulation for finding Steiner minimal trees, *Numerical Algorithms*, vol. 35. n. 2-4, pp. 315-330, (2004).

61-C. Martinhon, A. Lucena & N. Maculan,Stronger K-tree relaxations for the vehicle routing problem, *EJOR (European Journal of Operational Research)*, vol. 158, issue 1, pp. 56-71, (2004).

62-R. Andrade, A. Lisser, N. Maculan & G. Plateau, Telecommunication network capacity design for uncertain demand, *Computational Optimization and Applications (COAP)*, vol. 29, n. 2, pp. 127-146, (2004).

63-C.T. Bornstein, L. Ferreira Alcoforado & N. Maculan, A graph-oriented approach for the minimization of the number of late jobs for the parallel machines scheduling, *EJOR (European Journal of Operational Research)*, vol. 165, pp.649-656, (2005).

64-L. Liberti, E. Amaldi, N. Maculan & F. Maffioli, Mathematical models and constructive heuristic for finding minimum fundamental cycle bases, *Yugoslav Journal of Operations Research,* Vol.15, n.1, pp. 15-24, (2005).

65-E.M. Macambira, N. Maculan & Cid C. de Souza, A note on characterizing canonical cuts using geometry, *ITOR (International Transaction in Operations Research)*, vol. 12, pp. 581-593, (2005).

66-R. Andrade, A. Lisser, N. Maculan & G. Plateau, B&B frameworks for the capacity expansion of high speed telecommunication networks under uncertainty, *Annals of Operations Research*, vol. 140 (1), pp. 49-65, (2005).

67-R. Andrade, A. Lucena & N. Maculan, Using Lagrangian dual information to generate degree constrained minimum spanning trees, *Discrete Applied Mathematics*, vol. 154, pp. 703-717, (2006).

68-R. Andrade, A. Lisser, N. Maculan & G. Plateau, Enhancing a branch and bound algorithm for two-stage stochastic integer network design based models, *Management Science,* Vol. 52 (9), pp. 1450-1455, (2006).

69-E.M. Macambira, N. Maculan & Cid C. de Souza, A column generation approach for SONET ring assignment, *NETWORKS*, vol. 47 (3), pp. 157-171, (2006).

70-S. Kucherenko, P. Belotti, L. Liberti & N. Maculan , New formulations for the kissing number problem, *Discrete Applied Mathematics,* Volume 155, Issue 14, pp.1793-1894, (2007).

71-R. Hoto, M. Arenales & N. Maculan, The compartmentalised knapsack problem: a case study, *EJOR (European Journal of Operational Research)*, Vol. 183, Issue 3, pp. 1183-1195, (2007).

72-C. Lavor, L. Liberti, N. Maculan & M.A.C. Nascimento, Solving Hartree-Fock systems with global optimization methods, *Europhysics Letters (EPL)*, vol. 77 (5), 50006 (p1-p6), (2007).

73-L.M. Graña Drummond, N. Maculan & B.F. Svaiter, On the choice of parameters for weighting method in vector optimization, *Mathematical Programming* , vol. 111, numbers 1-2, pp .201-216, (2008).

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