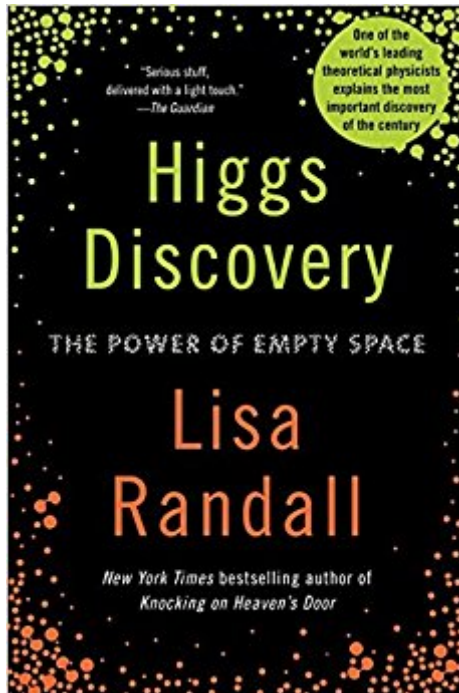


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# Higgs Discovery: The Power Of Empty Space



## Synopsis

On July 4, 2012, physicists at the Large Hadron Collider in Geneva made history when they discovered an entirely new type of subatomic particle that many scientists believe is the Higgs boson. For forty years, physicists searched for this capstone to the Standard Model of particle physics—the theory that describes both the most elementary components that are known in matter and the forces through which they interact. This particle points to the Higgs field, which provides the key to understanding why elementary particles have mass. In *Higgs Discovery*, Lisa Randall explains the science behind this monumental discovery, its exhilarating implications, and the power of empty space.

## Book Information

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## Customer Reviews

Lisa Randall studies theoretical particle physics and cosmology at Harvard University, where she is Frank B. Baird, Jr., Professor of Science. A member of the National Academy of Sciences, the American Philosophical Society, and the American Academy of Arts and Sciences, she is the recipient of many awards and honorary degrees. Professor Randall was included in *Time* magazine's "100 Most Influential People" of 2007 and was among *Esquire* magazine's "75 Most Influential People of the 21st Century." Professor Randall's two books, *Warped Passages* (2005) and *Knocking on Heaven's Door* (2011) were *New York Times* bestsellers and 100 Notable Books. Her stand-alone e-book, *Higgs Discovery: The Power of Empty Space*, was published in 2012.

Higgs Discovery: The Power of Empty Space by Lisa Randall "Higgs Discovery" this timely and topical Kindle Single, is written to enlighten the public to what the discovery of the Higgs boson means and to explain where it will take us. Influential and highly acclaimed theoretical physicist and best-selling author of "Knocking on Heaven's Door", Lisa Randall, gives the reader an intellectual appetizer on the implications of the announcement that a key particle, the Higgs boson was discovered. Randall's expertise and ability to convey such a complex topic to the layperson is what makes this Kindle Single such a great value. This 83-page book is composed of three sections: Higgs Discovery: The Power of Empty Space, An Excerpt from Warped Passages and An Excerpt from Knocking on Heaven's Door.

**Positives:**

1. A timely and fascinating topic, written at an accessible level for the layperson and everyone in between.
2. Randall's expertise in the field and background as an educator provides the perfect mix to reach out and educate the public.
3. A great Kindle Single value. A great idea that is now benefitting authors and readers alike. In merely 83 pages, the author provides much needed information on what has become a pop-scientific topic.
4. What the Higgs boson is. Finally, I get it, I think.
5. The implications of the discovery.
6. As a true scientist and educator, Randall keeps the discovery in perspective. That is, in science everything is a matter of degrees of certainty.
7. Not to be confused with the Higgs boson but also insight into what the Higgs mechanism is and its implications.
8. Understanding what empty space really is.
9. The Large Hadron Collider (LHC)...what makes it a remarkable machine and its future use.
10. Debunking myths...faster than light neutrinos.
11. Understanding scalar particles.
12. The importance of the supersymmetric model.
13. Really does a good job of capturing the essence of what these discoveries entail.
14. The additional excerpts really help the readers gain a better understanding.
15. In order not to overwhelm the general public, Randall focuses on a number of key concepts and processes which helps move the narration along.
16. The Standard Model of particles and what the Higgs mechanism provides.
17. Spontaneous breaking of symmetry...and when it occurs.
18. The hierarchy problem of particle physics.

