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Sommario/riassunto

"Frame construction is currently a very active area of research, and a book that provides a systematic introduction of the Lie theoretic tools for such an endeavor, together with thorough demonstrations how these tools can be employed, is in my view a very timely project." Duffin and Schaeffer developed frame theory in the fifties as a tool to solve problems in non-harmonic Fourier series. The search for redundant and flexible basis-like reproducing systems for signal analysis led to the rediscovery of frames in the early eighties. The foundational work of Daubechies, Meyer, Grossman, and others highlighted the influential role that frames play in studying signal analysis through wavelet theory and time-frequency analysis. Frame theory is a branch of harmonic analysis that has now blossomed into a dynamic and active field, drawing its strengths from a wide range of areas such as representation theory, and Lie theory. The proposed book is concerned with the discretization problem of representations of Lie groups, which can be formulated as follows. Given a representation of a Lie group, under which conditions is it possible to sample one of its orbits for the construction of frames with prescribed properties? This book aims to give a systematic, coherent, and detailed treatment of the mathematics encountered in searching for a satisfactory solution to the discretization problem."--