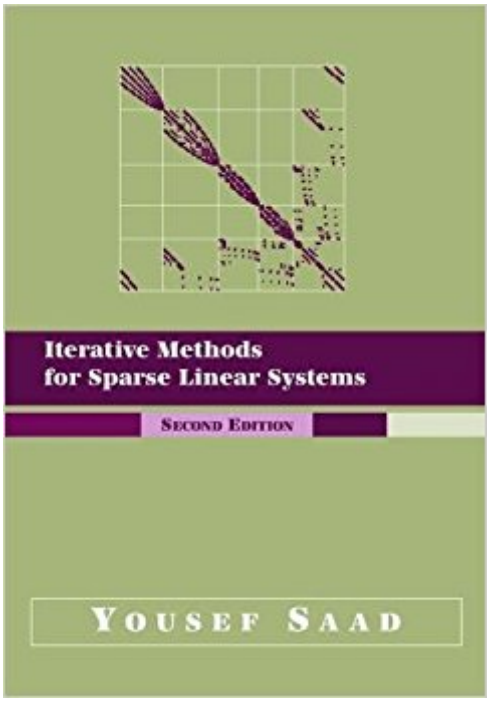
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Iterative Methods For Sparse Linear Systems, Second Edition



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Synopsis

Tremendous progress has been made in the scientific and engineering disciplines regarding the use of iterative methods for linear systems. The size and complexity of linear and nonlinear systems arising in typical applications has grown, meaning that using direct solvers for the three-dimensional models of these problems is no longer effective. At the same time, parallel computing, becoming less expensive and standardized, has penetrated these application areas. Iterative methods are easier than direct solvers to implement on parallel computers but require approaches and solution algorithms that are different from classical methods. This second edition gives an in-depth, up-to-date view of practical algorithms for solving large-scale linear systems of equations, including a wide range of the best methods available today. A new chapter on multigrid techniques has been added, whilst material throughout has been updated, removed or shortened. Numerous exercises have been added, as well as an updated and expanded bibliography.

Book Information

Paperback: 528 pages

Publisher: Society for Industrial and Applied Mathematics; 2 edition (April 30, 2003)

Language: English

ISBN-10: 0898715342

ISBN-13: 978-0898715347

Product Dimensions: 6 x 1.1 x 9 inches

Shipping Weight: 2 pounds (View shipping rates and policies)

Average Customer Review: 5.0 out of 5 stars 7 customer reviews

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Tremendous progress has been made in the scientific and engineering disciplines regarding the use of iterative methods for linear systems. This second edition gives an in-depth, up-to-date view of practical algorithms for solving large-scale linear systems of equations, including a wide range of the best methods available today.

Yousef Saad joined the University of Minnesota in 1990 as a Professor of Computer Science and a

Fellow of the Minnesota Supercomputer Institute. He was head of the department of Computer Science and Engineering from 1997 to 2000. He received the "Doctorat d'Etat" from the University of Grenoble (France) in 1983. His current research interests include numerical linear algebra, sparse matrix computations, iterative methods, parallel computing, and numerical methods for eigenvalue problems.

The book is written by Y. Saad, famous in the field of applied mathematics for developing the GMRES solver along with Martin Schultz. Their seminal 80s paper is still widely cited today. That being said, I think this book is one of the most accessible books in math. This book is really well written and says a lot about the author's ability to explain such hard topics to the newbie. As other reviewers mentioned, this book is already a masterpiece and it's an instant classic. The Krylov subspace and the preconditioning techniques chapters are a must read for any practitioner who solves ODEs and PDEs. The chapter on parallel techniques is another great introduction to a very difficult subject. It's one of the most valuable books in my collection, and career. I'd rather buy this book for over $100 than buy many other books on the field of iterative solvers.

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If you want to learn about iterative methods for solving linear equations, this should be the first book you buy. It will also serve as a great reference for the shelves. Very well written and organised.

This is a great book for this subject. The book is easy to follow and Saad does a wonderful job of illustrating with examples. This is a great textbook or a book for reference. This book does a particularly good job with Krylov methods and does a reasonable job with preconditioning.

This is one of my favorite books in my library on this subject. Also I have used this book for my class as main textbook along with "Iterative Methods for Solving Linear and Nonlinear Equations" by C. T. Kelley , which is another SIAM book.Highly recommended.

We used this book to prove a theorem in our studies that is directly related to my PhD thesis on spatial data mining and spatial statistics. This book is a master-piece.Thanks Dr. Saad.

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