Dark Plasma

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What is Dark Matter?

According to Donald Goldsmith, dark matter remains invisible over the entire electromagnetic spectrum known currently to Science, from the longest wave-length radio waves to the shortest wave-length gamma rays. It is important to note that this does not discount the possibility that dark matter may be emitting electromagnetic waves at frequencies that are beyond the known electromagnetic spectrum and that are beyond the capabilities of current scientific instruments to detect - although they may be detected in the future when our instruments are improved. If X-ray galaxies were observed in the nineteenth century to affect nearby stars through gravity it would have been classified under matter that we would now classify as dark matter because it would not have emitted any electromagnetic waves that would have been detectable using the scientific instruments available in the nineteenth century. However, with today's instruments it can be declassified from dark matter.

Hence, matter that is now considered dark matter may be declassified in the future into ordinary matter when our instruments become more sensitive and powerful. For this very reason, new higher energy particle accelerators are being used in 2007, such as the Large Hadron Collider (LHC), to detect higher energy particles that have not been detected by scientific instruments up to this point in time. David Peat, who worked with leading physicists including David Bohm, says that we can only "see" elementary particles and phenomena which come within our range. "If there are indeed more massive particles around, then we simply cannot see them." Hence, the more complete definition of dark matter would have to be that it is matter that does not emit radiation that is detectable by our current scientific instruments. This is particularly relevant in a situation when powerful, internally self-consistent, scientific theories predict higher energy particles and therefore higher frequency radiation.

Supersymmetry

Supersymmetry theory predicts the existence of higher mass-higher energy particles - beyond the energies of the particles described in the physicists 'Standard Model'. David Peat, explaining the E8 x E8 symmetry within Superstring theory (a combination of Supersymmetry and String theories), says that each E8 symmetry group describes its own ("shadow") universe, particles and forces. Each group is complete, being able to fully account for the known elementary particles and forces of nature. Since the forces (except mainly for the gravitational force) are confined within each group, the elementary particles in one group are invisible when viewed from the other group. In fact, this shadow universe has matter that is not very different from the properties of dark matter. Richard Morris says, "If someone tried to grasp a chunk of shadow matter, her hands would pass right through it. It has been said that one would walk through a shadow

matter mountain or stand at the bottom of a shadow matter ocean and never know it. Shadow matter particles could interact with one another according to physical laws similar to those of our world. It is possible that there could be shadow matter planets, and perhaps even shadow matter organisms."

Shadow matter is ordinarily invisible - just like dark matter. Shadow matter interacts with ordinary matter mainly through weak gravitational fields - also, much like dark matter. Shadow matter consists of matter concentrations similar to that produced by hot or cold dark matter. John Gribbin says that one reason that the idea of a shadow universe has been taken seriously is that there is astronomical and cosmological evidence that a lot of the universe exists in the form of dark matter, detectable gravitationally but not seen. Shadow matter is composed of more massive or high energy 'super' (i.e. supersymmetric) particles and objects.

Hence, a plasma of much higher energy particles (as predicted by supersymmetry theory) that emits electromagnetic waves beyond the known electromagnetic spectrum would be classified as invisible dark matter. The particles could even be charged but they would not be detectable by our current instruments. David Peat says, "It is indeed theoretically possible for a shadow universe to exist in parallel to our own. While we would feel its gravitational effects, this shadow universe would be otherwise invisible. Photons [light] from the shadow group would have no interaction with the matter in our universe."

More than 99% of our current universe is in the form of plasma. Magnetic fields can be found in every region of space within our universe. Hence, we conclude that magnetic plasma (or "magma") is pervasive throughout this universe. Dark matter is composed of super particles and other extended objects predicted by Supersymmetry theory. These super particles and objects are more massive and exist in higher energy environments. Plasma is associated with higher energies which allow particles in atoms to escape forming soups of charged particles. Hence, it is highly probable that higher energy universes are also composed of magnetic plasma. Under M Theory, higher dimensional universes are thought to harbor dark matter.

M Theory

M Theory offers an interesting explanation for "dark matter" which can be detected by its gravitational influence, yet seems to emit no radiation. Arkani-Hamed, Dvali, Dimopoulos and Nemanja Kaloper, also at Stanford, have proposed that our brane (universe) could be folded back on itself, so that stars at huge distances from us along the brane could be less than a millimeter away along a higher dimension. However, their light would not yet have reached us because it has to travel all the way around the folded brane, but their gravity took a short-cut. The gravitational effects of astrophysical objects composed of plasma would then be observed but their light or radiation would not be detected.

