

1. Record Nr.	UNINA9910449676303321
Autore	Vorst H. A. van der <1944->
Titolo	Iterative Krylov methods for large linear systems // Henk A. van der Vorst [[electronic resource]]
Pubbl/distr/stampa	Cambridge : , : Cambridge University Press, , 2003
ISBN	1-107-13540-0 1-280-43457-0 9786610434572 0-511-17900-6 1-139-14863-X 0-511-06134-X 0-511-05501-3 0-511-61511-6 0-511-30613-X 0-511-06980-4
Descrizione fisica	1 online resource (xiii, 221 pages) : digital, PDF file(s)
Collana	Cambridge monographs on applied and computational mathematics ; ; 13
Disciplina	511/.4
Soggetti	Iterative methods (Mathematics) Linear systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Title from publisher's bibliographic system (viewed on 05 Oct 2015).
Nota di bibliografia	Includes bibliographical references (p. 205-217) and index.
Nota di contenuto	Cover; Half-title; Series-title; Title; Copyright; Contents; Preface; 1 Introduction; 2 Mathematical preliminaries; 3 Basic iteration methods; 4 Construction of approximate solutions; 5 The Conjugate Gradients method; 6 GMRES and MINRES; 7 Bi-Conjugate Gradients; 8 How serious is irregular convergence?; 9 Bi-CGSTAB; 10 Solution of singular systems; 11 Solution of $f(A)x = b$ with Krylov subspace information; 12 Miscellaneous; 13 Preconditioning; References; Index
Sommario/riassunto	Computational simulation of scientific phenomena and engineering problems often depends on solving linear systems with a large number of unknowns. This book gives insight into the construction of iterative methods for the solution of such systems and helps the reader to select

the best solver for a given class of problems. The emphasis is on the main ideas and how they have led to efficient solvers such as CG, GMRES, and BI-CGSTAB. The author also explains the main concepts behind the construction of preconditioners. The reader is encouraged to gain experience by analysing numerous examples that illustrate how best to exploit the methods. The book also hints at many open problems and as such it will appeal to established researchers. There are many exercises that motivate the material and help students to understand the essential steps in the analysis and construction of algorithms.

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