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Descrizione fisica	1 online resource (762 p.)
Collana	Springer Monographs in Mathematics, , 1439-7382
Disciplina	510
Soggetti	Group theory Commutative algebra Commutative rings Categories (Mathematics) Algebra, Homological Group Theory and Generalizations Commutative Rings and Algebras Category Theory, Homological Algebra
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and indexes.
Nota di contenuto	Fundamentals -- Direct Sums -- Direct Sums of Cyclic Groups -- Divisibility and Injectivity -- Purity and Basic Subgroups -- Algebraically Compact Groups -- Homomorphism Groups -- Tensor and Torsion Products -- Groups of Extensions and Cotorsion Groups -- Torsion Groups -- p-Groups with Elements of Infinite Height -- Torsion-free Groups -- Torsion-free Groups of Infinite Rank -- Butler Groups -- Mixed Groups -- Endomorphism Rings -- Automorphism groups -- Groups in Rings and in Fields.
Sommario/riassunto	Written by one of the subject’s foremost experts, this book focuses on the central developments and modern methods of the advanced theory of abelian groups, while remaining accessible, as an introduction and reference, to the non-specialist. It provides a coherent source for results scattered throughout the research literature with lots of new proofs. The presentation highlights major trends that have radically changed the modern character of the subject, in particular, the use of homological methods in the structure theory of various classes of

abelian groups, and the use of advanced set-theoretical methods in the study of undecidability problems. The treatment of the latter trend includes Shelah's seminal work on the undecidability in ZFC of Whitehead's Problem; while the treatment of the former trend includes an extensive (but non-exhaustive) study of p-groups, torsion-free groups, mixed groups, and important classes of groups arising from ring theory. To prepare the reader to tackle these topics, the book reviews the fundamentals of abelian group theory and provides some background material from category theory, set theory, topology, and homological algebra. An abundance of exercises are included to test the reader's comprehension, and to explore noteworthy extensions and related sidelines of the main topics. A list of open problems and questions, in each chapter, invite the reader to take an active part in the subject's further development.