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Sommario/riassunto

Growth of groups is an innovative new branch of group theory. This is the first book to introduce the subject from scratch. It begins with basic definitions and culminates in the seminal results of Gromov and Grigorchuk and more. The proof of Gromov's theorem on groups of polynomial growth is given in full, with the theory of asymptotic cones developed on the way. Grigorchuk's first and general groups are described, as well as the proof that they have intermediate growth, with explicit bounds, and their relationship to automorphisms of regular trees and finite automata. Also discussed are generating functions, groups of polynomial growth of low degrees, infinitely generated groups of local polynomial growth, the relation of intermediate growth to amenability and residual finiteness, and conjugacy class growth. This book is valuable reading for researchers, from graduate students onward, working in contemporary group theory.