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Edizione	[1st ed.]
Descrizione fisica	1 online resource (xix, 242 pages) : illustrations (some color)
Collana	Necas Center Series
Disciplina	511.8
Soggetti	Algorithms Matrius disperses Sistemes lineals Algorismes Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	An introduction to sparse matrices Sparse matrices and their graphs Introduction to matrix factorizations Sparse Cholesky sovler: The symbolic phase Sparse Cholesky solver: The factorization phase Sparse LU factorizations Stability, ill-conditioning and symmetric indefinite factorizations Sparse matrix ordering algorithms Algebraic preconditioning and approximate factorizations Incomplete factorizations Sparse approximate inverse preconditioners.
Sommario/riassunto	Large sparse linear systems of equations are ubiquitous in science, engineering and beyond. This open access monograph focuses on factorization algorithms for solving such systems. It presents classical techniques for complete factorizations that are used in sparse direct methods and discusses the computation of approximate direct and inverse factorizations that are key to constructing general-purpose algebraic preconditioners for iterative solvers. A unified framework is used that emphasizes the underlying sparsity structures and highlights the importance of understanding sparse direct methods when developing algebraic preconditioners. Theoretical results are complemented by sparse matrix algorithm outlines.