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   Edizione   [2nd ed. 2024.]

   Descrizione fisica   1 online resource (501 pages)

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   Disciplina   512.22

   Soggetti   Mathematical physics
                   Group theory
                   Theoretical, Mathematical and Computational Physics
                   Group Theory and Generalizations

   Lingua di pubblicazione   Inglese

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   Nota di contenuto   Overview -- Theory of the Poincaré Group -- Theory of Spinors --
                       Group Contractions -- Covariant Harmonic Oscillator Formalism --
                       Dirac's Form of Relativistic Quantum Mechanics -- Symmetries of Dirac'
                       s Coupled Oscillators and Dirac's Matrices -- The Lorentz Group --
                       Lorentz-Dirac Deformation in High-Energy Physics -- Decoherence and
                       the Poincaré Sphere.-Lorentz Group in Classical Optics.

   Sommario/riassunto   This book is intended mainly as a teaching tool directed toward those
                        who desire a deeper understanding of group theory in terms of
                        examples applicable to the physical world and/or of the physical world
                        in terms of the symmetry properties which can best be formulated in
                        terms of group theory. Both advanced students and scholars interested
                        in the relationship between group theory and physics will find it
                        instructive. In particular, those engaged in high-energy physics and
                        foundations of quantum mechanics will find this book rich in
                        illustrative examples of relativistic quantum mechanics. This new
                        edition contains four new chapters, two of which are consistent with
                        Dirac's aim to combine the important developments in physics in the
                        twentieth century, namely quantum mechanics and special relativity.

Moreover, these new chapters also discuss various aspects of classical and quantum optics that are now understood to be interrelated. Most of the original chapters have been updated, either with new material added or in some instances reinterpretation of the original. The order of the chapters has been rearranged to create a more cohesive presentation. The original purpose of the first edition, namely to present examples to which physics students and researchers can relate, has not been altered.