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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Homogenization of natural mechanical systems with a strong constraining potential -- Applications -- Adiabatic results in quantum theory and quantum-classical coupling.
Sommario/riassunto	This book is about the explicit elimination of fast oscillatory scales in dynamical systems, which is important for efficient computer-simulations and our understanding of model hierarchies. The author presents his new direct method, homogenization in time, based on energy principles and weak convergence techniques. How to use this method is shown in several general cases taken from classical and quantum mechanics. The results are applied to special problems from plasma physics, molecular dynamics and quantum chemistry. Background material from functional analysis is provided and explained to make this book accessible for a general audience of graduate students and researchers.