

Εισαγωγή στη Γενική Θεωρία της Σχετικότητας και την Κοσμολογία

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Abstract

This book aims to cover the material taught in an advanced undergraduate introductory course in general relativity and cosmology which is taught in many physics departments of Greek universities as an elective course. The recent discoveries in the subject area of gravity-cosmology, its fundamental role in physics, and the spectacular developments in observations and theoretical models have made it more attractive in a large amount of students. It stands out among similar books, as it contains more extensive topics and the latest developments in these fields. The book consists of 17 chapters. The first 4 chapters describe special relativity, electromagnetism, the momentum-energy

tensor and mathematical concepts necessary for understanding theories. Chapters 5-10 cover general relativity, Einstein's equations, and observational confirmations of the theory. Chapter 11 describes the Schwarzschild solution and its properties. Chapters 12-17 are devoted to Cosmology. Chapters begin from the basic principles, the best-known cosmological models, the ways of measuring distances in the universe and end up to the thermal history of the universe and the modern theories of dark matter and dark energy. At the same time, there is a description of the problems faced by the Big Bang model and the theories that exist to solve these problems are mentioned.

