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Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Systems of low Hankel rank: A survey -- Tensor approximation and signal processing applications -- Exploiting Toeplitz-like structure in adaptive filtering algorithms using signal flow graphs -- The structured total least squares problem -- Exploiting Toeplitz structure in atmospheric image restoration -- Part III. Control Theory -- A survey of model reduction methods for large-scale systems -- Theory and computations of some inverse eigenvalue problems for the quadratic pencil -- Partial eigenvalue assignment for large linear control systems -- A hybrid method for the numerical solution of discrete-time algebraic Riccati equations -- Part IV. Spectral Properties. Conditioning -- Condition numbers of large Toeplitz-like matrices -- How bad are symmetric Pick matrices? -- Spectral properties of real Hankel matrices -- Conjectures and remarks on the limit of the spectral radius of nonnegative and block Toeplitz matrices.
Sommario/riassunto	Many important problems in applied sciences, mathematics, and engineering can be reduced to matrix problems. Moreover, various applications often introduce a special structure into the corresponding matrices, so that their entries can be described by a certain compact formula. Classic examples include Toeplitz matrices, Hankel matrices, Vandermonde matrices, Cauchy matrices, Pick matrices, Bezoutians, controllability and observability matrices, and others. Exploiting these

and the more general structures often allows us to obtain elegant solutions to mathematical problems as well as to design more efficient practical algorithms for a variety of applied engineering problems. Structured matrices have been under close study for a long time and in quite diverse (and seemingly unrelated) areas, for example, mathematics, computer science, and engineering. Considerable progress has recently been made in all these areas, and especially in studying the relevant numerical and computational issues. In the past few years, a number of practical algorithms blending speed and accuracy have been developed. This significant growth is fully reflected in these volumes, which collect 38 papers devoted to the numerous aspects of the topic. The collection of the contributions to these volumes offers a flavor of the plethora of different approaches to attack structured matrix problems. The reader will find that the theory of structured matrices is positioned to bridge diverse applications in the sciences and engineering, deep mathematical theories, as well as computational and numerical issues. The presentation fully illustrates the fact that the techniques of engineers, mathematicians, and numerical analysts nicely complement each other, and they all contribute to one unified theory of structured matrices. The book is published in two volumes. The first contain s articles on interpolation, system theory, signal and image processing, control theory, and spectral theory. Articles in the second volume are devoted to fast algorithms, numerical and iterative methods, and various applications.