1. Record Nr. UNINA9910254280003321

Autore	Garoni Carlo
Titolo	Generalized Locally Toeplitz Sequences: Theory and Applications : Volume I / / by Carlo Garoni, Stefano Serra-Capizzano
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2017
ISBN	3-319-53679-6
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (XI, 312 p. 16 illus. in color.)
Disciplina	518
Soggetti	Numerical analysis Matrix theory Algebra Differential equations, Partial Numerical Analysis Linear and Multilinear Algebras, Matrix Theory Partial Differential Equations
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	1 Introduction -- 2 Mathematical background -- 3 Singular value and eigenvalue distribution of a matrix-sequence -- 4 Spectral distribution of sequences of perturbed Hermitian matrices -- 5 Approximating classes of sequences -- 6 Toeplitz sequences -- 7 Locally Toeplitz sequences -- 8 Generalized locally Toeplitz sequences -- 9 Summary -- 10 Applications -- Future developments -- Solutions to the exercises .
Sommario/riassunto	Based on their research experience, the authors propose a reference textbook in two volumes on the theory of generalized locally Toeplitz sequences and their applications. This first volume focuses on the univariate version of the theory and the related applications in the unidimensional setting, while the second volume, which addresses the multivariate case, is mainly devoted to concrete PDE applications. This book systematically develops the theory of generalized locally Toeplitz (GLT) sequences and presents some of its main applications, with a particular focus on the numerical discretization of differential

equations (DEs). It is the first book to address the relatively new field of GLT sequences, which occur in numerous scientific applications and are especially dominant in the context of DE discretizations. Written for applied mathematicians, engineers, physicists, and scientists who (perhaps unknowingly) encounter GLT sequences in their research, it is also of interest to those working in the fields of Fourier and functional analysis, spectral analysis of DE discretization matrices, matrix analysis, measure and operator theory, numerical analysis and linear algebra. Further, it can be used as a textbook for a graduate or advanced undergraduate course in numerical analysis.