Dark side of the universe - wilkinson microwave anisotropy probe of nasa produced...

Science, Physics

The paper “ Dark Side of the Universe - Dark Matter and Dark Energy" is an impressive variant of a term paper on physics. The Wilkinson Microwave Anisotropy Probe (WMAP) of NASA produced some interesting knowledge that addresses man’s curiosity to develop an understanding of the cosmos. Findings of this research calculated the universe’s age and drew the curvature of space. NASA’s WMAP plotted a map of the cosmic microwave background radiation and shed light on a surprising fact that atoms constitute no more than 4. 6% of the whole universe (Lamb, 2014). The remaining universe is not empty as the traditional concept holds. The percentage of dark matter in the cosmos is 23. 3% whereas 72. 1% of the cosmos is filled with dark energy (Lamb, 2014). When taken as a whole, dark matter and dark energy constitute 95. 4% of the universe, which is a very large percentage.

Astronomers as early as the 1960s had thought that the universe might have more mass than what can be seen (Moskowitz, 2011). This curiosity led the astronomers to observe the speeds of stars at different places within the galaxies. Their findings and computer models led them to the realization that galaxies have much more matter than what is known to us. “ If the stars and gas that we can see inside galaxies are only a small portion of their total mass, then the velocities make sense” (Moskowitz, 2011). While the WMAP was launched in the year 2001, the problem of dark energy was identified in the year 1998 when three extremely curious supernovae were observed by the Hubble Space Telescope.

The farthest of the cosmic blasts took place about 7. 7 billion years ago (Lamb, 2014). This is indicative of the fact that the rate of expansion of the universe has increased rather than decreased over the passage of time contrary to the popular perception among the scientists and astronomers that gravity played a role in deceleration of expansion of the universe. The increased rate of expansion of the universe can be attributed to the dark energy because of its mysterious nature and the need to attribute the vast reaches of space to something that also has a role in the acceleration of the expansion of the universe. Dark matter has not been directly observed so far, it has no interaction with the baryonic matter “[b]ut scientists are confident it exists because of the gravitational effects it appears to have on galaxies and galaxy clusters” (National Geographic, 2014). Being the basic building block of clusters and galaxies, the effect of the dark matter on the universe is magnanimous.

Although nothing can be said with surety about what actually constitutes dark energy, yet certain theories have surfaced to explain them. According to one theory, dark energy is a cosmological constant which does not dilute with the expansion of the space. Another theory considers dark energy as a unique kind of matter which fills in the universe like a fluid and whose gravitational mass is negative. There are also possibilities of nonuniform occurrence of dark energy. The knowledge and understanding of dark matter are greater than dark energy so far. Dark matter neither reflects nor emits

light, but its location can be assessed on the basis of the gravitational effects it has on the surrounding matter. Scientists achieve this by using gravitational lensing studying how the gravitational pull of the dark matter bends the light and distorts it from the faraway galaxies.