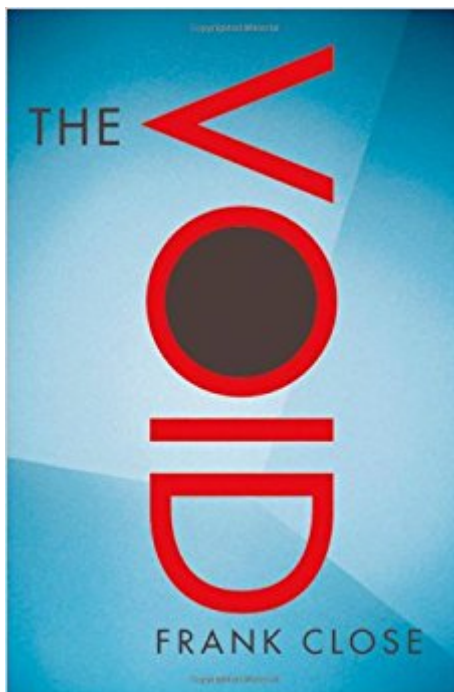


The book was found

# The Void



## Synopsis

What is the void? What remains when you take all the matter away? Can empty Space--nothing--exist? To answer these questions, eminent scientist Frank Close takes us on a lively and accessible journey that ranges from ancient ideas and cultural superstitions to the frontiers of current research, illuminating the story of how scientists have explored the void and the rich discoveries they have made there. Readers will find an enlightening history of the vacuum: how the efforts to make a better vacuum led to the discovery of the electron; the understanding that the vacuum is filled with fields; the ideas of Newton, Mach, and Einstein on the nature of space and time; the mysterious aether and how Einstein did away with it; and the latest ideas that the vacuum is filled with the Higgs field. The story ranges from the absolute zero of temperature and the seething vacuum of virtual particles and anti-particles that fills space, to the extreme heat and energy of the early universe. It compares the ways that substances change from gas to liquid and solid with the way that the vacuum of our universe has changed as the temperature dropped following the Big Bang. It covers modern ideas that there may be more dimensions to the void than those that we currently are aware of and even that our universe is but one in a multiverse. The Void takes us inside a field of science that may ultimately provide answers to some of cosmology's most fundamental questions: what lies outside the universe, and, if there was once nothing, then how did the universe begin?

## Book Information

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## Customer Reviews

Aristotle famously wrote that nature abhors a vacuum, but as Oxford physicist Close illustrates in

this concise study, that depends on what you mean by a vacuum or a void. Greek and medieval philosophers gave philosophical arguments against the existence of the void, but an artificial vacuum was finally created in 1643 and quickly used to investigate atmospheric pressure. Scientific exploration of a vacuum's properties and applications took off in the 19th century, although ancient ideas like the concept of an ether that pervaded empty space masqueraded as serious science until Einstein explained them away via relativity. Close (Lucifer's Legacy) is a particle physicist at heart, and he hits his stride as he explains why scientists now don't think a void is really empty at all, but is teeming with particles popping in and out of existence and pervaded by a contemporary version of the ether, called the Higgs field. Close misses opportunities to make this a more rewarding interdisciplinary study that would attract a broader readership, and science buffs will find it redundant with other books in their collections. The moral of Close's book should be, as Nietzsche said, that when you look into the void, it really is looking back at you. 20 b&w illus. (Feb.) Copyright © Reed Business Information, a division of Reed Elsevier Inc. All rights reserved.

