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Collana	Algorithms and Combinatorics, , 0937-5511 ; ; 30
Disciplina	510
Soggetti	Algorithms Combinatorial analysis Computer science—Mathematics Statistical physics Dynamics Approximation theory Mathematics of Algorithmic Complexity Combinatorics Discrete Mathematics in Computer Science Complex Systems Approximations and Expansions
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Chapter I. Introduction -- Chapter II. Preliminaries -- Chapter III. Permanents -- Chapter IV. Hafnians and Multidimensional Permanents -- Chapter V. The Matching Polynomial -- Chapter VI. The Independence Polynomial -- Chapter VII. The Graph Homomorphism Partition Function -- Chapter VIII. Partition Functions of Integer Flows -- References -- Index.
Sommario/riassunto	Partition functions arise in combinatorics and related problems of statistical physics as they encode in a succinct way the combinatorial structure of complicated systems. The main focus of the book is on efficient ways to compute (approximate) various partition functions, such as permanents, hafnians and their higher-dimensional versions,

graph and hypergraph matching polynomials, the independence polynomial of a graph and partition functions enumerating 0-1 and integer points in polyhedra, which allows one to make algorithmic advances in otherwise intractable problems. The book unifies various, often quite recent, results scattered in the literature, concentrating on the three main approaches: scaling, interpolation and correlation decay. The prerequisites include moderate amounts of real and complex analysis and linear algebra, making the book accessible to advanced math and physics undergraduates. .
