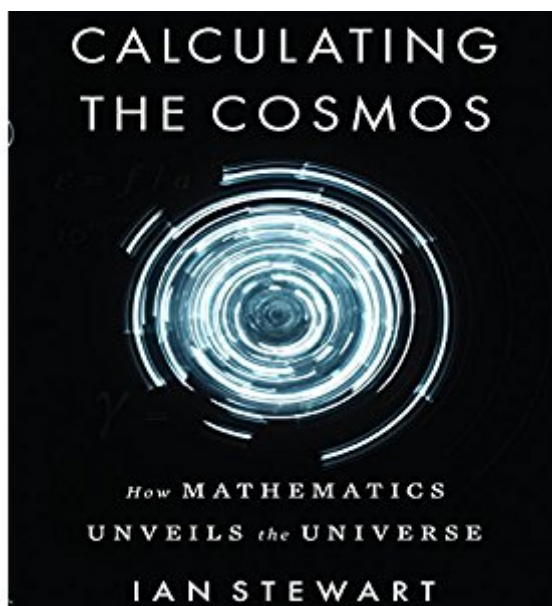


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# Calculating The Cosmos: How Mathematics Unveils The Universe



## Synopsis

In *Calculating the Cosmos*, Ian Stewart presents an exhilarating guide to the cosmos, from our solar system to the entire universe. He describes the architecture of space and time, dark matter and dark energy, how galaxies form, why stars implode, how everything began, and how it's all going to end. He considers parallel universes, the fine-tuning of the cosmos for life, what forms extraterrestrial life might take, and the likelihood of life on Earth being snuffed out by an asteroid. Beginning with the Babylonian integration of mathematics into the study of astronomy and cosmology, Stewart traces the evolution of our understanding of the cosmos: How Kepler's laws of planetary motion led Newton to formulate his theory of gravity. How, two centuries later, tiny irregularities in the motion of Mars inspired Einstein to devise his general theory of relativity. How, 80 years ago, the discovery that the universe is expanding led to the development of the Big Bang theory of its origins. How single-point origin and expansion led cosmologists to theorize new components of the universe, such as inflation, dark matter, and dark energy. But does inflation explain the structure of today's universe? Does dark matter actually exist? Could a scientific revolution that will challenge the long-held scientific orthodoxy and once again transform our understanding of the universe be on the way? In an exciting and engaging style, *Calculating the Cosmos* is a mathematical quest through the intricate realms of astronomy and cosmology.

## Book Information

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## Customer Reviews

Having graduated with a math degree, I am, of course biased to this book. To me, it is a refreshing look at the astronomy and the cosmos based upon mathematics and how the subject helped these

fields progress. The author covers all the historic great mathematicians - Newton, Laplace, Gauss, Riemann, etc. and highlights their contributions to our understanding of our solar system and beyond. Further, there is very little need for understanding of advanced mathematics - very few formulas and the ones that he uses are those that we studied in high school. He does review some advanced mathematical theories, especially the ones leading up to Einstein's Theory of Relativity, but if you don't fully understand the math, you can still understand the essence of what he is sharing. Further, I enjoyed his criticisms of the current theories of dark matter, dark energy, multi-universe, string theory. As he states, the math is interesting but the conclusions are faulty. He suggests that physicists have gone down the wrong path to make sure that their formulas work. These theories don't have the right rigor to mathematicians. Rigor is a challenge (as an individual who struggled with Abstract Algebra, I can assure you that), but it can assure that theories are based on a strong foundation. I highly recommend this book for anyone who is interested in mathematics and our universe. It is very interesting and well written.

This is not a mathematics book, so the title could probably be better worded. It's primarily a history of astronomical and astrophysical science which describes how certain conclusions were arrived at through calculations. (That mathematics is involved of course isn't news.) The book doesn't get into the calculations themselves, but rather just discusses the results. The book is extremely well written and I highly recommend it for those interested in learning how and why the universe is structured as it is on both the microscopic and macroscopic levels.

Written from the standpoint of a mathematician, Ian Stewart's new book should be read by anyone interested in cosmology. He discusses orbits, chaos theory, and the likely absence of dark matter. The evidence for it is based on faulty application of the virial theorem. I read it twice and then purchased it for my library.

Beware: Will awake dormant parts of your brain. Will blossom new concepts and make older ones whole. Will reinforce the infinite beauty of existence, supported by bulletproof mathematics a novice can understand.

This is another outstanding book by Professor Stewart. He presents many mathematical concepts and sets them against the historical events of Science. Mathematics is the language of the Universe! Wholeheartedly recommended especially to mathematics and physics undergraduate and

graduate students.

This book is interesting and entertaining to read. But it is not the book that I expected it to be based on the title and description. The book is mainly a review of science's current understanding of the nature of the solar system, galaxies and universe overall. There is almost no mathematics, either used or explained, in the book. The title of the book is a complete misnomer. The title should have been: Observing the Cosmos: How Astronomy Unveils the Universe. Anyone looking for a book about the use of mathematics in understanding the universe must look elsewhere.

I have read a couple of Ian Stewart's other books so I wasn't surprised to find this book as interesting and well written as the others. If you are interested in Astronomy then "Calculating the Cosmos" will be a good place to start with some of the math concepts used in the science.

A wonderful book written in a style that makes it hard to put down. On almost every page there's a topic that I thought I understood but realised that "it's a bit more complicated than that". There are sufficient illustrations to guide you through the mind-boggling bits. Highly recommended.

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