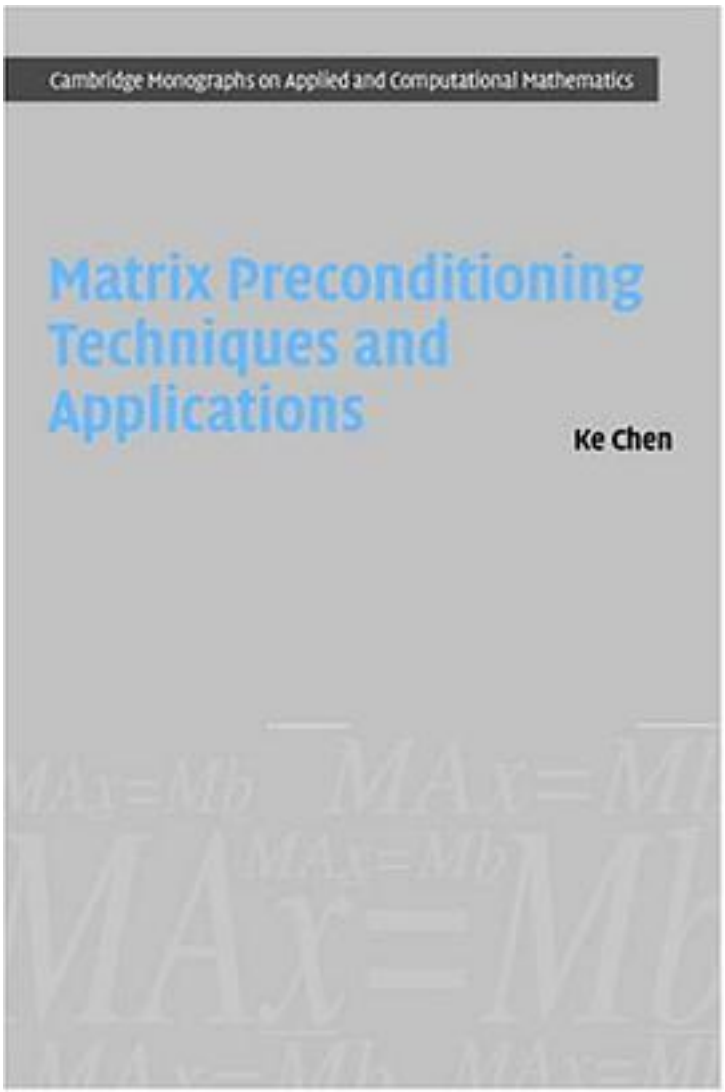
Matrix Preconditioning Techniques and Applications



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Preconditioning techniques have emerged as an essential part of successful and efficient iterative solutions of matrices. Ke Chen's book offers a comprehensive introduction to these methods. A vast range of explicit and implicit sparse preconditioners are covered, including the conjugate gradient, multi-level and fast multi-pole methods, matrix and operator splitting, fast Fourier and wavelet transforms, incomplete LU and domain decomposition, Schur complements and approximate inverses. In addition, aspects of parallel realization using the MPI are discussed. Very much a users-guide, the book provides insight to the use of these techniques in areas such as acoustic wave scattering, image restoration and bifurcation problems in electrical power stations. Supporting MATLAB files are available from the Web to support and develop readers' understanding, and provide stimulus for further study. Pitched at graduate level, the book is intended to serve as a useful guide and reference for students, computational practitioners, engineers and researchers alike.

作者介绍:

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