Table of Contents

A Faster Scaling Algorithm for Minimizing Submodular Functions ....... 1
Satoru Iwata

A Generalization of Edmonds’ Matching and Matroid Intersection
Algorithms ................................................................. 9
Bianca Spille and Robert Weismantel

A Coordinatewise Domain Scaling Algorithm
for M-convex Function Minimization ............................ 21
Akihisa Tamura

The Quickest Multicommodity Flow Problem ....................... 36
Lisa Fleischer and Martin Skutella

A New Min-Cut Max-Flow Ratio for Multicommodity Flows ......... 54
Oktay Günlük

Improved Rounding Techniques for the MAX 2-SAT
and MAX DI-CUT Problems ........................................ 67
Michael Lewin, Dror Livnat, and Uri Zwick

Finding the Exact Integrality Gap for Small Traveling Salesman
Problems ........................................................................ 83
Sylvia Boyd and Geneviève Labonté

Polynomial-Time Separation of Simple Comb Inequalities .......... 93
Adam N. Letchford and Andrea Lodi

A New Approach to Cactus Construction Applied
to TSP Support Graphs ............................................... 109
Klaus M. Wenger

Split Closure and Intersection Cuts. .................................. 127
Kent Andersen, Gérard Cornuéjols, and Yanjun Li

An Exponential Lower Bound on the Length of Some Classes
of Branch-and-Cut Proofs ............................................. 145
Sanjeeb Dash

Lifted Inequalities for 0-1 Mixed Integer Programming:
Basic Theory and Algorithms ........................................ 161
Jean-Philippe P. Richard, Ismael R. de Farias, Jr.,
and George L. Nemhauser
# Table of Contents

On a Lemma of Scarf .................................................. 176
*Ron Aharoni and Tamás Fleiner*

A Short Proof of Seymour’s Characterization of the Matroids with the Max-Flow Min-Cut Property ...................... 188
*Bertrand Guenin*

Integer Programming and Arrovian Social Welfare Functions .......... 194
*Jay Sethuraman, Chung-Piaw Teo, and Rakesh V. Vohra*

Integrated Logistics: Approximation Algorithms Combining Facility Location and Network Design ................................. 212
*Ramamoorthi Ravi and Amitabh Sinha*

The Minimum Latency Problem Is NP-Hard for Weighted Trees ........ 230
*René Sitters*

An Improved Approximation Algorithm for the Metric Uncapacitated Facility Location Problem ............................. 240
*Maxim Sviridenko*

A Polyhedral Approach to Surface Reconstruction from Planar Contours . . . 258
*Ernst Althaus and Christian Fink*

The Semidefinite Relaxation of the $k$-Partition Polytope Is Strong ...... 273
*Andreas Eisenblätter*

A Polyhedral Study of the Cardinality Constrained Knapsack Problem ... 291
*Ismael R. de Farias, Jr. and George L. Nemhauser*

A PTAS for Minimizing Total Completion Time of Bounded Batch Scheduling .................................................. 304
*Mao-Cheng Cai, Xiaotie Deng, Haodi Feng, Guojun Li, and Guizhen Liu*

An Approximation Scheme for the Two-Stage, Two-Dimensional Bin Packing Problem ........................................... 315
*Alberto Caprara, Andrea Lodi, and Michele Monaci*

On Preemptive Resource Constrained Scheduling: Polynomial-Time Approximation Schemes .................................. 329
*Klaus Jansen and Lorant Porkolab*

Hard Equality Constrained Integer Knapsacks .......................... 350
*Karen Aardal and Arjen K. Lenstra*

The Distribution of Values in the Quadratic Assignment Problem ........ 367
*Alexander Barvinok and Tamon Stephen*

A New Subadditive Approach to Integer Programming ............... 384
*Diego Klabjan*
Improved Approximation Algorithms for Resource Allocation .................. 401
  Gruia Calinescu, Amit Chakrabarti, Howard Karloff, and Yuval Rabani

Approximating the Advertisement Placement Problem ......................... 415
  Ari Freund and Joseph Naor

Algorithms for Minimizing Response Time in Broadcast Scheduling ....... 425
  Rajiv Gandhi, Samir Khuller, Yoo-Ah Kim, and Yung-Chun Wan

Building Edge-Failure Resilient Networks ..................................... 439
  Chandra Chekuri, Anupam Gupta, Amit Kumar, Joseph Naor, and Danny Raz

The Demand Matching Problem .................................................. 457
  Bruce Shepherd and Adrian Vetta

The Single-Sink Buy-at-Bulk LP Has Constant Integrality Gap .............. 475
  Kunal Talwar

Author Index ............................................................................. 487
Integer Programming and Combinatorial Optimization
Cook, W.J.; Schulz, A.S. (Eds.)
ISBN: 978-3-540-43676-8