

1. Record Nr.	UNINA9910483729703321
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Titolo	Numerical Linear Algebra and Matrix Factorizations // 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.
