

1. Record Nr.	UNINA9910299226303321
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Titolo	Parameterized Algorithms // by Marek Cygan, Fedor V. Fomin, ukasz Kowalik, Daniel Lokshtanov, Dániel Marx, Marcin Pilipczuk, Micha Pilipczuk, Saket Saurabh
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2015
ISBN	3-319-21275-3
Edizione	[1st ed. 2015.]
Descrizione fisica	1 online resource (XVII, 613 p. 84 illus., 25 illus. in color.)
Disciplina	519.544
Soggetti	Algorithms Algorithm Analysis and Problem Complexity
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction -- Kernelization -- Bounded Search Trees -- Iterative Compression -- Randomized Methods in Parameterized Algorithms -- Miscellaneous -- Treewidth -- Finding Cuts and Separators -- Advanced Kernelization Algorithms -- Algebraic Techniques: Sieves, Convolutions, and Polynomials -- Improving Dynamic Programming on Tree Decompositions -- Matroids -- Fixed-Parameter Intractability -- Lower Bounds Based on the Exponential-Time Hypothesis -- Lower Bounds for Kernelization.
Sommario/riassunto	This comprehensive textbook presents a clean and coherent account of most fundamental tools and techniques in Parameterized Algorithms and is a self-contained guide to the area. The book covers many of the recent developments of the field, including application of important separators, branching based on linear programming, Cut & Count to obtain faster algorithms on tree decompositions, algorithms based on representative families of matroids, and use of the Strong Exponential Time Hypothesis. A number of older results are revisited and explained in a modern and didactic way. The book provides a toolbox of algorithmic techniques. Part I is an overview of basic techniques, each chapter discussing a certain algorithmic paradigm. The material covered in this part can be used for an introductory course on fixed-parameter tractability. Part II discusses more advanced and specialized

algorithmic ideas, bringing the reader to the cutting edge of current research. Part III presents complexity results and lower bounds, giving negative evidence by way of $W[1]$ -hardness, the Exponential Time Hypothesis, and kernelization lower bounds. All the results and concepts are introduced at a level accessible to graduate students and advanced undergraduate students. Every chapter is accompanied by exercises, many with hints, while the bibliographic notes point to original publications and related work.
