1. Record Nr. UNINA9910460726203321

Autore	Mann Robert
Titolo	An introduction to particle physics and the standard model / / by Robert Mann
Pubbl/distr/stampa	Taylor & Francis, 2010 Boca Raton, FL : , : CRC Press, an imprint of Taylor and Francis, , 2009
ISBN	0-429-14122-X 1-4200-8300-7
Edizione	[First edition.]
Descrizione fisica	1 online resource (602 p.)
Classificazione	UO 1000 UO 5000
Disciplina	539.7/2
Soggetti	Particles (Nuclear physics) Quark models String models
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.
Nota di contenuto	Front cover; Contents; Preface; Acknowledgments; Further Reading; Chapter 1. Introduction and Overview; Chapter 2. A Review of Special Relativity; Chapter 3. Symmetries; Chapter 4. Conservation Laws; Chapter 5. Particle Classification; Chapter 6. Discrete Symmetries; Chapter 7. Accelerators; Chapter 8. Detectors; Chapter 9. Scattering; Chapter 10. A Toy Theory; Chapter 11. Wave Equations for Elementary Particles; Chapter 12. Gauge Invariance; Chapter 13. Quantum Electrodynamics; Chapter 14. Testing QED; Chapter 15. From Nuclei to Quarks; Chapter 16. The Quark Model Chapter 17. Testing the Quark ModelChapter 18. Heavy Quarks and QCD; Chapter 19. From Beta Decay to Weak Interactions; Chapter 20. Charged Leptonic Weak Interactions; Chapter 21. Charged Weak Interactions of Quarks and Leptons; Chapter 22. Electroweak Unification; Chapter 23. Electroweak Symmetry Breaking; Chapter 24. Testing Electroweak Theory; Chapter 25. Beyond the Standard Model; Appendix A. Notation and Conventions; Appendix B. Kronecker Delta and Levi-Civita Symbols; Appendix C. Dirac Delta-Functions; Appendix D. Pauli and Dirac Matrices; Appendix E. Cross-Sections and Decay

Rates

Appendix F. Clebsch-Gordon CoefficientsAppendix G. Fundamental Constants; Appendix H. Properties of Elementary Particles; Appendix I. Feynman Rules for the Standard Model; Appendix J. The Large Hadron Rap; References; Back cover

Sommario/riassunto

An Introduction to the Standard Model of Particle Physics familiarizes readers with what is considered tested and accepted and in so doing, gives them a grounding in particle physics in general. Whenever possible, Dr. Mann takes an historical approach showing how the model is linked to the physics that most of us have learned in less challenging areas. Dr. Mann reviews special relativity and classical mechanics, symmetries, conservation laws, and particle classification; then working from the tested paradigm of the model itself, he. Those who work through the material will develop a solid command of the basics of particle physics. The book does require a knowledge of special relativity, quantum mechanics, and electromagnetism, but most importantly it requires a hunger to understand at the most fundamental level: why things exist and how it is that anything happens. This book will prepare students and others for further study, but most importantly it will prepare them to open their minds to the mysteries that lie ahead. Ultimately, the Large Hadron Collider may prove the model correct, helping so many realize their greatest dreams … or it might poke holes in the model, leaving us to wonder an even more exciting possibility: that the answers lie in possibilities so unique that we have not even dreamt of them.