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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Review of Scattering Theory -- Quantum Field Theory and the Spectral Method -- Applications in One Space Dimension -- Spectral Analysis of Charges -- Hedgehog Configurations in = 3+1 -- Boundary Conditions and Casimir Forces -- String-Type Configurations -- Quantum Corrections to -Balls.
Sommario/riassunto	This concise text introduces techniques from quantum mechanics, especially scattering theory, to compute the effects of an external background on a quantum field in general, and on the properties of the quantum vacuum in particular. This approach can be successfully used in an increasingly large number of situations, ranging from the study of solitons in field theory and cosmology to the determination of Casimir forces in nano-technology. The method introduced and applied in this book is shown to give an unambiguous connection to perturbation theory, implementing standard renormalization conditions even for non-perturbative backgrounds. It both gives new theoretical insights,

for example illuminating longstanding questions regarding Casimir stresses, and also provides an efficient analytic and numerical tool well suited to practical calculations. Last but not least, it elucidates in a concrete context many of the subtleties of quantum field theory, such as divergences, regularization and renormalization, by connecting them to more familiar results in quantum mechanics. While addressed primarily at young researchers entering the field and nonspecialist researchers with backgrounds in theoretical and mathematical physics, introductory chapters on the theoretical aspects of the method make the book self-contained and thus suitable for advanced graduate students.