"It's a nice read for people with little background knowledge"--New Scientist"Close is a particle physicist at heart, and he hits his stride as he explains why scientists now don't think a void is really empty at all, but is teeming with particles popping in and out of existence and pervaded by contemporary version of the ether, called the Higgs field."--Publishers Weekly"The Higgs boson remains the missing ingredient of the remarkably successful standard model of particle physics that describes interactions between the sub-nuclear elementary particles to an impressive precision, and The Void provides an introduction to the underlying concepts. It is nice to think that the explanations may help the physics community share its extraordinary excitement and anticipation with others."--The Times Higher Education Supplement

This little book covers a LOT of science in a pretty short amount of time. Another reviewer said that it deals rather less with the void than one might think from the title. While this is true, there isn't much that can be said about nothing without understanding that in the real universe, nothing is truly something after all. That said, there is a lot of explaining of "stuff" to get to explaining nothing, which leads the book to have a lot less nothing than you might expect. That said, the science is very solid and quite clearly explained. However, having extensively studied physics and chemistry years ago, this read more like a refresher course to me. I didn't have too much trouble making sense of most of the science because I have been exposed to it in great depth (even though I may've forgotten some things). I worry that to the lay reader, the book would be extremely hard going, even as there are

many analogies drawn, so I would put it closer to three stars for a reader with little or no science background. Still, written well overall and with great clarity. An interesting concept.

Frank Close is an eminent physicist who is able to explain classical and modern physics in a very easy to read way. This comprehensive, concise book is not meant however for "beginners". A certain level of education in physics is required to understand what the book is about. Close leads us from the old idea of the "horror vacui" to the empty space as modern physicists understand it today. Close pays also some attention to the big bang and the quantum physical background of the origin of our universe and relates it to experiments going on in the CERN collider. The story includes the Higgs field and the role of Higgs's particle in the genesis of the material world.

Very fun and authored by one of the best in theoretical physics

Frank Close writes in the Oxford style, a little eccentric and quite profound. This is the clearest explanation of the Void, the so-called vacuum of empty space, that I have read. He shows very clearly how physicists came to understand the vacuum of space, which is really a quantum plenum. Well-written and clear (for the most part), this small volume is worth the price and the reading.

While a very well written book, *The Void* spends most of its 156 pages not getting to the point. But then the title is misleading -- this is not about voids or vacuums or the idea of nothingness. Instead, Close writes a summary, fairly historical, of the theories contributing to the current views of the universe. We hear a lot about Newton and Einstein, Lorentz and Michelson, and so on. Special and general relativity are explained again (as they have been in myriad other books). Something as important as the Higgs field is glossed over, while such things as inertial frames of reference or concepts of curved space-time are covered in a tad too much depth or too much repetition. This is really a book for someone who needs a quick overview, rather like it is the introductory chapter to a text with a lot more depth. And from my perspective, it seems to ramble here and there, as if the author doesn't quite want to make a point. Even at the end, the summary shows that the book was not about the void or vacuum but about what fills it and defines its boundaries/properties. Not quite what I was looking for.

I can understand how some see the title of this book as misleading, but after reading it, I found it wonderful and swirling with currents of energy and supercharged particle of knowledge. A

thoroughly amazing little book with content - and an approach - that mirrors the subject matter: nothingness is but energy misunderstood. Read it and prepare for a trip across unimaginably small distances that will change you forever.

While a very well written book, The Void spends most of its 156 pages not getting to the point. But then the title is misleading -- this is not about voids or vacuums or the idea of nothingness. Instead, Close writes a summary, fairly historical, of the theories contributing to the current views of the universe. We hear a lot about Newton and Einstein, Lorentz and Michelson, and so on. Special and general relativity are explained again (as they have been in myriad other books). Something as important as the Higgs field is glossed over, while such things as inertial frames of reference or concepts of curved space-time are covered in a tad too much depth or too much repetition. This is really a book for someone who needs a quick overview, rather like it is the introductory chapter to a text with a lot more depth. And from my perspective, it seems to ramble here and there, as if the author doesn't quite want to make a point. Even at the end, the summary shows that the book was not about the void or vacuum but about what fills it and defines its boundaries/properties. Not quite what I was looking for.

Ok, enough of the bad puns! But as the other reviewers noted, the book strayed markedly from the promise of exploring the meaning of the Void, that is, "existence" before the Big Bang and the creation of the Universe and all its physical machinations and manifestations. I kept waiting for the exposition to come, some theory, and instead page after page of sometimes complicated and incomprehensible science theorems. Ultimately, the author avoided the premise, perhaps because there is no answer to that Cosmic query known to mankind.

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