Can Dark Matter be in the form of Plasma?

A plasma consists of electrically conductive soups of charged particles that respond collectively to electromagnetic forces and are overall (quasi) neutral. If these particles were much more massive or of higher energy, they would not be detectable. According to plasma metaphysics, a significant proportion of dark matter is in the form of a plasma of super (high energy) particles.

In the "dark current mode" of plasma, the strength of the electrical current within a plasma is very low. The plasma does not glow and is essentially invisible. The plasma would not be detected unless its electrical activity was measured with sensitive instruments. Note that the ability to detect the matter rests on the sensitivity of the instrument. If we did not have the relevant instruments, these currents would have to be classified as dark matter i.e. as dark plasma. The magnetospheres of the planets are examples of plasmas operating in the dark current mode. Nevertheless, there is much more "dark plasma" in the universe. Dark plasma emits radiation that cannot be detected by our current scientific instruments. For example, the web of filamentary currents carrying hot plasma, cited in the author's article Acupuncture Meridians and the Cosmic Spider Web, is invisible. (Hence, by definition, they are components of dark matter.) They are detected only when ordinary matter, which condenses around them, gives out detectable radiation.

"Plasmas are not just the 'fourth state of matter' - they are really the first state in modern cosmology, and they continue to be, by far, the dominant state of visible matter in the universe; perhaps also of invisible matter as well if so-called 'dark matter' continues to remain unobserved and unexplained." - Timothy Eastman, President, Plasmas International

Intergalactic Magnetic Fields

The natural tendency of plasma to carry currents is an important source of magnetic fields. We know from basic electromagnetics that currents generate magnetic fields around them. (For example, currents circulating in the Earth's core give rise to the Earth's magnetic field.) Since plasma is pervasive throughout the universe, scientists believe that virtually all visible matter in the universe is magnetized. But magnetic fields are also found outside galaxy clusters where there is no visible matter. Where did these fields come from? The origin of these magnetic fields is still a puzzle to scientists. Are these magnetic fields generated by the equally pervasive dark matter? If so, the evidence points to dark plasma which would have the ability to generate magnetic and electric fields. Both gravitational and magnetic fields and anomalies, not accounted for by visible matter, may be indirect evidence of dark invisible matter composed of the lightest super particles.

Similarities between Dark Matter and Plasma

Consider the observed properties of space plasma, compared with dark matter:

a. Low Particle Density, Diffused, Collisionless

The particle density of dark matter is low, which correlates well with the low particle density in space plasma. (Many types of plasma are low density since they are composed of soups of particles of like charges which naturally repel each other within the soup.) Dark matter is said to be 'diffused' - so is magnetic plasma in our universe. Supersymmetric particles like WIMPs form a pervasive sea of diffused matter. Dark matter has also been described as "non-atomic" - this points directly to plasma. Dark matter objects are supposed to pass right through each other, just like objects in collisionless plasma. Magnetic plasma of different densities and other properties naturally separate into different regions, with denser matter separating from the more tenuous matter - so does dark matter, based on studies of its density distribution in galaxies.

b. Structure of Dark Matter Halos versus Plasma Crystals

Dark matter is also present in the halos of elliptical galaxies. These elliptical galaxies reveal the presence of faint shells on deep photographic plates which extend out to two or three times further than the bulk of the starlight. As many as 20 shells have been discovered around one bright galaxy. Computer simulations result in a similar array of concentric shells. Shell structures have also been found in other galaxies - and also in plasma crystals.

H Thomas and his colleagues have generated plasma crystals in the laboratory. These crystals were in the form of assemblies of particles which were held in a crystal-like array by a plasma of weakly ionized gas. When the assembly of microscopic particles was contained between two electrodes and illuminated by a laser beam, it could be seen, even with the naked eye, that the particles naturally arranged themselves regularly into as many as 18 planes parallel to the electrodes. In another more recent experiment, the particles in a plasma crystal arranged themselves into neat concentric shells, to a total ball diameter of several millimeters. These orderly Coulomb balls, consisting of aligned, concentric shells of dust particles, survived for long periods. The presence of concentric shells in the structure of plasma crystals and dark matter halos suggest that the dynamics in these crystals and halos are the same - both arise from the dynamics of magnetic plasma.

Conclusion

The evidence strongly suggests that a significant proportion of dark matter is in the form of magnetic plasma.