

1. Record Nr.	UNINA9910819295103321
Autore	Arbuzov Boris A. <1938->
Titolo	Non-perturbative effective interactions in the standard model // Boris A. Arbuzov
Pubbl/distr/stampa	Berlin, [Germany] ; ; Boston, [Massachusetts] : , : De Gruyter, , 2014 ©2014
ISBN	3-11-038805-7 3-11-030521-6
Descrizione fisica	1 online resource (236 p.)
Collana	De Gruyter Studies in Mathematical Physics, , 2194-3532 ; ; Volume 23
Classificazione	UO 5000
Disciplina	539.7/5
Soggetti	Standard model (Nuclear physics) Unified field theories
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front matter -- Preface -- Contents -- 1. Elementary particles and fields -- 2. The standard model -- 3. Bogoliubov compensation -- 4. Three-gluon effective interaction -- 5. Nambu-Jona-Lasinio effective interaction -- 6. Three-boson interaction -- 7. Possible four-fermion interaction of heavy quarks -- 8. Overall conclusion -- Bibliography -- Index
Sommario/riassunto	This monograph is devoted to the nonperturbative dynamics in the Standard Model (SM), the basic theory of all fundamental interactions in nature except gravity. The Standard Model is divided into two parts: the quantum chromodynamics (QCD) and the electro-weak theory (EWT) are well-defined renormalizable theories in which the perturbation theory is valid. However, for the adequate description of the real physics nonperturbative effects are inevitable. This book describes how these nonperturbative effects may be obtained in the framework of spontaneous generation of effective interactions. The well-known example of such effective interaction is provided by the famous Nambu-Jona-Lasinio effective interaction. Also a spontaneous generation of this interaction in the framework of QCD is described and applied to the method for other effective interactions in QCD and EWT. The method is based on N.N. Bogoliubov's conception of compensation

equations. As a result we then describe the principal features of the Standard Model, e.g. Higgs sector, and significant nonperturbative effects including recent results obtained at LHC and TEVATRON.
