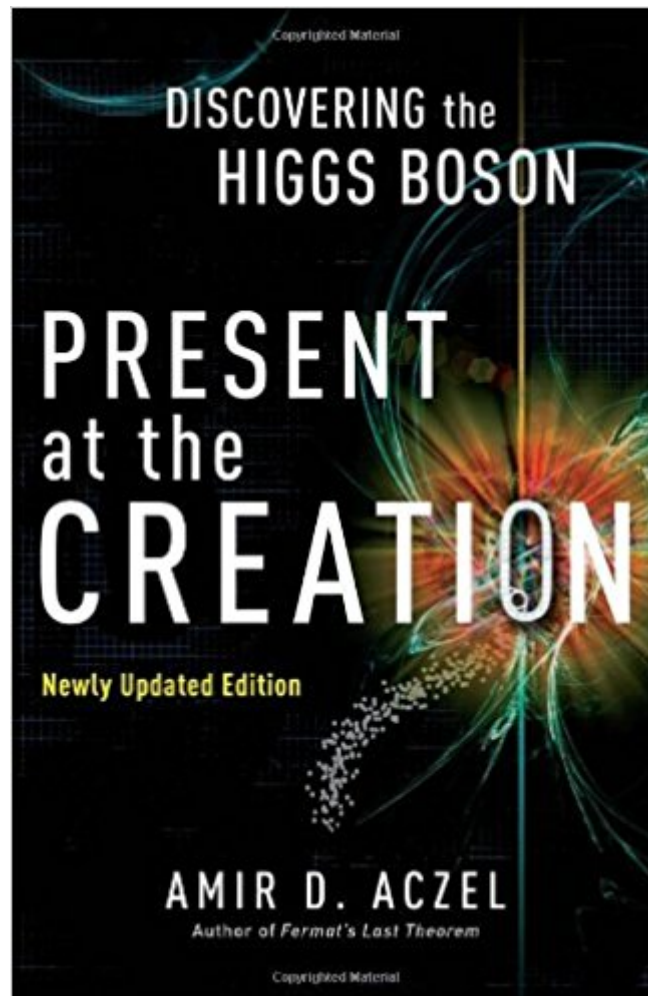




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Present At The Creation: Discovering The Higgs Boson



Synopsis

The Large Hadron Collider (LHC) is the biggest, and by far the most powerful, machine ever built. A project of CERN, the European Organization for Nuclear Research, its audacious purpose is to re-create, in a 16.5-mile-long circular tunnel under the French-Swiss countryside, the immensely hot and dense conditions that existed some 13.7 billion years ago within the first trillionth of a second after the fiery birth of our universe. In *Present at the Creation*, Amir D. Aczel takes us inside the control rooms, as an international team of researchers begins to discover whether a multibillion-euro investment will fulfill its promise: to find empirical confirmation of theories in physics and cosmology. Through the eyes and words of the men and women who conceived and built CERN and the LHC, Aczel enriches all of us with a firm grounding in the scientific concepts necessary to appreciate fully the stunning July 4, 2012 discovery of the Higgs Boson. Newly updated in the wake of the discovery, *Present at the Creation* tells the story of perhaps the greatest experiment in the history of science.

Book Information

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Customer Reviews

Dan Brown fans and science buffs alike will be familiar with CERN (The European Organization for Nuclear Research), where scientists probe the origins of our universe using the largest and most powerful machine ever created, the Large Hadron Collider. In the hands of Aczel (*The Cave and the Cathedral*), a research fellow at Boston University, truth is more compelling than fiction. He describes CERN's ongoing research to find "the last particle needed to confirm the validity of

Standard Model of particle physics" and discover the answer to how the universe got its mass. The LHC can accelerate protons up to the very edge of the speed of light; by smashing two beams of accelerated protons together, scientists hope to solve the mystery of what happened in the first "five thousand-trillionths of a second" after the creation of the universe. Aczel brings the non-scientist reader up to speed with a clear description of theoretical and experimental scientific advances over past century and the development of accelerator technology. An exciting, true scientific adventure. Illus. (Oct.) (c) Copyright PWxyz, LLC. All rights reserved. --This text refers to an out of print or unavailable edition of this title.

"A fascinating discussion of research at the cutting-edge of physics."--Arthur I. Miller, author of *Deciphering the Cosmic Number* From the Hardcover edition.

Sirs: The book presented current state of investigation & discoveries in partial Physics. Included was the history of mathematics (Noether equation of symmetry/ conservation law) & Physics (Dirac equations). It also fulfilled my expected coverage of the LHC. A recommended read for the "old timer" nuclear plant experienced. Norman Gaffin A welcome market for searching materials re my interests.

expertly written, surprisingly understandable (after about 2-3 readings). I couldn't put it down. The most capable author I ever encountered.

Well written book but misses graphics. The author describes several very technical details but the graphics were of poor quality. Book was disappointing to me.

This was a gift along with three other books that are about CERN. He said it is slow reading because some of it is technical but he loves all four books. He is reading all 4 at one time.

