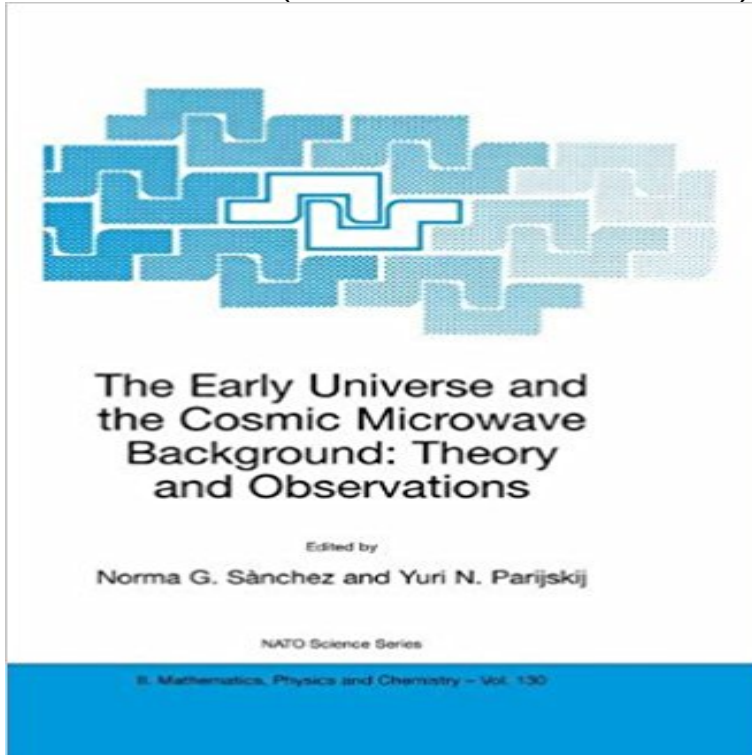


# The Early Universe and the Cosmic Microwave Background: Theory and Observations (Nato Science Series II:)



The goal of the Daniel Chalonge School on Astrofundamental Physics is to contribute to a theory of the universe (and particularly of the early universe) up to the marks, and at the scientific height of, the unprecedented accuracy, existent and expected, in the observational data. The impressive development of modern cosmology during the last decades is to a large extent due to its unification with elementary particle physics and quantum field theory. The cross-section between these fields has been increasing setting up Astrofundamental Physics. The early universe is an exceptional (theoretical and experimental) laboratory in this new discipline. This NATO Advanced Study Institute provided an up dated understanding, from a fundamental physics and deep point of view, of the progress and key issues in the early universe and the cosmic microwave background: theory and observations. The genuine interplay with large scale structure formation and dark matter problem were discussed. The central focus was placed on the cosmic microwave background. Emphasis was given to the precise inter-relation between fundamental physics and cosmology in these problems, both at the theoretical and experimental/observational levels, within a deep and well defined programme which provided in addition, a careful interdisciplinarity. Special sessions were devoted to high energy cosmic rays, neutrinos in astrophysics, and high energy astrophysics. Deep understanding, clarification, synthesis, careful interdisciplinarity within a fundamental physics framework, were the main goals of the course.

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