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Sommario/riassunto

The central subject of this book is Almost Periodic Oscillations, the most common oscillations in applications and the most intricate for mathematical analysis. Prof. Akhmet's lucid and rigorous examination proves these oscillations are a "regular" component of chaotic attractors. The book focuses on almost periodic functions, first of all, as Stable (asymptotically) solutions of differential equations of different types, presumably discontinuous; and, secondly, as non-isolated oscillations in chaotic sets. Finally, the author proves the existence of Almost Periodic Oscillations (asymptotic and bi-asymptotic) by asymptotic equivalence between systems. The book brings readers' attention to contemporary methods for considering oscillations as well as to methods with strong potential for study of chaos in the future. Providing three powerful instruments for mathematical research of oscillations where dynamics are observable and applied, the book is ideal for engineers as well as specialists in electronics, computer sciences, robotics, neural networks, artificial networks, and biology. Distinctively combines results and methods of the theory of differential equations with thorough investigation of chaotic dynamics with almost periodic ingredients; Provides all necessary mathematical basics in their most developed form, negating the need for any additional sources for readers to start work in the area; Presents a unique method of investigation of discontinuous almost periodic solutions in its unified form, employed to differential equations with different types of discontinuity; Develops the equivalence method to its ultimate effective state such that most important theoretical problems and practical applications can be analyzed by the method.