

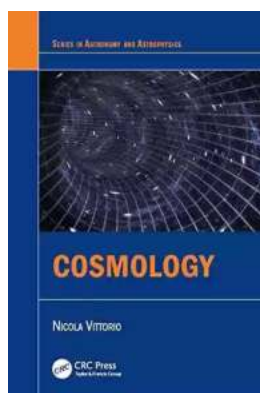
Unveiling the Secrets of the Universe: The Cosmology Series in Astronomy and Astrophysics

Explore the magnificent field of cosmology as we dive into the depths of the universe, uncovering its mysteries and unraveling the fabric of space and time. In this captivating Cosmology Series in Astronomy and Astrophysics, embark on a cosmic journey that will leave you astounded and awe-inspired.

Understanding Our Universe

What lies beyond our planet? What is the origin of the universe? These profound questions have captivated humankind for centuries. Cosmology, the study of the universe as a whole, seeks to answer these inquiries by examining its structure, composition, and evolution.

As we delve into the intricacies of cosmology, we are presented with mind-boggling concepts such as the Big Bang theory, dark matter, dark energy, and gravitational waves. These notions challenge our understanding and force us to question our place in the grand scheme of things.



Cosmology (Series in Astronomy and

Astrophysics) by Baby Professor(1st Edition, Kindle Edition)

★★★★☆ 4 out of 5

Language : English

File size : 83130 KB

Screen Reader : Supported

Print length : 454 pages



The Big Bang Theory and Cosmic Origins

The Big Bang theory, widely accepted by the scientific community, suggests that the universe originated from a hot, dense state approximately 13.8 billion years ago. This explosive event marks the beginning of space, time, and all the matter and energy in the cosmos.

Explore the fascinating aftermath of the Big Bang as we trace the cosmic timeline, from the formation of the first atoms to the emergence of galaxies and clusters. Learn about the key players in this cosmic symphony, such as cosmic microwave background radiation, inflation, and nucleosynthesis.

The Enigma of Dark Matter and Dark Energy

Dark matter and dark energy account for a significant portion of the universe, yet their nature remains largely mysterious. Delve into the realm of dark matter, an invisible substance that pervades the cosmos and exerts gravitational pull on visible matter. Discover its role in shaping the formation of galaxies and galactic clusters.

Unveil the enigma of dark energy, a repulsive force that accelerates the expansion of the universe. Learn about its potential implications for the fate of the universe and the possibility of a future cosmic event known as the Big Rip.

Gravitational Waves: Ripples in the Fabric of Space-Time

Embark on a thrilling journey as we explore the groundbreaking discovery of gravitational waves, ripples in the fabric of space-time caused by cataclysmic cosmic events such as merging black holes and neutron stars. Witness how

these elusive waves allow us to observe the universe in an entirely new way, providing unprecedented insight into the most energetic phenomena in the cosmos.

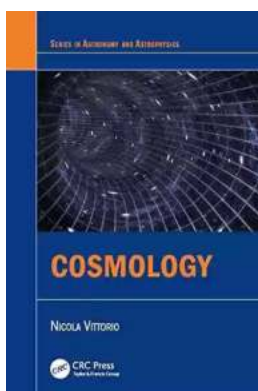
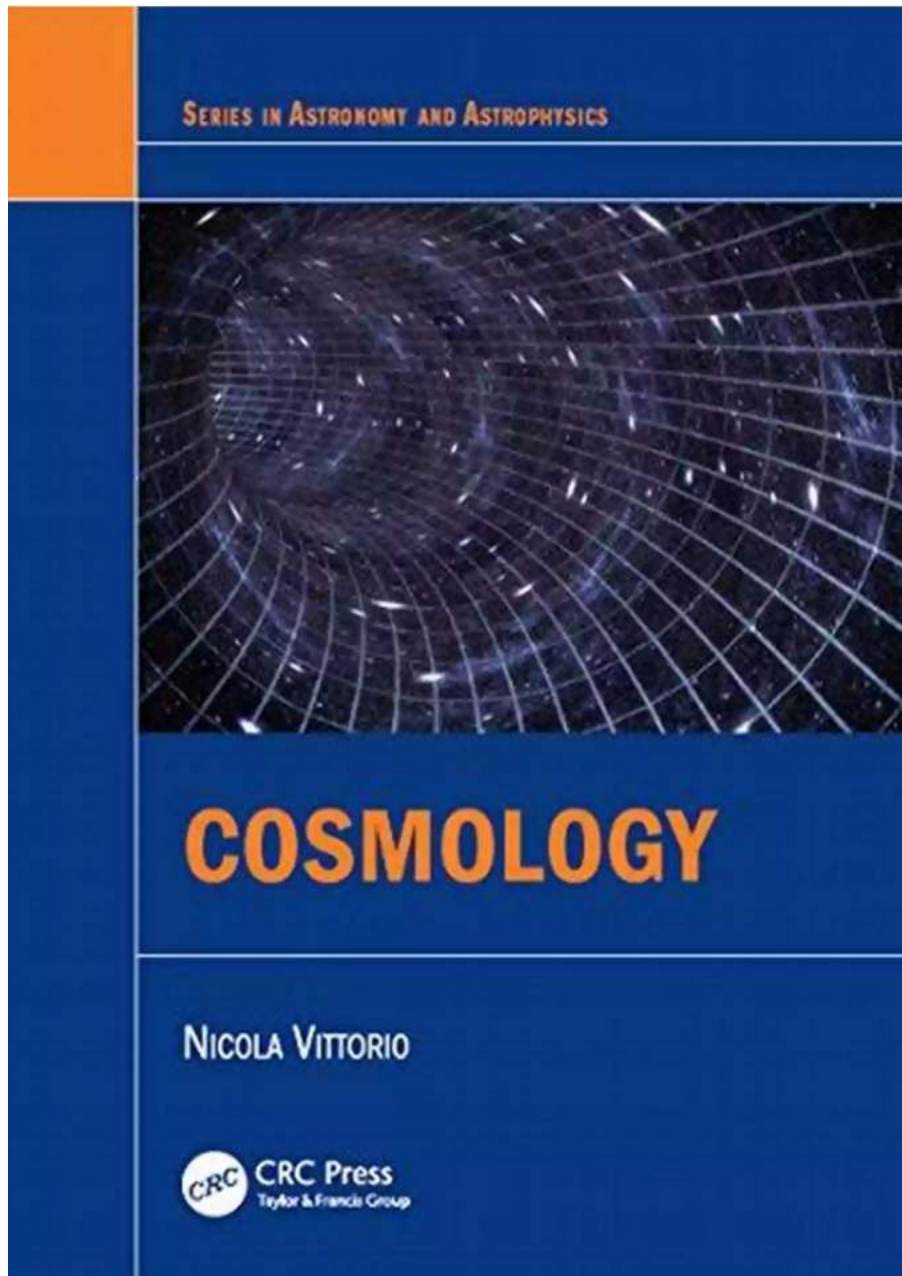
Discover how gravitational wave observatories, like the Laser Interferometer Gravitational-Wave Observatory (LIGO), are revolutionizing our understanding of the universe and opening up a new era of astronomy.

