1. Record Nr.   UNISA996418201903316

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   Titolo   Numerical Linear Algebra and Matrix Factorizations [[electronic resource] /] / by Tom Lyche

   Pubbl/distr/stampa Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020

   ISBN   3-030-36468-2

   Edizione   [1st ed. 2020.]

   Descrizione fisica 1 online resource (XXIII, 371 p. 181 illus., 37 illus. in color.)

   Collana   Texts in Computational Science and Engineering, , 1611-0994 ; ; 22

   Disciplina   512.9

   Soggetti   Matrix theory
                       Algebra
                       Algorithms
                       Computer mathematics
                       Numerical analysis
                       Linear and Multilinear Algebras, Matrix Theory
                       Computational Science and Engineering
                       Numerical Analysis

   Lingua di pubblicazione   Inglese

   Formato   Materiale a stampa

   Livello bibliografico   Monografia

   Nota di contenuto   A Short Review of Linear Algebra -- LU and QR Factorizations -- Eigenpairs and Singular Values -- Matrix Norms and Least Squares -- Kronecker Products and Fourier Transforms -- Iterative Methods for Large Linear Systems -- Eigenvalues and Eigenvectors -- Index.

   Sommario/riassunto After reading this book, students should be able to analyze computational problems in linear algebra such as linear systems, least squares- and eigenvalue problems, and to develop their own algorithms for solving them. Since these problems can be large and difficult to handle, much can be gained by understanding and taking advantage of special structures. This in turn requires a good grasp of basic numerical linear algebra and matrix factorizations. Factoring a matrix into a product of simpler matrices is a crucial tool in numerical linear algebra, because it allows us to tackle complex problems by solving a sequence of easier ones. The main characteristics of this book are as follows: It is self-contained, only assuming that readers have

completed first-year calculus and an introductory course on linear algebra, and that they have some experience with solving mathematical problems on a computer. The book provides detailed proofs of virtually all results. Further, its respective parts can be used independently, making it suitable for self-study. The book consists of 15 chapters, divided into five thematically oriented parts. The chapters are designed for a one-week-per-chapter, one-semester course. To facilitate self-study, an introductory chapter includes a brief review of linear algebra.