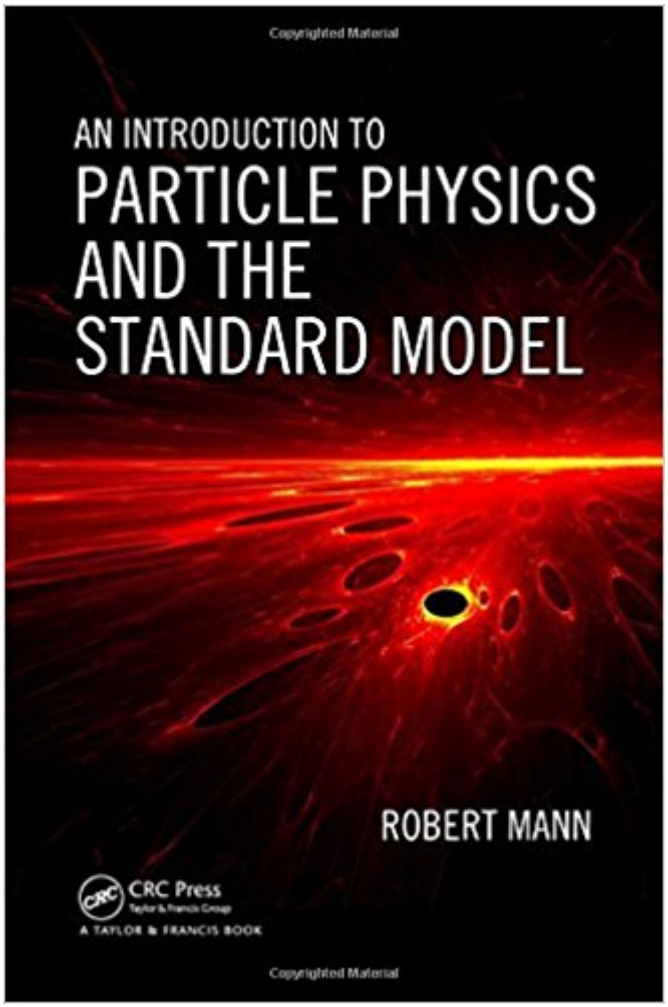
An Introduction To Particle Physics And The Standard Model



Synopsis

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: Describes the Standard Model in terms of its electromagnetic, strong, and weak components Explores the experimental tools and methods of particle physics Introduces Feynman diagrams, wave equations, and gauge invariance, building up to the theory of Quantum Electrodynamics Describes the theories of the Strong and Electroweak interactions Uncovers frontier areas and explores what might lie beyond our current concepts of the subatomic world 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 Ã¢â ¬Â¦ 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.

Book Information

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Customer Reviews

Ã¢â ¬Â¦ thoroughly recommended for a final-year specialist or first-year postgraduate study level especially for those engaged in experimental high energy physics research. The author has performed an excellent service in making accessible the language and results of field theory applied to elementary particle physics.Ã¢â ¬â ¢John J. Quenby, Contemporary Physics, 52, 2011 The first chapter shows how clearly the author can write and even though the subject matter gets more complex through the book, the clarity continues. Ã¢â ¬Â¦ giv[es] readers greater insights into how the maths and the reality match (or donÃ¢â ¬â„¢t match!) and hopefully exciting them into further consideration of what may be Ã¢â ¬Ëœhidden behind the curtainÃ¢â ¬â„¢. Ã¢â ¬Â¦ while most of the book is limited to final year and postgraduate students, the first and last chapters of the book should be accessible to any interested reader wanting to understand the present knowledge and future directions of particle physics. The author has intended the book to be used as a course of study Ã¢â ¬Â¦ he has used the material himself in this way with success for two decades. Ã¢â ¬Â¦ Every chapter ends with Ã¢â ¬Â¦ well thought out, relevant questions Ã¢â ¬Â¦Ã¢â ¬â ¢Jack McArdle, Reviews, Volume 11, Issue 1, 2010

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The book is chock full of typos, but that seems to be an epidemic in physics publishing these days so I won’t count it as a point against. The definition of group on page 46 is wrong. The definition of algebra on page 54 is wrong. The definition of Lie algebra also on page 54 is wrong. I don’t mean typo, I mean wrong. Given the central place that groups and Lie algebras hold in the subject, together with my own inability to make head or tail of the text on pages 64 and 65, I didn’t finish reading the book. Perhaps the rest of the book is better once you get past the preliminaries.

(Graduate Texts in Physics) From Special Relativity to Feynman Diagrams: A Course in Theoretical Particle Physics for Beginners (UNITEXT for Physics) Gauge Theories in Particle Physics, Second Edition (Graduate Student Series in Physics) Insider Secrets From A Model Agent: How To Become A Successful Model (Modeling, Modelling, Model Agency) RCadvisor's Model Airplane Design Made Easy: The Simple Guide to Designing R/C Model Aircraft or Build Your Own Radio Control Flying Model Plane Nuclear and Particle Physics: An Introduction Particle Physics: A Very Short Introduction Particle Physics: A Very Short Introduction (Very Short Introductions) Gauge Theories in Particle Physics: A Practical Introduction, Fourth Edition - 2 Volume set Introduction to Elementary Particle Physics 2016 ICD-10-CM Standard Edition, 2016 HCPCS Standard Edition and AMA 2016 CPT Standard Edition Package, 1e The Standard Model and Beyond, Second Edition (Series in High Energy Physics, Cosmology and Gravitation) The Solid State: An Introduction to the Physics of Crystals for Students of Physics, Materials Science, and Engineering (Oxford Physics Series)