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Altri autori (Persone)	AnjosMiguel F LasserreJean-Bernard <1953->
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction to Semidefinite, Conic and Polynomial Optimization -- The Approach of Moments for Polynomial Equations -- Algebraic Degree in Semidefinite and Polynomial Optimization -- Semidefinite Representation of Convex Sets and Convex Hulls -- Convex Hulls of Algebraic Sets -- Convex Relations and Integrality Gaps -- Relaxations of Combinatorial Problems via Association Schemes -- Copositive Programming -- Invariant Semidefinite Programs -- A "Joint+Marginal" Approach in Optimization -- An Introduction to Formally Real Jordan Algebras and Their Applications in Optimization -- Complementarity Problems Over Symmetric Conics: A Survey of Recent Developments in Several Aspects -- Convexity and Semidefinite Programming in Dimension-Free Matrix Unknowns -- Positivity and Optimization: Beyond Polynomials -- Self-Regular Interior-Point Methods for Semidefinite Optimization -- Elementary Optimality Conditions for Nonlinear SDPs -- Recent Progress in Interior-Point Methods: Cutting Plane Algorithms and Warm Starts -- Exploiting Sparsity in SDP

Relaxation of Polynomial Optimization Problems -- Block Coordinate Descent Methods for Semidefinite Programming -- Projection Methods in Conic Optimization -- SDP Relaxations for Non-Commutative Polynomial Optimization -- Semidefinite Programming and Constraint Programming -- The State-of-the-Art in Conic Optimization Software -- Latest Developments in SDPA Family for Solving Large-Scale SDPs -- On the Implementation and Usage of SDPT3: A MATLAB Software Package for Semidefinite-Quadratic-Linear Programming, Version 4.0 -- PENNON: Software for Linear and Nonlinear Matrix Inequalities -- SDP Relaxations for Some Combinatorial Optimization Problems -- Computational Approaches to Max-Cut -- Global Approaches for Facility Layout and VLSI Floorplanning -- Euclidean Distance Matrices and Applications -- Sparse PCA: Convex Relaxations, Algorithms and Applications.

Sommario/riassunto

Semidefinite and conic optimization is a major and thriving research area within the optimization community. Although semidefinite optimization has been studied (under different names) since at least the 1940s, its importance grew immensely during the 1990s after polynomial-time interior-point methods for linear optimization were extended to solve semidefinite optimization problems. Since the beginning of the 21st century, not only has research into semidefinite and conic optimization continued unabated, but also a fruitful interaction has developed with algebraic geometry through the close connections between semidefinite matrices and polynomial optimization. This has brought about important new results and led to an even higher level of research activity. This Handbook on Semidefinite, Conic and Polynomial Optimization provides the reader with a snapshot of the state-of-the-art in the growing and mutually enriching areas of semidefinite optimization, conic optimization, and polynomial optimization. It contains a compendium of the recent research activity that has taken place in these thrilling areas, and will appeal to doctoral students, young graduates, and experienced researchers alike. The Handbook’s thirty-one chapters are organized into four parts: Theory, covering significant theoretical developments as well as the interactions between conic optimization and polynomial optimization; Algorithms, documenting the directions of current algorithmic development; Software, providing an overview of the state-of-the-art; Applications, dealing with the application areas where semidefinite and conic optimization has made a significant impact in recent years.