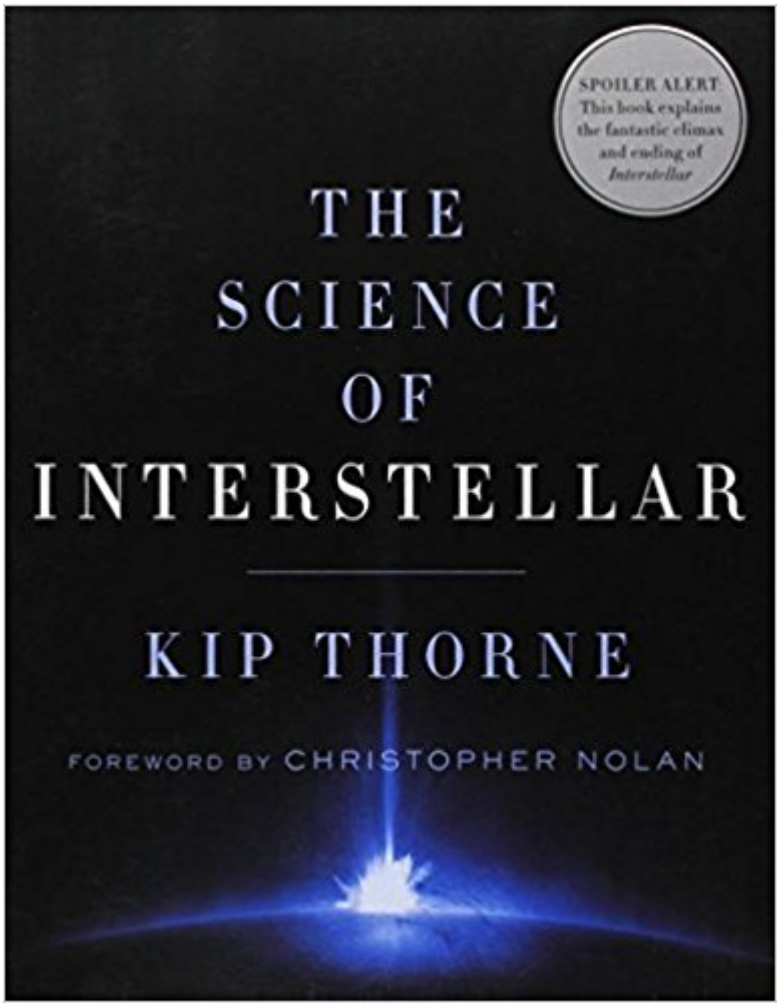
The Science Of Interstellar



Synopsis

A journey through the otherworldly science behind Christopher NolanÃ¢â ¬â„¢s highly anticipated film, Interstellar, from executive producer and theoretical physicist Kip Thorne.Interstellar, from acclaimed filmmaker Christopher Nolan, takes us on a fantastic voyage far beyond our solar system. Yet in The Science of Interstellar, Kip Thorne, the physicist who assisted Nolan on the scientific aspects of Interstellar, shows us that the movieÃ¢â ¬â„¢s jaw-dropping events and stunning, never-before-attempted visuals are grounded in real science. Thorne shares his experiences working as the science adviser on the film and then moves on to the science itself. In chapters on wormholes, black holes, interstellar travel, and much more, ThorneÃ¢â ¬â„¢s scientific insightsÃ¢â ¬â ¢many of them triggered during the actual scripting and shooting of InterstellarÃ¢â ¬â ¢describe the physical laws that govern our universe and the truly astounding phenomena that those laws make possible.Interstellar and all related characters and elements are trademarks of and Ã Â© Warner Bros. Entertainment Inc. (s14). 200 color illustrations

Book Information

Paperback: 336 pages

Publisher: W. W. Norton & Company; 1 edition (November 7, 2014)

Language: English

ISBN-10: 0393351378

ISBN-13: 978-0393351378

Product Dimensions: 7.8 x 0.8 x 10 inches

Shipping Weight: 2 pounds (View shipping rates and policies)

Average Customer Review: 4.6 out of 5 stars 317 customer reviews

Best Sellers Rank: #20,690 in Books (See Top 100 in Books) #33 inÃ Â Books > Textbooks > Science & Mathematics > Astronomy & Astrophysics #35 inÃ Â Books > Textbooks > Humanities > Performing Arts > Film & Television #38 inÃ Â Books > Science & Math > Astronomy & Space Science > Astrophysics & Space Science

Customer Reviews

"Eric Michael Summerer is an excellent choice for the narration of this challenging text." ---AudioFile

--This text refers to an out of print or unavailable edition of this title.

Kip Thorne is the Feynman Professor of Theoretical Physics Emeritus at Caltech, an executive producer for Interstellar, and the author of books including the bestselling Black Holes and Time

Warps. He lives in Pasadena, California.

