DECONSTRUCTING COSMOLOGY

The advent of sensitive high-resolution observations of the cosmic microwave background radiation and their successful interpretation in terms of the standard cosmological model has led to great confidence in this model’s reality. The prevailing attitude is that we now understand the Universe and need only work out the details. In this book, Sanders traces the development and successes of Lambda-CDM, and argues that this triumphalism may be premature. The model’s two major components, dark energy and dark matter, have the character of the pre-twentieth-century luminiferous aether. While there is astronomical evidence for these hypothetical fluids, their enigmatic properties call into question our assumptions of the universality of locally determined physical law. Sanders explains how modified Newtonian dynamics (MOND) is a significant challenge for cold dark matter. Overall, the message is hopeful: the field of cosmology has not become frozen, and there is much fundamental work ahead for tomorrow’s cosmologists.

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DECONSTRUCTING COSMOLOGY

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