

1. Record Nr.	UNINA9910627229303321
Autore	Fernow Richard C.
Titolo	Introduction to Experimental Particle Physics // Richard C. Fernow
Pubbl/distr/stampa	Cambridge, United Kingdom : , : Cambridge University Press, , 1986
Descrizione fisica	1 online resource (429 pages)
Disciplina	539.754
Soggetti	Electromagnetic interactions
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Cover; Title ; Copyright ; Contents; Preface; 1 Introduction ; 1.1 Particle physics ; 1.2 Particles and interactions ; 1.3 Relativistic kinematics ; 1.4 Summary of particle properties ; 1.5 Scattering ; 1.6 Particle physics experiments ; 1.7 Data analysis ; 2 Electromagnetic interactions. 2.1 Energy loss in matter 2.2 Quantum treatment of the energy loss ; 2.3 Fluctuations in energy loss ; 2.4 Energy loss of electrons and positrons ; 2.5 Interactions of photons ; 2.6 Elastic scattering ; 2.7 Multiple scattering ; 2.8 Other electromagnetic effects. 3 Nuclear interactions 3.1 Strong interactions ; 3.2 Weak interactions ; 4 Particle beams ; 4.1 Particle accelerators ; 4.2 Secondary beams ; 4.3 Beam transport ; 4.4 Flux monitors ; 4.5 Other particle sources ; 4.6 Radiation protection ; 5 Targets ; 5.1 Standard targets. 5.2 Special purpose targets 6 Fast electronics ; 6.1 Fast pulse instrumentation ; 6.2 Discriminators ; 6.3 Coincidence units ; 6.4 CAMAC standard ; 6.5 Other fast pulse devices ; 6.6 Signal cables ; 7 Scintillation counters ; 7.1 The scintillation process ; 7.2 Light collection. 7.3 Photomultiplier tubes 7.4 Performance ; 7.5 Timing applications ; 8 Cerenkov counters ; 8.1 The Cerenkov effect ; 8.2 Photon yield ; 8.3 Gas radiators ; 8.4 Threshold counters ; 8.5 Differential counters ; 8.6 Total absorption counters ; 9 Proportional chambers.
Sommario/riassunto	This book brings together the most important topics in experimental particle physics in the late twentieth century to give a brief but balanced overview of the subject. The author begins by reviewing particle physics and discussing electromagnetic and nuclear interactions. He then goes on to discuss three nearly universal aspects

of particle physics experiments: beams, targets, and fast electronics. The second part of the book treats in detail the properties of various types of particle detector, such as scintillation counters, Cerenkov counters, proportional chambers, drift chambers, sampling calorimeters, and specialized detectors. Wherever possible the author attempts to enumerate the advantages and disadvantages of performance. Finally, he discusses aspects of specific experiments, such as properties of triggers, types of measurement, spectrometers, and the integration of detectors into coherent systems. First published in 1986, this title has been reissued as an Open Access publication on Cambridge Core.

---