Preisträgervortrag PV X Do 11:00 H 1

Searching for the identity of the dark matter in our local neighbourhood — •Carlos S. Frenk — Durham University, UK — Laureate of the Max-Born-Prize

One of the most impressive advances in Physics and Astronomy of the past thirty years is the development of the "standard model of cosmology," ΛCDM (where Λ stands for Einstein's cosmological constant and CDM for cold dark matter). Theoretical predictions formulated in the 1980s turned out to agree remarkably well with measurements, peformed decades later, of the galaxy distribution and the temperature structure of the microwave background radiation. Yet, these successes do not inform us directly about the nature of the dark matter. Indeed, there are competing (and controversial) claims that the dark matter might have already been discovered, either through the annihilation of cold, or the decay of warm, dark matter particles. In an astrophysical context the identity of the dark matter manifests itself clearly in the properties of dwarf galaxies, such as the satellites of the Milky Way. I will discuss predictions from cosmological simulations assuming cold and warm (in the form of sterile neutrinos) dark matter and show how astronomical observations can, in principle, distinguish between these as well as other possibilities.