Physics Extended Reading List

Bad Science by Ben Goldacre (500)

Full of spleen, this is a hilarious, invigorating and informative journey through the world of *Bad Science*. When Dr Ben Goldacre saw someone on daytime TV dipping her feet in an 'Aqua Detox' footbath, releasing her toxins into the water, turning it brown, he thought he'd try the same at home. 'Like some kind of Johnny Ball cum Witchfinder General', using his girlfriend's Barbie doll, he gently passed an electrical current through the warm salt water. It turned brown. In his words: 'before my very eyes, the world's first Detox Barbie was sat, with her feet in a pool of brown sludge, purged of a weekend's immorality.' Dr Ben Goldacre is the author of the Bad Science column in the Guardian. His book is about all the 'bad science' we are constantly bombarded with in the media and in advertising. At a time when science is used to prove everything and nothing, everyone has their own 'bad science' moments from the useless pie-chart on the back of cereal packets to the use of the word 'visibly' in cosmetics ads.

Black Holes and Uncle Albert by Russell Stannard (STA)

Uncle Albert and his intrepid niece Gedanken make some astonishing discoveries when they set out on their next mission: to investigate the universe. Discover black holes that swallow up everything, tape measures that shrink when you take them downstairs, speeded-up time, and how it is that you are made of stardust in this adventure story set in deepest space.

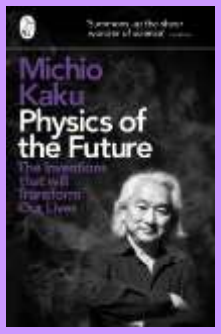
Brief History of Time by Stephen Hawking (530.1HAW)

In the ten years since its publication in 1988, Stephen Hawking's classic work has become a landmark volume in scientific writing, with more than nine million copies in forty languages sold worldwide. That edition was on the cutting edge of what was then known about the origins and nature of the universe. But the intervening years have seen extraordinary advances in the technology of observing both the micro- and the macrocosmic worlds. These observations have confirmed many of Professor Hawking's theoretical predictions in the first edition of his book, including the recent discoveries of the Cosmic Background Explorer satellite (COBE), which probed back in time to within 300,000 years of the universe's beginning and revealed wrinkles in the fabric of space-time that he had projected. Eager to bring to his original text the new knowledge revealed by these observations, as well as his own recent research, Professor Hawking has prepared a new introduction to the book, written an entirely new chapter on wormholes and time travel, and updated the chapters throughout.

Hawking and Black Holes by Paul Strathern (523.1)

Stephen Hawking is arguably the most famous scientist in the world, and many of us may know that black holes are his forte, but do we really have any idea what a black hole is? In this remarkably engaging book, Paul Strathern not only demystifies Hawking's universe-expanding theories, but helps readers appreciate why such knowledge is essential for anyone who wants to more fully understand the world around them. Just a few of the big ideas featured in *Hawking & Black Holes* are: how the universe originated and what this has to do with black holes how the big bang actually worked why black holes aren't actually black Is a Unified Theory of Everything possible (the ultimate Big Idea)? *Hawking & Black Holes* also portrays the iron-willed determination of a man who continues to search for the key to understanding the cosmos, despite the devastating effects of motor neuron disease. Brilliantly simplifying the most complex ideas, *Hawking & Black Holes* will help you grasp the universe in ways you never thought possible.

Physics of the Future: The Inventions that will Transform our Lives by Michael Kaku (530)



Michio Kaku's Physics of the Future: The Inventions that will Transform our Lives is a hypothetical journey through the next 100 years of scientific innovation, as told by the scientists who are making it happen. We all wish we could predict the future, but most of us don't know enough about the science that makes it possible.

That's why Michio Kaku decided to talk to the people who really know - the visionaries who are already inventing the future in their labs. Based on interviews with over three hundred of the world's top scientists, Kaku gives us an insider's perspective on the revolutionary advances that mean we'll soon be able to take an elevator into space, access the internet via our contact lenses, scan our DNA for signs of disease and even change the shape of objects - and all still within the laws of known physics. This isn't just the shape of things to come - as Kaku shows, it's already happening.

Seven Brief Lessons on Physics by Carlo Rovelli (530)

In this mind-bending overview of modern physics, Carlo Rovelli explains Einstein's theory of general relativity, quantum mechanics, black holes, the complex architecture of the universe, elementary particles, gravity, and the nature of the mind.

Mr Tompkins in Paperback by George Gamow (539GAM)

Mr Tompkins has become known and loved by many thousands of readers (since his first appearance over fifty years ago) as the bank clerk whose fantastic dreams and adventures lead him into a world inside the atom. George Gamow's classic provides a delightful explanation of the central concepts in modern physics, from atomic structure to relativity, and quantum theory to fusion and fission. Roger Penrose's foreword introduces Mr Tompkins to a new generation of readers, and reviews his adventures in the light of current developments in physics today.

Science, money, and politics: political triumph and ethical erosion by Daniel S Greenberg (501)

Each year, Congress appropriates billions of dollars for scientific research. In this book, veteran science reporter Daniel S. Greenberg takes us behind closed doors to show us who gets it, and why. What he reveals is startling: an overlooked world of false claims, pork, and cronyism, where science, money, and politics all manipulate one another.

