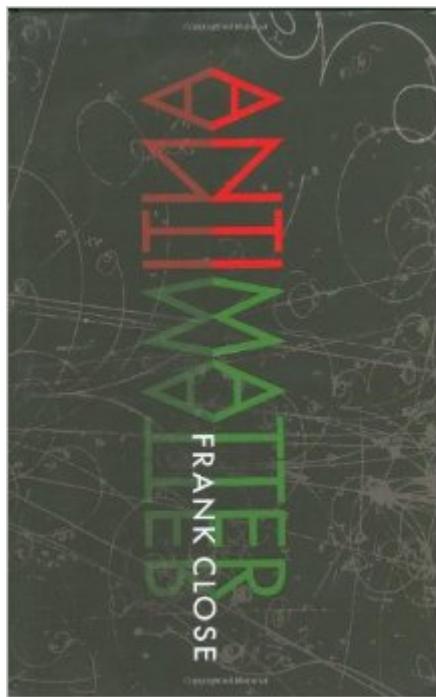


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# Antimatter



## Synopsis

Of all the mind-bending discoveries of physics--quarks, black holes, strange attractors, curved space--the existence of antimatter is one of the most bizarre. It is also one of the most difficult, literally and figuratively, to grasp. *Antimatter* explores this strange mirror world, where particles have identical yet opposite properties to those that make up the familiar matter we encounter everyday, where left becomes right, positive becomes negative, and where--should matter and antimatter meet--the resulting flash of blinding energy would make even thermonuclear explosions look feeble by comparison. Antimatter is an idea long beloved of science-fiction writers--but here, renowned science writer Frank Close shows that the reality of antimatter is even more intriguing than the fiction. We know that at one time antimatter and matter existed in perfect counterbalance, and that antimatter then perpetrated a vanishing act on a cosmic scale that remains one of the great mysteries of the universe. Today, antimatter does not exist normally, at least on Earth, but we know that it is real, as scientists are now able to make small pieces of it in particle accelerators, such as that at CERN in Geneva. Looking at the remarkable prediction of antimatter and how it grew from the meeting point of relativity and quantum theory in the early 20th century, at the discovery of the first antiparticles, at cosmic rays, annihilation, antimatter bombs, and antiworlds, Close separates the facts from the fiction about antimatter, and explains how its existence can give us profound clues about the origins and structure of the universe. For all those wishing to take a closer look at the flip side of the visible world, this lucidly written book shines a bright light into a truly strange realm. "Beautifully written... This book will inspire a sense of awe in even the most seasoned of physics readers." --Amanda Gefter, *New Scientist* "This is a must read for fans of science and science fiction alike." --John Gribbin, [www.bbclifemagazine.com](http://www.bbclifemagazine.com)

## Book Information

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## Customer Reviews

Physicist Frank Close offers a short but enlightening look at a frequently misunderstood aspect of physical reality in his book *Antimatter*. In about 150 pages, Close delivers a solid summary of the historical and current research into the nature of the tricky particles, especially the positron. As a physics buff, albeit a non-technical one, Close's descriptions and narrative are easy to follow and not overly-detailed. He keeps close to his main points, explaining the nature of antimatter and exposing some of the latest experiments into its properties, without overburdening the reader with dense technical interjections. While I thought I understood antimatter prior to reading this book, Close provided a strong overview that supplements the understanding of most any popular physics reader, myself included. Close explores many of the theories surrounding the symmetries between normal matter and antimatter, as well as offering some thoughts on why we might see a universe which appears to be largely devoid of antimatter. While a small handful of antimatter particles have been created in labs around the world, as well as a few dozen antihydrogen atoms, the mysterious lack of antimatter in the universe remains one of the questions needing a great deal of further research to explain. Close uses the Tunguska event to explore the possibility that a chunk of antimatter could have caused the currently unexplained explosion in 1908 (Close determines it was not antimatter, but leaves the question open until the latter chapters). The author also debunks most of the antimatter properties and usages found in Dan Brown's *Angels and Demons*, as well as the idea that antimatter is likely to supplement traditional sources of energy found on the planet. Popular physics readers have good cause to pick up this tightly-focused book, and will almost certainly learn things about antimatter that aren't covered in many sources. A solid, very quick read that can be knocked out in an afternoon, I recommend this book to anyone interested in physics wanting to gain a reasonable understanding of this mysterious and interesting subset of the science.

This is a superb book! The title is *Antimatter*, but don't be fooled: The book is about a lot more than antimatter. Prof. Close is a great physicist, and he has been involved with the LHC at CERN. His book explains everything in a perfectly clear and understandable way so that you understand the theory and the applications behind the work of CERN in general, and of the Large Hadron Collider. This is the best book on particle physics, written by a top scientist, and it is written in a style that

makes it not only very clear--but also a lot of fun to read! The stories here are amazing!!

Congratulations, Dr. Close!!JCM

AntimatterDespite this book being on the "shorter" side, it's an excellent book -- well worth reading.This book is written for the usual armchair scientist (no heavy math) but goes into enough details to be meaningful. In particular, this book explains Dirac's mathematical work in predicting antimatter ... from which one can really appreciate Dirac's mental genius.Can't go wrong buying this book!

This short book is a friendly, well written treatment of particle physics with special attention paid to anti-matter.The last chapter (9) of the book "debunking" prospects for commercial or military use of anti-matter is fine, I guess, but seemed unnecessary - it did seem to make this otherwise charming book end on a lower plane.The book is good if you like particle physics and are a layperson. If you want more, I suggest "Lightness of Being" by Wilczek (another physicist). Relatedly, the recent biography of Dirac (the theoretician) is also quite good: "The Strangest Man," by Farmelo.

XXXXXThere exists a mirror world to our own--an anti-world, if you will, built from antiparticles (examples: anti-electron or positron, antiproton, antineutron) that form anti-atoms (example: anti-hydrogen), anti-molecules, and possibly even anti-life! Science fiction, you say? No, science FACT.Welcome to the world of antimatter. We're given a tour of this anti-world by Frank Close, OBE (Order of the British Empire), a Professor of Physics at Oxford University and science author.What is antimatter? In particle physics (which this book examines in detail), antimatter is the extension of the concept of the antiparticle to matter, where antimatter is composed of antiparticles in the same way that normal matter is composed of particles.Close tells us about his slim book:"One of my primary goals in this book will be to attempt to separate fact from fiction in the antimatter story...This book will tell the [true] story of antimatter, what it is, how it was discovered, how we can make it, and what opportunities and threats it could pose. It will assess the reality of antimatter as fuel for space odysseys and for weapons."What happens when antimatter comes in contact with matter? Answer: annihilation! This simple fact, as Close explains, is used especially in medicine.Finally, everything in this book is explained thoroughly. If you know what electrons, protons, and neutrons are then you should be able to understand this book. As with all books of this type, the more of a science background you have, the more you will enjoy this book.In conclusion, this book inspires a sense of awe as it examines, what perhaps is, the strangest thing in the universe. And remember:DON'T

SHAKE HANDS WITH AN ANTI-ALIEN!!(first published 2009; foreword; 9 chapters; main narrative 150 pages; 2 appendices; endnotes; bibliography; index)XXXXX

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