1.	Record Nr.	UNINA9910808641703321
	Autore	Giunti Carlo
	Titolo	Fundamentals of neutrino physics and astrophysics [[electronic resource] /] / Carlo Giunti, Chung W. Kim
	Pubbl/distr/stampa	Oxford ; ; New York, : Oxford University Press, 2007
	ISBN	0191523224
		9780191523229
	Edizione	[1st ed.]
	Descrizione fisica	xvi, 710 p. : ill
	Altri autori (Persone)	KimChung Wook <1934->
	Disciplina	539.7215
	Soggetti	Neutrino astrophysics
		Neutrinos
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di bibliografia	Includes bibliographical references (p. [671]-704) and index.
	Nota di contenuto	Intro -- Contents -- 1 Historical introduction -- 2 Quantized Dirac fields -- 2.1 Dirac equation -- 2.2 Representations of &amp -- #947 -- matrices -- 2.3 Products of &amp -- #947 -- matrices -- 2.4 Relativistic covariance -- 2.5 Helicity -- 2.6 Gauge transformations -- 2.7 Chirality -- 2.8 Solution of the Dirac equation -- 2.9 Quantization -- 2.10 Symmetry transformation of states -- 2.11 C, P, and T transformations -- 2.12 Wave packets -- 2.13 Finite normalization volume -- 2.14 Fierz transformations -- 3 The Standard Model -- 3.1 Electroweak Lagrangian -- 3.2 Electroweak interactions -- 3.3 Three generations -- 3.4 The Higgs mechanism -- 3.5 Fermion masses and mixing -- 3.6 Gauge bosons -- 3.7 Effective low-energy CC and NC Lagrangians -- 4 Three-generation mixing -- 4.1 Diagonalization of the mass matrix -- 4.2 Physical parameters in the mixing matrix -- 4.3 Parameterization of the mixing matrix -- 4.4 Degenerate masses -- 4.5 Mixing matrix with one vanishing element -- 4.6 CP violation -- 4.7 Rephasing invariants -- 4.8 Unitarity triangles -- 4.9 Conditions for CP violation -- 5 Neutrino interactions -- 5.1 Neutrino-electron interactions -- 5.2 Hadron decays -- 5.3 Neutrino-nucleon scattering -- 6 Massive neutrinos -- 6.1 Dirac masses -- 6.2 Majorana neutrinos -- 6.3 Mixing of three Majorana neutrinos -- 6.4 One-generation Dirac-Majorana mass term -- 6.5 Three-generation Dirac-Majorana mixing -- 6.6 Special cases -- 6.7 Majorana mass matrix -- 7 Neutrino

Sommario/riassunto

Our Universe is made of a dozen fundamental building blocks. Among these, neutrinos are the most mysterious - but they are the second

most abundant particles in the Universe. This book provides detailed discussions of how to describe neutrinos, their basic properties, and the roles they play in nature.