

# Understanding the Nature of Dark Matter

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## Abstract

Energy from quantum level  $n = 3$  of the void is currently creating the 4D (fourth spatial dimensional) part of our 3D Universe. Matter in the form of the three generations of elementary particles of the Standard Model is being sent from the point singularities of our Black Holes into the point singularities of the White Holes of 4D space where the fourth generation of elementary particles has been formed. The four generations are combined by 4D gravity to form 4D matter. During the construction of the final  $n$ th dimension, the Standard Model will be filled up with a table of  $n$  generations of columns and 4 rows of elementary particles. Matter of all the  $n$  dimensions is composed only of elementary particles of the first generation since elementary particles of all higher generations are heavier, hence unstable, and therefore decay into 1D elementary particles. While Dark Energy is the energy of photons located in different levels “ $n$ ” of the void, Dark Matter is the 4D matter located in the 4D part of our 3D Universe made of protons, neutrons, electrons, and electron neutrinos. Bullet Cluster and Gravitational Lensing experiments confirm the existence of Dark Matter in the 4D part of our 3D Universe.

## Keywords

Dark Matter, Dark Energy, 3D Universe

## 1. Introduction

The velocity of stars and 21 cm Hydrogen gas in the rotation curves of galaxies have confirmed the existence of Dark Matter [1]. It is the purpose of this paper to discuss what Dark Matter is, more importantly, what it is not, and that it is not located as part of our 3D Universe. We will begin by understanding how matter and vacuum spaces are being created in 1-D and 2-D and then extrapolate to 3-D and the 4-D part of our Universe.

## 2. Dark (Photon) Energy

Dark (Photon) Energy from within the void is responsible for creating matter, vacuum space, charge, time, and the Multiverse [2]. Photon Energy exists in the void in quantum levels “n” obeying Bose-Einstein Statistics. The concept of speed  $v = d/t$  depends on space (d) and time (t) which do not exist within the void and hence the speed of light (photons) within the void is a meaningless entity. Energy from level  $n = 0$  of the void creates the first generation of elementary particles of the Standard Model and the first dimension 1D starting with  $n!$  point singularities needed to create up to a  $n$ th dimensional Universe  $n$ -D; energy from level  $n = 1$  of the void creates the second generation of elementary particles and the second dimension 2D; energy from level  $n = 2$  of the void creates the third generation of elementary particles and the third dimension 3D; energy from level  $(n - 1)$  of the void will create the  $n$ th generation of elementary particles and the  $n$ th dimension  $n$ -D.

To construct a 1D rotating ellipse made of matter and vacuum spaces consider the elliptical motion of a planet around the sun. The planet moves slowest at the apogee (furthest distance from the sun) and then begins to speed up until it is moving fastest at the perigee (closest distance from the sun), and then begins to slow down until it reaches the apogee again. Let us start at the apogee where Energy is shot from the  $n = 0$  level point singularity of the void in two perpendicular directions. Energy from the first direction creates matter pushing it in the forward direction while its reaction force pushes the point singularity along with vacuum space backwards in accordance with Newton’s third law. The second directional Energy aimed at a single point toward the center of the elliptical shape to be formed around the second dimensional void does the work to change the point singularity and its associated matter and vacuum space from a straight line to a curve. By increasing the second Energy in a continuous fashion the component of the Energy in the direction of motion of the matter will make it accelerate until the matter reaches the perigee and then by decreasing the second Energy it will make the matter de-accelerate until it comes back to the apogee. This process of creating matter, speeding it up and slowing it down can be repeated in steps from the apogee many times before the matter created by the first step gets back to the apogee so that we have the equivalent of several planets in orbit located the same distance from the sun (the point that the second Energy was aimed at) moving in elliptical orbits around that point (called the focal point) with speeds conserving angular momentum. This moving ellipse made of matter and vacuum spaces started with 1D elementary particles coming out of the  $n = 0$ -point singularity viz. up and down quarks, electrons and electron neutrinos, and the gauge bosons that are combined by 1D gravity to form 1D matter viz. protons, neutrons, electrons, and electron neutrinos.

