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# Facts And Mysteries In Elementary Particle Physics



## Synopsis

This book provides a comprehensive overview of modern particle physics accessible to anyone with a true passion for wanting to know how the universe works. We are introduced to the known particles of the world we live in. An elegant explanation of quantum mechanics and relativity paves the way for an understanding of the laws that govern particle physics. These laws are put into action in the world of accelerators, colliders and detectors found at institutions such as CERN and Fermilab that are in the forefront of technical innovation. Real world and theory meet using Feynman diagrams to solve the problems of infinities and deduce the need for the Higgs boson. *Facts and Mysteries in Elementary Particle Physics* offers an incredible insight from an eyewitness and participant in some of the greatest discoveries in 20th century science. From Einstein's theory of relativity to the elusive Higgs particle, this book will fascinate and educate anyone interested in the world of quarks, leptons and gauge theories. This book also contains many thumbnail sketches of particle physics personalities, including contemporaries as seen through the eyes of the author. Illustrated with pictures, these candid sketches present rare, perceptive views of the characters that populate the field. The Chapter on Particle Theory, in a pre-publication, was termed "superbly lucid" by David Miller in *Nature* (Vol. 396, 17 Dec. 1998, p. 642).

## Book Information

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## Customer Reviews

... readers, from the merely curious to the expert in the field of modern particle physics, should read

this book ..."

I greatly enjoyed finally reading a book that goes into the details I always wanted ... Veltman has the courage to try a deeper level about what we understand and what is simply fact ... Even if you have read books popularizing physics before, you have to read this one ... --This text refers to the Hardcover edition.

This is a unique book. First of all, the paper, font, diagrams, and cover are wonderful. It's really a nice looking book cover to cover. Next, the author includes biographies of people involved in the field. The writing is candid and humorous. The biographies don't read like a textbook at all. They include his own opinions, as well as interesting anecdotes about the people. Finally, the author includes some of his own personal story in the book, regarding his work in particle physics. It's nice to see a first-hand account. I enjoy his commentary. All these things make this a special book, and worth reading. The author can be somewhat grumpy, but you have to take that with a sense of humor. Consider that physicists (I am one) tend to be literal and often TOO honest, at the risk of being blunt or awkward. So try not to be put off. Some parts of the book are a bit tedious. If you really want to understand the topic, read some other books along with this one. If there's only one book to get, try Oerter's "Theory of Almost Everything". But if you want a few books, then definitely include this one.

This is the best popular science book I've read in a long time. It is a wonderfully clear journey through the odd and complex world of elementary physics. There are two things I particularly like about this book. While it is aimed at a lay audience, it does not attempt to dumb down the topic beyond the constraint of removing the maths that is the usual vehicle for the topic. The other thing is the human element that Veltman brings, with the little vignettes and anecdotes of about those responsible. A potential weakness is the timing of the book, published just before the large hadron collider and the verification of the Higgs boson (Hi to Prof. Bose!). This is not the fault of the author and in a way reinforces the careful approach required to gain an understanding of the topic. There is certainly room for a follow up that is as carefully argued as this volume. I can't comment on the accuracy or otherwise of the science. The balanced and nuanced text leaves me with a lot of confidence that the science is correct. This book is a hard read. Not because of the language, but because of the topic. Veltman has written a terrific book that is accessible to a non-technical audience that is willing to do a bit of thinking.

Good

I learned a lot from this book. The only reason I gave it four stars is because it was more advanced than I was looking for. If you really want to learn, then this book would be great. For a beginner non scientist like myself, I really liked "Particle Physics: A Very Short Introduction" by Frank Close, and the chapter on the Standard Theory in "The Particle Garden" by Gordon Kane. I can't wait to read "Particle Physics: A Beginner's Guide by Brian Martin", since it has good reviews.

The Higgs hadn't been discovered when the book was written, so obviously some things have changed since then. But most of it should still be current, I suppose. He does some nice sidebars about a lot of the key players, many of whom he knew personally. I am just an interested layperson (B.Sc. In physics), no expert. The standard model seems to work but it also seems kind of ungainly.

I already know a bit about the subject but this book does a great job of giving you a high-level overview without getting bogged down in the supporting math. The author's English is not perfect but mostly quite understandable and easy to read. Although I haven't finished it yet, it's one book that I know I will finish. I would recommend it to anyone with an interest in understanding Quantum Mechanics and particle physics from a high-level point of view.

Veltman, a Nobel-prizewinning theorist, has written an engagingly personalized account of the interplay between experiment and theory that underlies our current understanding of particle physics. The description is thorough and yet -with a lay reader in mind- is about as non-mathematical as can be managed in this subject. Some reviewers have complained about a lack of rigor in copy editing, but the occasional infelicities seem quite minor and do not diminish the book's intellectual value. Veltman's account is unusual in giving generous credit to those experimentalists who conceive, build, and make measurements with accelerators and detectors. He describes the manner in which the data from those measurements affect the work of theorists. His vigorously expressed views on the physics and on the physicists give Veltman's book an unusual zing. It should be read by anyone with a serious interest in the substance or the sociology of contemporary physics.

Excellent book for very accessible introduction to particle physics for amateurs.

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