Unraveling the Mysteries: A Never-Ending Journey

The Cosmology Series in Astronomy and Astrophysics takes us on an enthralling expedition through the vast expanse of the universe, offering glimpses into its awe-inspiring wonders and unsolved mysteries.

Join us as we attempt to comprehend the intricate cosmic symphony and unlock the secrets of our existence. From the birth of the universe to the properties of dark matter and dark energy, and from the detection of gravitational waves to the evolution of galaxies, each topic in this series presents an exciting adventure in the realm of cosmology.

Prepare to immerse yourself in the captivating world of cosmology and witness the unveiling of the secrets that lie within the vastness of the universe.



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Modern cosmology has changed significantly over the years, from the discovery to the precision measurement era. The data now available provide a wealth of information, mostly consistent with a model where dark matter and dark energy are in a rough proportion of 3:7. The time is right for a fresh new textbook which captures the state-of-the art in cosmology.

Written by one of the world's leading cosmologists, this brand new, thoroughly class-tested textbook provides graduate and undergraduate students with coverage of the very latest developments and experimental results in the field. Prof. Nicola Vittorio shows what is meant by precision cosmology, from both theoretical and observational perspectives.

This book is divided into three main parts:

- Part I provides a pedagogical, but rigorous, general relativity-based discussion of cosmological models, showing the evidence for dark energy, the constraints from primordial nucleosynthesis and the need for inflation
- Part II introduces density fluctuations and their statistical description, discussing different theoretical scenarios, such as Λ CDM, as well as observations
- Part III introduces the general relativity approach to structure formation and discusses the physics behind the CMB temperature and polarization pattern of the microwave sky

Carefully adapted from the course taught by Prof. Vittorio at the University of Rome Tor Vergata, this book will be an ideal companion for advanced students undertaking a course in cosmology.

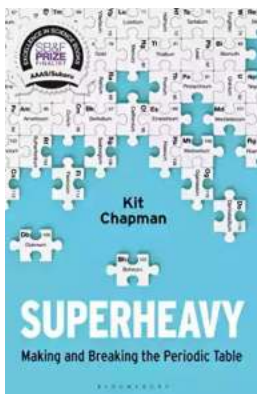
Features:

- Incorporates the latest experimental results, at a time of rapid change in this field, with balanced coverage of both theoretical and experimental perspectives
- Each chapter is accompanied by problems, with detailed solutions
- The basics of tensor calculus and GR are given in the appendices



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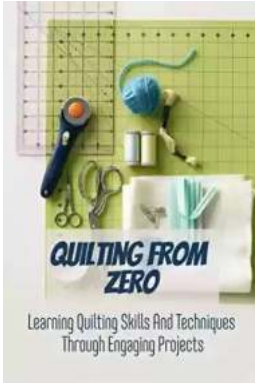
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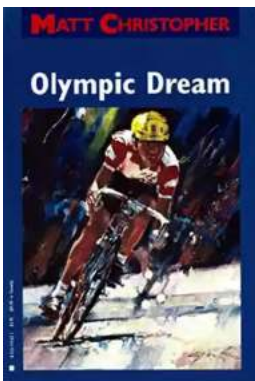
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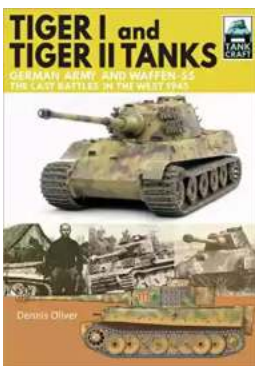
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