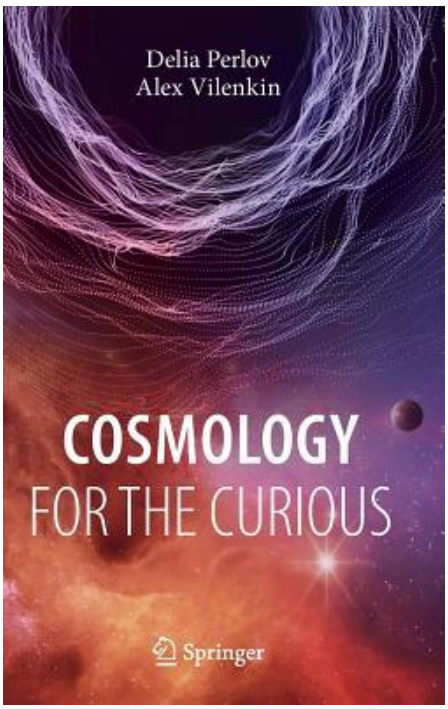

Cosmology for the Curious

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This book is an introductory text for all those wishing to learn about modern views of the cosmos. Our universe originated in a great explosion - the big bang. For nearly a century cosmologists have studied the aftermath of this explosion: how the universe expanded and cooled down, and how galaxies were gradually assembled by gravity. The nature of the bang itself has come into focus only relatively recently. It is the subject of the theory of cosmic inflation, which was developed in the last few decades and has led to a radically new global view of the universe.

Students and other interested readers will find here a non-technical but conceptually rigorous account of modern cosmological ideas - describing what we know, and how we know it. One of the book's central themes is the scientific quest to find answers to the ultimate cosmic questions: Is the universe finite or infinite? Has it existed forever? If not, when and how did it come into being? Will it ever end?

The book is based on the undergraduate course taught by Alex Vilenkin at Tufts University. It assumes no prior knowledge of physics or mathematics beyond elementary high school math. The necessary physics background is introduced as it is required. Each chapter includes a list of questions and exercises of varying degree of difficulty.

Cosmology for the Curious Details

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From Reader Review Cosmology for the Curious for online ebook

Dara Ghaznavi says

This book is awesome. It is neither too simplified (as many pop science books), nor too complicated (as many technical textbooks). The authors have tried to give a general understanding of cosmology to people with minimum knowledge of physics and mathematics. You can get the whole idea by reading it once but to master the book, one has to go over technical parts a few times as with textbooks. The final chapters of the book are devoted to ideas about the inflation hypothesis and eternal inflation.

Brian Clegg says

In the recently published The Little Book of Black Holes we saw what I thought was pretty much impossible - a good next level general audience science title, spanning the gap between a typical popular science book and an introductory textbook, but very much in the style of popular science. Cosmology for the Curious does something similar, but coming from the other direction. This is an introductory textbook, intended for first year physics students, with familiar textbook features like questions to answer at the end of each chapter. Yet by incorporating some history and context, plus taking a more relaxed style in the writing, it's certainly more approachable than a typical textbook.

The first main section, The Big Bang and the Observable Universe not only covers basic big bang cosmology but fills in the basics of special and general relativity, Hubble's law, dark matter, dark energy and more. We then move onto the more speculative (this is cosmology, after all) aspects, bringing in inflation (surely more doubted than ever before at the moment), string theory, whether the universe had a beginning and whether it's possible to create a universe from nothing. There's even a subsection labelled 'A proof of God?' where, not surprisingly, that 'universe from nothing' idea is used to counter what is hardly a rigorous 'proof' in the first place.

Being a textbook lite, although there are a fair number of equations, there is relatively little manipulation of them - certainly not enough to lose a dedicated reader with a good grasp of high school maths. The ideal market for this book is either someone who has read popular science titles on the big bang and wants to get more depth, or a student about to start on a physics course at university who wants to make it more comfortable to ease into the course.

Delia Perlov and Alex Vilenkin should be congratulated on making a big step towards accessibility in a book like this. (Incidentally, don't go for the Kindle version - it's ludicrously expensive, and this is the kind of book where you benefit from having the physical version.)

Angela says

Great book! Covers all the latest ideas about the universe, including it origins, the expansion, the future, dark matter, dark energy, multiverse ideas. All very clearly explained and with some easy maths that helps the reader to really understand the ideas, rather than just knowing the facts.