To construct a hollow 2D rotating ellipsoid made of matter and vacuum spaces consider two rotating ellipses, one near the South pole and the other near the North pole. Energy from the  $n = 1$  singularity of the void is shot directly at the

South pole point from the southern ellipse and directly at the North pole point from the northern ellipse, from vacuum singularities all around the two ellipses. This creates 2D elementary particles viz. charm and strange quarks, muons and muon neutrinos, filling up the very bottom and the very top portions of the ellipsoids with matter along with vacuum spaces, while the point singularities are pushed up from the South pole and down from the North pole in elliptical shapes around the 3D void. 1D elementary particles sent from the Black Holes of the 1D ellipses are combined by 2D gravity with the 2D elementary particles to form rotating 2D ellipsoids at the very bottom and very top of the ellipsoids by shooting energy from the  $n = 1$  level of the vacuum spaces formed in 2D space in the direction of the rotating ellipses. As 1D matter is being used up, so too more 1D matter and vacuum space are being created from the  $n = 0$  level of the void. The point singularities that were sent into 3D space continue the process of creating bigger parts of the rotating ellipsoids by shooting energy from the  $n = 1$  level of the void in the direction of the first two ellipses near the South and North poles, and at the same points of the South and North poles as was done earlier, and in the direction of the rotating ellipsoids, forming two more intermediate parts of the rotating ellipsoids. This process continues until the two half rotating ellipsoids formed, one that was started from the South pole and the other from the North pole is joined at the equator to form a 2D rotating ellipsoid by means of a Big Bang which would exemplify the ending of the 2D Universes and the beginning of the 3D Universes.

In a similar manner 3D rotating matter and vacuum spaces are formed around the fourth dimensional void by the point singularities from the  $n = 2$  void in the form of the third generation of elementary particles viz. top and bottom quarks, tau and tau neutrinos, while the first two generations of elementary particles are sent through the Black Holes of 2D space into the White Holes of 3D space. Having completed the 3D Universe by 3D gravity combining the three generations of elementary particles, and 3 parts of the 3D Universe created by three 2D Universes coming together, we note that since the completed 2D Universe is filled with matter and vacuum spaces as it is built around the 3D void, so too the completed 3D Universe would be filled with matter and vacuum spaces as it is built around the 4D void. This is the rotating 3D Universe that we currently live in.

The formation of the rotating 4D Universe around the fifth dimensional void will start up from the  $n = 3$  point singularities of the void. This is the current situation we find ourselves in and the 3D elementary particles sent from the 3D Black Holes into the 4D White Holes that have been combined with 4D elementary particles by 4D gravity to form 4D matter, 4D matter whose elementary particles decay to form protons, neutrons, electrons, and electron neutrinos is currently the Dark Matter of our 3D Universe. The rotating 4D Universe will not be completed until 4 rotating parts of the 4D Universe created by four rotating 3D Universes come together to form the 4D Universe.

The Energy of photons in the higher levels “n” of the void exist in a more condensed state and hence have a lower Entropy, but photons in the higher levels have more Energy in them [2]. Entropy decreases even more while building higher dimensional Matter Universes since Matter is congealed Energy, but the Energy does not change while creating Matter from Energy since Energy is a conserved quantity. Starting from 1-D to the final n-D Entropy decreases, and it increases when time reverses itself taking the Antimatter dimensions coming out of the (n + 1)st void and depositing it back into the voids of levels n-D to 0-D. Therefore, the Entropy of the total system (which is the Void and the Matter Universes that the Energy from within the Void creates) is forced to decrease while creating the Matter Multiverse and then the Entropy reverts to its original value as the Antimatter Multiverse deposits all the Energy back into the original “n” levels of the Void as photons. How many “n” levels can exist within the void is a tradeoff between the Energy and the Entropy that each level of the void can contain. More Energy implies higher spatial dimensions while less Entropy leads to the instability of the higher dimensions as evidenced by the elementary particles that these higher dimensions create.

### 3. Einstein’s Special and General Theories

According to Einstein’s Special and General theories of Relativity space contracts and time slows down for objects moving close to the speed of light or in strong gravitational fields such as that which exists in the vicinity of Black Holes. Both these effects of length contraction and time dilation take place simultaneously to keep the speed of light a constant. Higher dimensions have more gravity because gravity acts in all the additional dimensions, and this implies that space will contract and time will slow down more and more as the number of the nth dimension continues to increase, even more so because the speed of light decreases as “n” increases in higher, denser mediums. The system will begin to become more and more unstable since the Entropy of the system will also continue to decrease, thereby forming the limiting factor for the final nth dimension of the Multiverse which will not be allowed to form by not providing sufficient Energy from the (n – 1)th void for the centrifugal outward force to cancel the inward gravitational force. Forming parts of the nth dimension without a rotation, gravity will make all parts of the nth and all the lower dimensions that have become a part of the nth dimension crash into the final (n + 1)st void that the nth dimension surrounds.