**Negatives:**

1. The topic can be daunting at times. This is a complex topic and despite Randall's ability to relay the basic concepts to the public it will test your resolve to comprehend.
2. The Kindle version loses something in translation. Some of the links did not function.
3. One of the problems of inserting excerpts of previous books is that some of the references to other chapters of those books do not translate over to this book.
4. There are a limited amount of charts. Such complex topics warrants more visual aid.
5. A recommendation for the general audience, you will be better served by reading the excerpts first before the Higgs Discovery section.
6. In many respects, there remains more questions than answers. "The Higgs boson, even if

it is the Higgs boson, is almost certainly not the only particle yet to be discovered." In summary, this Kindle Single quenched my thirst for understanding the Higgs boson. This is a very complex topic but I'm glad that such an accomplished particle theorist like Lisa Randall took on the role to educate the public and even happier that it was done in a timely manner. That being said, the book can be daunting at times. It may take multiple readings or better yet I suggest you read the excerpts first and finalize with the meat of this brief book. If you are interested in becoming familiar with this pop-science topic, at this price and brevity you have nothing to lose. I highly recommend this book with the reservations noted. Further suggestions: "Knocking on Heaven's Door: How Physics and Scientific Thinking Illuminate the Universe and the Modern World" and "Warped Passages: Unraveling the Mysteries of the Universe's Hidden Dimensions" by Lisa Randall, "A Universe from Nothing: Why There Is Something Rather than Nothing" by Lawrence Krauss, "The Quantum Universe (And Why Anything That Can Happen, Does)", "Wonders of the Universe" and "Why Does  $E=mc^2$ ? (And Why Should We Care?)" by Brian Cox, "For the Love of Physics: From the End of the Rainbow to the Edge of Time - A Journey Through the Wonders of Physics" by Walter Lewin, "Physics of the Future: How Science Will Shape Human Destiny and Our Daily Lives by the Year 2100" by Michio Kaku, "The Hidden Reality: Parallel Universes and the Deep Laws of the Cosmos" by Brian Greene, "The Grand Design" by Stephen Hawking and "The 4 Percent Universe" by Richard Panek.

Lisa Randall no doubt is a genius, because this reads as if she knocked it off over the weekend and mailed it in. I am sure explaining high level physics to a general audience is tough, but this reads as if she herself couldn't figure out what level she wanted to hit and her compromise doesn't make it - alternating between great redundancy in stating (and restating, and...) some ideas, and impenetrability, or superficiality in treating others. A poor balance. The impression is that this was designed to catch the wave of excitement about the Higg's, with the priority being given to getting it out quickly, at the cost of a better, more thoughtfully written book. Would have benefited from stronger editorial oversight maybe, but for me this was tantalizing but ultimately unsatisfying.

I think the book itself is very good - at least from what I could tell. Perhaps if I had the full book I would give it four or five stars. However, when I bought the book at the "special price" I hadn't realized that the "Kindle single" edition is merely an expanded free sample - it is not the entire text. At first I thought I had accidentally downloaded the sample, but after finally talking to a CSR at we (for she hadn't realized it either) found out that indeed this version only contains excerpts from two

chapters. Evidently, the publisher, trying to push hard-copy editions, severely limits the e-book version. I assume itself was not really aware of this; otherwise one hopes they would have made this very clear in the description rather than just touting the super-low price. In the end, it feels like a rip-off - only \$3 worth, but it left a bad enough taste in my mouth that it will be a long while before I get suckered by the special Kindle book deal thing again. Meanwhile, I plan to make use of my local library to actually read the full book itself, which, as mentioned already, looks to be excellent.

The book is actually only 40 pages long and is only an advertisement for the author's other two books. After page 40 the author kindly includes two chapters from the other books as a commercial preview. The actual content of the book is written poorly and only scratches the surface of an immensely complicated subject that should be exciting but comes across as dull. Borrow this from a public library if you must read it, but don't pay even a penny for it.

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