In this book, Dr. Thorne painstakingly explains what are the well-established science and what are the speculations behind the movie Interstellar.The movie is very long, and contains a lot of things --- and in places it was a little bit puzzling. This book takes us back to the movie, and explains to us the many aspects of science that this movie touched on, including: the biology and geophysics behind the dooms-day scenario at the beginning of the movie, the astrophysics and gravitational physics of black holes, the science of planets, and the (very wild) scientific speculations on wormholes and quantum gravity.I watched the movie together with a group of physicists and astronomers; afterwards, we had a lively debate about whether many details in the movie was really plausible, as Dr. Thorne had promised to us previously. After reading this book, I can see that Dr. Thorne had (of course!) realized most of the problems that we were debating. In places when astrophysics or planetary science were involved, Dr. Thorne provided the (sometimes very unlikely but nevertheless possible) scenarios that our difficulties might be resolved. In places involving speculations in fundamental gravitational and quantum physics, Dr. Thorne provided motivations from the frontiers of theoretical physics. It was great fun to read these details.Finally, this book reveals the untold story in the movie: it all started from the detection of gravitational waves!!!

If you saw the movie and walked away with questions, this is the road to enlightenment.To further explain, I have the hard copy of the book and the audio version. I bought the audio version to listen to while I do my daily walks.While the book offers the same information along with corresponding illustrations, I actually found the audio version to be far easier to comprehend.The audio version does come with a .pdf file with all the illustrations contained in the book if one is inclined to view them. However, even without referencing these (during my walks), the spoken word seemed to explain the movie (at least for me) far better than the book.While a few of the scientific concepts behind the movie are still a bit unclear (We are talking some pretty cutting edge science here, and in reality, not understanding every aspect of gravitational force effects on objects entering black holes or the speculative science of a tesserect and it’s five dimensional properties on a three dimensional beings, etc., etc.,), over all, the audio book explained enough of the theory behind these concepts, to allow me to understand pretty much everything I saw on the movie screen which is what I was hoping for (unlike 2001, which still has me scratching my head).I now anxiously await the DVD release to see the film again, knowing the science (truth, educated guesses and speculation related in the book) to what I’m seeing on the screen.

The imagery in Christopher Nolan's movie Interstellar is breathtaking in IMAX. One of the most memorable scenes is of the massive black hole named Gargantua. In this scene we view something that mankind will not see in reality in the foreseeable future. In Kit Thorne's book the reader learns that in making the movie Nolan stayed as close to known science and scientific speculation as possible. This science can be difficult, but Thorne writes well and provides a number of diagrams that illustrate the points he is making. Prof. Thorne worked on the movie from it's early beginnings in 2005, when Christopher Nolan's brother Jonathan worked on the early screen play. At one time Steven Spielberg was slated to direct the movie. We can be glad that he dropped out, because he would not have made the breathtaking movie that Nolan did. Thorne covers the science from the beginning of the movie to the end, where Cooper falls through the black hole into the tesseract structure. As Thorne warns at the start of the book, some sections can be heavy going. If you don't know what an event horizon is, the book may be especially difficult.What makes black holes so difficult is that their physics is far outside any normal experience.For example, at the end of the movie, Cooper, in one of the landing craft, falls into the black hole. In a massive black hole the tidal forces (the difference in gravity between your toes and the top of your head) are small so he can survive the trip across the event horizon.Thorne mentions several times in the book that as an object approaches the event horizon, time, relative to the rest of the universe, slows toward infinity. To the outside observer, an object becomes trapped at the event horizon (although it cannot be seen). What is hard to understand is that the object, in its own frame of reference, does cross the event horizon.Thorne does not succeed in fully explaining exactly what is happening in this strange region that is outside of our universe. For example, looking out of the hole, in the direction he is falling, does Cooper see all of time come to an end? How fast is he traveling? If he orbits just below the event horizon, is he traveling near the speed of light? Why, exactly, is it so important that Cooper intersect the out falling singularity? Simply stating that this is "historical light" is not an obvious explanation.I suspect that the problem is that many of the answers to these questions exist in mathematical equations, which are Thorne's old friends, since he has spent a lifetime with them.These complexities make the book both fascinating and difficult at the same time. Einstein once said that ideas should be as simple as possible, but no simpler. Thorne is dealing with complex material and has done a good job of trying to live up to Einstein's dictum.

Kip Thorne's Science of Interstellar, answers just about all of the questions that one could possibly have after seeing the incredible movie. From the "simple" law of gravity, to the insanely complex

ideas of space time warping, the tesseract, and gravitational anomalies, Kip takes his incredible knowledge of the universes and translates it into language that we can understand. The Science of Interstellar is as fascinating as it is riveting.The only complaint that I have is that Thorne does not dedicate a specific chapter or section to explain the complex timeline which occurs throughout Interstellar. There is a chapter on the climax of the movie where I believed that section would be, however, there was nothing on the crazy timeline of events which would have been quite helpful in the understanding of this incredible movie.