Nice book explaining the importance of the Higgs particle. A good explanation of the pathway to the discovery and the result of the tests

The completion of repairs to CERN's new supercollider has resulted in a wealth of general science offerings devoted to the attempt to explain humanity's most expensive and complicated machine. It is quite clear that a number of publishers are hoping to ride an anticipated wave of publicity to great

profit--if and when the Higgs boson is discovered. Having previously tackled several of the related books, I am pleased to say that this volume is one of Dr. Aczel's best efforts; it provides an excellent road map to the intricacies of the standard model--which I now understand a bit better than before--and provides both a more informative and more entertaining read than its competition. To be sure, this is no replacement for a text nor should anyone think of it in that light; rather, it is a story about discovery. To even begin to intelligently discuss the science that makes the supercollider relevant requires massive amounts of backstory. The reader must be introduced to fantastically complex theoretical musings and, I think some editor somewhere has dictated that no equations may be used, although a few of them crept into the appendix. Here is where Dr. Aczel's effort is superior. His recital of the basic underlying scientific principles has all the hallmarks of a capable lecturer--other authors in this area focus almost entirely on their unique and valuable contributions to the science in such a way that makes an understanding of the whole picture somewhat difficult, but this more general work is better able to convey the sense of wonder and shared discovery that motivates scientists to keep digging deeper into nature's inner workings. Now, I grant that perhaps having read several similar books my understanding was primed to better receive this volume; however, I believe that independently of the other offerings, this work does a better job of telling a story and teaching the science. It can always be done better and, frankly, much of it just makes my head spin. Yet because this book can take such an esoteric topic and leave you interested in learning more, the author is to be commended. Highly Recommended

A 3-star rating from means that I don't recommend a particular book, but I would not, in general, deter people from reading it. It also means that, in my opinion, if you don't get to this book on your reading list, then it is not a big deal; no loss. I want to formally begin by saying that, for those who do not like this book, this work is not really representative of the quality of Aczel's craft and ability. He really is a rare specimen of genius, in that his genius spills over from the world of mathematics and into the finer, more liberal arts, as attested to by his prose. In sum, Aczel could have done much better with this work. I think some issues in this book's construction were his fault, while many others were problems arising from the nature of the subject matter (i.e., the genre, popular physics), and the problem of being slightly out of his depth in subtler matters of the history of science (see the link to my blog post below). Some portions of this book are brilliantly composed, as one comes to expect from Aczel's works, like "Fermat's Last Theorem," for example. In other places, I could hardly figure out why Aczel was including a particular bit of information, such as talking about the world's largest tunnels in the world, of which the LHC's is not one of them. I see that he was trying

to give the reader some amount of perspective, but I don't think the discussion was helpful (and that most would not find it helpful), and I seriously believe that it took away from the book; I felt like it was filler. In the first part of the book (the first 3 chapters, I think), Aczel bombards the reader with an endless series of numbers, some of which are helpful, but most just make the text a mess. At times, Aczel is wildly successful in adding the perspective that he seeks to give the reader, like in his comparison of a particular detector weighing more than the Eiffel Tower. These successes were outnumbered by other failures, attempts to make the text more interesting. One example is the addition of conversation snippets Aczel had with LHC physicists. However, I think these fell flat. Being someone who was very interested in have the practical story told about the LHC and CERN, having just read slightly technical books on the topic, I found these anecdotes lacking. This review may come off as contrary to what I said a 3-star rating indicates; and I indeed would have been inclined to give it a 2-star rating. The thing is that I really feel as though some people will find this book to be in the 4-star range, supposing they are new (or newer) to the genre. The reason is that a great deal of the discussion in this book is geared toward giving the reader a basic knowledge of information that gets told over, and over, and over again in popular physics books. This is not Aczel's fault, it is just a problem in the genre that needs working out. I think many newcomers to the genre will find Aczel's prose and oft-repeated information enjoyable. Therefore, it is highly dependent upon your, the potential reader's, past experience, in determining whether this is the book for you. If you are a journeyman or journeywoman of popular physics, then I can make a recommendation that should be of infinitely more interest than this book. I recommend "From Atoms to Quarks" by James S. Trefil (this has a very nice breakdown of the physics, it goes a little deeper, and gives you a better chance of understanding the physics, because there is a better context developed), "The Britannica Guide to Particle Physics" (this has an outstanding! section on particle accelerators, and a nice section on brief biographies of relevant players), and Scientific American's "The Elusive Neutrino" by Solomey (basically, this is a much better version of what Aczel is trying to do outside of the human interest elements, but not in strict popular physics form). I have written reviews on each of these books, if you are interested. Finally, I must note that Aczel makes an error in this book, minor but egregious. I have a policy of not discussing too deeply the content of a book, unless it is a scholarly review, which this is not. If you are interest, please see my blog post (at milliern_d_o_t_wordpress_d_o_t_com) on Aczel's error, entitled "A Problem with Popular Physics/Science Books: The Problem of Authorship."

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