



A.J. Conejo, E. Castillo, R. Mínguez, R. García-Bertrand

Decomposition Techniques in Mathematical Programming

Engineering and Science Applications

- **User-oriented written, easy to follow**
- **Comprehensive approach decomposition methods in linear and nonlinear programming, providing rigorous and heuristic real world algorithms**
- **Includes a lot of examples and motivating problems, borrowed from a diversity of fields of operations research and engineering science, and perfectly illustrating the ubiquity of decomposition**

2006, XVI, 542 p.

Printed book

Hardcover

199,99 € | £179.99 | \$249.99

^[1]213,99 € (D) | 219,99 € (A) | CHF

236,00

Softcover

158,86 € | £119.99 | \$179.99

^[1]169,98 € (D) | 174,75 € (A) | CHF

187,50

eBook

128,39 € | £95.50 | \$139.00

^[2]128,39 € (D) | 128,39 € (A) | CHF

150,00

Available from your library or
springer.com/shop

MyCopy ^[3]

Printed eBook for just

€ | \$ 24.99

springer.com/mycopy

Optimization plainly dominates the design, planning, operation, and control of engineering systems. This is a book on optimization that considers particular cases of optimization problems, those with a decomposable structure that can be advantageously exploited. Those decomposable optimization problems are ubiquitous in engineering and science applications. The book considers problems with both complicating constraints and complicating variables, and analyzes linear and nonlinear problems, with and without integer variables. The decomposition techniques analyzed include Dantzig-Wolfe, Benders, Lagrangian relaxation, Augmented Lagrangian decomposition, and others. Heuristic techniques are also considered. Additionally, a comprehensive sensitivity analysis for characterizing the solution of optimization problems is carried out. This material is particularly novel and of high practical interest. This book is built based on many clarifying, illustrative, and computational examples, which facilitate the learning procedure. For the sake of clarity, theoretical concepts and computational algorithms are assembled based on these examples. The results are simplicity, clarity, and easy-learning. We feel that this book is needed by the engineering community that has to tackle complex optimization problems, particularly by practitioners and researchers in Engineering, Operations Research, and Applied Economics. The descriptions of most decomposition techniques are available only in complex and specialized mathematical journals, difficult to understand by engineers.

Order online at springer.com / or for the Americas call (toll free) 1-800-SPRINGER / or email us at: customerservice@springernature.com. / For outside the Americas call +49 (0) 6221-345-4301 / or email us at: customerservice@springernature.com.

The first € price and the £ and \$ price are net prices, subject to local VAT. Prices indicated with [1] include VAT for books; the €(D) includes 7% for Germany, the €(A) includes 10% for Austria. Prices indicated with [2] include VAT for electronic products; 19% for Germany, 20% for Austria. All prices exclusive of carriage charges. Prices and other details are subject to change without notice. All errors and omissions excepted. [3] No discount for MyCopy.