Short history of nearly everything by Bill Bryson (500)

In Bryson's biggest book, he confronts his greatest challenge: to understand—and, if possible, answer—the oldest, biggest questions we have posed about the universe and ourselves. Taking as territory everything from the Big Bang to the rise of civilization, Bryson seeks to understand how we got from there being nothing at all to there being us. To that end, he has attached himself to a host of the world's most advanced (and often obsessed) archaeologists, anthropologists, and mathematicians, travelling to their offices, laboratories, and field camps. He has read (or tried to read) their books, pestered them with questions, apprenticed himself to their powerful minds. *A Short History of Nearly Everything* is the record of this quest, and it is a sometimes profound, sometimes funny, and always supremely clear and entertaining adventure in the realms of human knowledge, as only Bill Bryson can render it. Science has never been more involving or entertaining.

Six Easy Pieces by Richard Feynman (530.1)

Six Easy Pieces: Essentials of Physics Explained by Its Most Brilliant Teacher is a publishing first. This set couples a book containing the six easiest chapters from Richard P. Feynman's landmark work, *Lectures on Physics*—specifically designed for the general, non-scientist reader—with the actual recordings of the late, great physicist delivering the lectures on which the chapters are based. Nobel Laureate Feynman gave these lectures just once, to a group of Caltech undergraduates in 1961 and 1962, and these newly released recordings allow you to experience one of the Twentieth Century's greatest minds—as if you were right there in the classroom.

Stephen Hawking A Life in Science by Michael White and John Gribbin (530.1.WHI)

A definitive biography of a remarkable man and a brilliant scientist.

Scarcely able to move or speak as a result of motor-neuron disease, Hawking has vastly expanded our scientific knowledge and made his discoveries accessible to the layperson in his bestselling book *A Brief History of Time.* Stephen Hawking is perhaps the most famous scientist since Einstein. Although his body is confined to a wheelchair, his brilliant work on black holes, the Big Bang, and quantum cosmology has already guaranteed his reputation as a towering figure in modern physics. This superb biography interweaves the events of Hawking's life with concise and cogent explanations of the theories that have brought us breathtakingly close to piercing the ultimate mysteries of time, space, and matter. It tells the story of Hawking's days at Oxford and of the early warning signs of the terrible disease that has made him dependent on a voice synthesizer to communicate his epochal discoveries. It shows us his emergence as the hugely successful author of the best-selling *A Brief History of Time*, an unexpected triumph that saved him from a financial "black hole" and brought him worldwide celebrity. And it describes the dissolution of his marriage of many years. Revealing yet ultimately admiring, *Stephen Hawking* is a master portrait of the man who is destined to be remembered as the most important scientist of the modern era.

Stephen Hawking for Beginners by JP McEvoy and Oscar Zarate (530.1)

Stephen Hawking is a world-famous physicist, but few people outside his field know what he has done. To the public he is a figure of tragic dimensions - a brilliant scientist and author of the phenomenal best-seller A Brief History of Time, and yet confined to a wheelchair, unable to speak or write. Hawking has mastered the two great theories of 20th-century physics - Einstein's General Theory of Relativity and Quantum Mechanics - and has made breathtaking discoveries about where they break down or overlap, such as on the edge of a Black Hole or at the Big Bang origin of the Universe. Here is the perfect introduction to Hawking's work by the author, who was helped by several long discussions with Hawking in researching the book.

Surely You're Joking Mr Feynman by Richard P Feynman (530.092)

A series of anecdotes, such as are included in *Surely You're Joking, Mr Feynman*, shouldn't by rights add up to an autobiography, but that's just one of the many pieces of received wisdom that Nobel Prize-winning physicist Richard Feynman (1918-88) cheerfully ignores in this engagingly eccentric book. Fiercely independent (read the chapter entitled "Judging Books by Their Covers"), intolerant of stupidity even when it comes packaged as high intellectualism (check out "Is Electricity Fire?"), unafraid to offend (see "You Just Ask Them?"), Feynman informs by entertaining. It's possible to enjoy *Surely You're Joking, Mr Feynman*, a bestseller ever since its initial publication in 1985, simply as a bunch of hilarious yarns with the author as know-it-all hero. At some point, however, attentive readers realise that underneath all the merriment simmers a running commentary on what constitutes authentic knowledge: learning by understanding, not by rote; refusal to give up on seemingly insoluble problems, and total disrespect for fancy ideas that have no grounding in the real world. Feynman himself had all these qualities in spades, and they come through with vigour and verve in his no-bull prose. No wonder his students--and readers around the world adored him. by *Wendy Smith*

Why does E=mc2? By Brian Cox and Jeff Forshaw (530.11)

The most accessible, entertaining, and enlightening explanation of the best-known physics equation in the world, as rendered by two of today's leading scientists.

World of 10001 Mysteries by Russell Stannard (STA)

The Council of the Federation of Universes has decreed that the universe is to be destroyed. Not just the Earth, but the Sun, the Stars, Space, Time - everything. No-one can convince the appeals judge that he is wrong - until he visits Earth.