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| Nota di contenuto | Preface -- Discrete Geometry in Minkowski Spaces (Alonso, Martini, and Spirova) -- Engineering Branch-and-Cut Algorithms for the Equicut Program (Anjos, Liers, Pardella, and Schmutzer) -- An Approach to the Dodecahedral Conjecture Based on Bounds for Spherical Codes (Anstreicher) -- On Minimal Tilings with Convex Cells Each Containing a Unit Ball (Bezdek) -- On Volumes of Permutation Polytopes (Burggraf, De Loera, and Omar) -- Monotone Paths in Planar Convex Subdivisions and Polytopes (Dumitrescu, Rote, and Toth).- Complexity of the Positive Semidefinite Matrix Completion Problem with a Rank Constraint (Eisenberg-Nagy, Laurent, and Varvitsiotis) -- The Strong Dodecahedral Conjecture and Fejes Toth's Conjecture on Sphere Packings with Kissing Number Twelve (Hales) -- Solving Nuclear Norm Regularized and Semidefinite Matrix Least Squares Problems with Linear Equality Constraints (Jiang, Sun, and Toh) -- Techniques for Submodular Maximization (Lee) -- A Further Generalization of the Colourful Caratheodory theorem (Meunier, Deza) -- Expected Crossing Numbers (Mohar, Stephen) -- EL-Labelings and Canonical Spanning Trees for Subword Complexes (Pilaud, Stump) -- Bandwidth, Vertex Separators, and Eigenvalue Optimization (Rendl, Lisser, and Piacentini) -- |

Exploiting Symmetries in Polyhedral Computations (Schurmann) -- Conditions for Correct Sensor Network Localization Using SDP Relaxation (Shamsi, Taheri, Zhu, and Ye) -- A Primal-Dual Smooth Perceptron-von Neumann Algorithm (Soheili, Pena) -- Open Problems (Bezdek, Deza, and Ye). .

Sommario/riassunto

Optimization has long been a source of both inspiration and applications for geometers, and conversely, discrete and convex geometry have provided the foundations for many optimization techniques, leading to a rich interplay between these subjects. The purpose of the Workshop on Discrete Geometry, the Conference on Discrete Geometry and Optimization, and the Workshop on Optimization, held in September 2011 at the Fields Institute, Toronto, was to further stimulate the interaction between geometers and optimizers. This volume reflects the interplay between these areas. The inspiring Fejes Tóth Lecture Series, delivered by Thomas Hales of the University of Pittsburgh, exemplified this approach. While these fields have recently witnessed a lot of activity and successes, many questions remain open. For example, Fields medalist Stephen Smale stated that the question of the existence of a strongly polynomial time algorithm for linear optimization is one of the most important unsolved problems at the beginning of the 21st century. The broad range of topics covered in this volume demonstrates the many recent and fruitful connections between different approaches, and features novel results and state-of-the-art surveys as well as open problems.