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	Descrizione fisica	1 online resource (xvi, 432 pages) : illustrations (some color)
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	Note generali	Description based upon print version of record.
	Nota di bibliografia	Includes bibliographical references.
	Nota di contenuto	From the Contents: Basic concepts of structural analysis and graph theory -- Optimal force method of structural analysis -- Optimal displacement method of structural analysis -- Ordering for optimal patterns of structural matrices: graph theory methods.
	Sommario/riassunto	Graph theory gained initial prominence in science and engineering through its strong links with matrix algebra and computer science. Moreover, the structure of the mathematics is well suited to that of engineering problems in analysis and design. The methods of analysis in this book employ matrix algebra, graph theory and meta-heuristic algorithms, which are ideally suited for modern computational mechanics. Efficient methods are presented that lead to highly sparse and banded structural matrices. The main features of the book include: application of graph theory for efficient analysis; extension of the force method to finite element analysis; application of meta-heuristic algorithms to ordering and decomposition (sparse matrix technology); efficient use of symmetry and regularity in the force method; and simultaneous analysis and design of structures.