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Autore	Ilisie Victor
Titolo	Concepts in Quantum Field Theory : A Practitioner's Toolkit // by Victor Ilisie
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ISBN	3-319-22966-4
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (XIII, 190 p. 25 illus.)
Collana	UNITEXT for Physics, , 2198-7882
Disciplina	530.143
Soggetti	Elementary particles (Physics) Quantum field theory String theory Elementary Particles, Quantum Field Theory Quantum Field Theories, String Theory
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di contenuto	1 Vectors, tensors, manifolds and Special Relativity -- 2 Lagrangians, Hamiltonians and Noether's Theorem -- 3 Relativistic kinematics and phase space -- 4 Angular Distributions -- 5 Dirac algebra -- 6 Dimensional regularization. Ultraviolet and infrared divergences -- 7 QED renormalization -- 8 One-loop two and three-point functions -- 9 Massive spin one and renormalizable gauges -- 10 Symmetries and effective vertices -- 11 Effective field theory -- 12 Optical theorem -- A Master integral -- B Renormalization group equations -- C Feynman rules for derivative couplings.
Sommario/riassunto	This book uses less strict yet still formal mathematical language to clarify a variety of concepts in Quantum Field Theory that remain somewhat "fuzzy" in many books designed for undergraduates and fresh graduates. The aim is not to replace formal books on Quantum Field Theory, but rather to offer a helpful complementary tool for beginners in the field. Features include a reader-friendly introduction to tensor calculus and the concept of manifolds; a simple and robust treatment for dimensional regularization; a consistent explanation of the renormalization procedure, step by step and in a transparent

manner at all orders, using the QED Lagrangian; and extensive treatment of infrared as well as ultraviolet divergences. The most general (Lorentz invariant) form of Noether's theorem is presented and applied to a few simple yet relevant examples in Quantum Field Theory. These and further interesting topics are addressed in a way that will be accessible for the target readership. Some familiarity with basic notions of Quantum Field Theory and the basics of Special Relativity is assumed.
