1. Record Nr. UNINA9910741183603321

Autore	Grynkiewicz David J
Titolo	Structural Additive Theory / / by David J. Grynkiewicz
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2013
ISBN	9783319004167 3319004166
Edizione	[1st ed. 2013.]
Descrizione fisica	1 online resource (425 p.)
Collana	Developments in Mathematics, , 2197-795X ; ; 30
Disciplina	512 512.814
Soggetti	Number theory Sequences (Mathematics) Algebra Number Theory Sequences, Series, Summability Order, Lattices, Ordered Algebraic Structures
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 index.
Nota di contenuto	1. Abelian Groups and Character Sums -- 2. Introduction to Sumsets -- 3. Simple Results for Torsion-Free Abelian Groups -- 4. Basic Results for Sumsets with an Infinite Summand -- 5. The Pigeonhole and Multiplicity Bounds -- 6. Periodic Sets and Kneser's Theorem -- 7. Compression, Complements and the 3k–4 Theorem -- 8. Additive Energy -- 9. Kemperman's Critical Pair Theory -- 10. Zero-Sums, Setpartitions and Subsequence Sums -- 11. Long Zero-Sum Free Sequences over Cyclic Groups -- 12. Pollard's Theorem for General Abelian Groups -- 13. The DeVos–Goddyn–Mohar Theorem -- 14. The Partition Theorem I -- 15. The Partition Theorem II -- 16. The -Weighted Gao Theorem -- 17. Group Algebras -- 18. Character and Linear Algebraic Methods -- 19. Character Sum and Fourier Analytic Methods -- 20. Freiman Homomorphisms Revisited -- 21. The Isoperimetric Method -- 22. The Polynomial Method -- Index.
Sommario/riassunto	Nestled between number theory, combinatorics, algebra, and analysis lies a rapidly developing subject in mathematics variously known as

additive combinatorics, additive number theory, additive group theory, and combinatorial number theory. Its main objects of study are not abelian groups themselves, but rather the additive structure of subsets and subsequences of an abelian group, i.e. sumsets and subsequence sums. This text is a hybrid of a research monograph and an introductory graduate textbook. With few exceptions, all results presented are self-contained, written in great detail, and only reliant upon material covered in an advanced undergraduate curriculum supplemented with some additional Algebra, rendering this book usable as an entry-level text. However, it will perhaps be of even more interest to researchers already in the field. The majority of material is not found in book form and includes many new results as well. Even classical results, when included, are given in greater generality or using new proof variations. The text has a particular focus on results of a more exact and precise nature, results with strong hypotheses and yet stronger conclusions, and on fundamental aspects of the theory. Also included are intricate results often neglected in other texts owing to their complexity. Highlights include an extensive treatment of Freiman Homomorphisms and the Universal Ambient Group of sumsets A+B, an entire chapter devoted to Hamidoune's Isoperimetric Method, a novel generalization allowing infinite summands in finite sumset questions, weighted zero-sum problems treated in the general context of viewing homomorphisms as weights, and simplified proofs of the Kemperman Structure Theorem and the Partition Theorem for setpartitions. .