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Disciplina	511.6
Soggetti	Discrete mathematics Algebras, Linear Number theory Computer science - Mathematics Discrete Mathematics Linear Algebra Number Theory Mathematical Applications in Computer Science
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	On (1, 1)-matrices of skew type with the maximal determinants and tournaments -- On good matrices and skew Hadamard matrices -- Suitable permutations, binary covering arrays, and Paley matrices -- Divisible design digraphs -- New symmetric (61,16,4) designs obtained from codes -- D-optimal matrices of orders 118, 138, 150, 154 and 174 -- Periodic Golay pairs of length 72 -- Classifying cocyclic Butson Hadamard matrices -- Signed group orthogonal designs and their applications -- On symmetric designs and binary 3-frameproof codes -- An algorithm for constructing Hjelmslev planes -- Mutually unbiased biangular vectors and association schemes -- A simple construction of complex equiangular lines -- Inner product vectors for skew-Hadamard matrices -- Twin bent functions and Clifford algebras -- A Walsh–Fourier approach to the circulant Hadamard matrices -- A note on order and eigenvalue multiplicity of strongly regular graphs -- Trades in complex Hadamard matrices -- The hunt for weighting

Sommario/riassunto

This volume develops the depth and breadth of the mathematics underlying the construction and analysis of Hadamard matrices and their use in the construction of combinatorial designs. At the same time, it pursues current research in their numerous applications in security and cryptography, quantum information, and communications. Bridges among diverse mathematical threads and extensive applications make this an invaluable source for understanding both the current state of the art and future directions. The existence of Hadamard matrices remains one of the most challenging open questions in combinatorics. Substantial progress on their existence has resulted from advances in algebraic design theory using deep connections with linear algebra, abstract algebra, finite geometry, number theory, and combinatorics. Hadamard matrices arise in a very diverse set of applications. Starting with applications in experimental design theory and the theory of error-correcting codes, they have found unexpected and important applications in cryptography, quantum information theory, communications, and networking.