

Answer on Question #51636 – Physics – Astronomy – Astrophysics

Question:

What are dark matters and dark energy?

Answer:

Dark matter is a hypothetical kind of matter that cannot be seen with telescopes but accounts for most of the matter in the universe. The existence and properties of dark matter are inferred from its gravitational effects on visible matter, radiation, and the large-scale structure of the universe. It has not been detected directly, making it one of the greatest mysteries in modern astrophysics.

In physical cosmology and astronomy, **dark energy** is an unknown form of energy which permeates all of space and tends to accelerate the expansion of the universe. Dark energy is the most accepted hypothesis to explain the observations since the 1990s indicating that the universe is expanding at an accelerating rate. According to the Planck mission team, and based on the standard model of cosmology, on a mass–energy equivalence basis, the observable universe contains 26.8% dark matter, 68.3% dark energy (for a total of 95.1%) and 4.9% ordinary matter. Again on a mass–energy equivalence basis, the density of dark energy (6.91×10^{-27} kg/m³) is very low, much less than the density of ordinary matter or dark matter within galaxies. However, it comes to dominate the mass–energy of the universe because it is uniform across space.