We can calculate the total age of our 3-D Universe since the ratio of Dark Matter to Baryonic Matter is estimated to be about 5 or 5.25 to 1. This implies that our 3-D universe (and all the other 3-D Universes) have advanced toward about 84% completion of the fourth dimension. At the current age of 13.8 billion years, in another 2.6 billion years there will be a phase change to end the 3-D and begin the 4-D Universes. This implies that **our 3-D Universe will have had a total lifetime of 16.4 billion years** [1]. We can estimate that the lifetimes of all

the dimensions are roughly the same since only the elementary particles creating 1D are stable and hence the elementary particles of all the higher dimensions will contribute very little to the lifetimes of those higher dimensions, except for the lifetime of the final  $n$ th dimension which will be shorter than all the rest because it will not be allowed to get to completion, thereby ending the Matter Multiverse to begin the creation of the Antimatter Multiverse.

It has been suggested in the literature that for our 3D Universe we cannot see beyond the horizon distance of 46 billion light years because our 3D space is expanding faster than the speed of light. This is an incorrect estimate since it is built on the premise that our 3D Universe will last forever while Dark Matter data indicates that it will end in another 2.6 billion years, much smaller than the estimated 46 billion years. Vacuum spaces and matter are continuously being created from level  $n = 2$  of the Void to fill our 3<sup>rd</sup> dimension and to continue its rotation as 3D matter becomes 4D Dark Matter. Even though Fred Hoyle (1915-2001) was wrong about the Big Bang nature of our Universe, he was right about matter being created from vacuum, although he did not understand the mechanism by which the process was taking place since he believed in a Steady State Universe.

The same process of creating Dark Matter is also occurring for all the other 3-D Universes of the Multiverse. Four 4-D parts of four of the 3-D Universes in our sub-set of the Multiverse are brought together by gravity to form the 4-D Universe [2]. This implies that all the 4-D parts of the Multiverse would have to be completed simultaneously.

There are only three generations in the Standard Model because we live in a 3-D spatial universe and each dimension adds an extra generation to the list. Each quantum level “ $n$ ” of photon energy within the void where time does not exist is in thermodynamic equilibrium with itself, but when removed from the void as elementary particles into dimensional spaces where time exists the elementary particles of the higher dimensions show themselves to be more unstable than the elementary particles of level  $n = 0$  in accordance with the Entropy of the higher levels “ $n$ ” of photon Energy in the void decreasing as void level “ $n$ ” increases.

Only elementary particles can exit Black Holes and enter White Holes through worm holes that connect them. The Black Holes of 1D are points connected by a thin filament (called worm holes in the literature) transporting 1D elementary particles to the White Holes of 2D that open as circles. The Black Holes of 2D start as circles to transport the elementary particles of the first two dimensions by a thin filament into the White Holes of 3D which have the shapes of cones. The Black Holes of 3D start as cones to transport the elementary particles of the first three dimensions by a thin filament into the White Holes of 4D whose shapes our 3D minds cannot fathom. We know that elementary particles have been created in the fourth dimension along similar lines as those in the first three columns of the Standard Model. Now, we understand how the progression

of elementary particle generations builds up in the Standard Model; it can be laid out in a table of “n” columns for the nth dimension, but always in 4 rows. The quarks and leptons of each higher generation will be more massive than those in the previous generation and therefore more unstable, and they will all decay into the quarks and leptons of the first generation. Hence all matter in all the n levels of the Multiverse will be made up of the first generation of elementary particles as depicted by the elements of the periodic table for our 3D Universe in which none of the particles of the higher dimensions exist.

Dark Matter exists as 4D matter in the 4-D part of our 3-D Universe and the only way to detect it is by its interaction (or absence of interaction) with the matter in our 3-D Universe as has been done by the Bullet Cluster observation for the absence of interaction [1] [3] and by Gravitational Lensing for the interaction observations [1] [4].

## 4. Conclusions

**Searching for Dark Matter experimentally in our 3-D Universe is a waste of both time and money** since it hasn't been found after much effort, the reason being we have been looking experimentally for it in the wrong place, in our 3-D (3<sup>rd</sup> dimension) where only matter exists but where 4-D Dark Matter does not exist. Dark Matter exists in the 4-D part of our 3-D Universe.

Since the Standard Model is a model for third dimensional particles; therefore, Dark Matter particles cannot be integrated as elementary particles currently within the Standard Model. The Standard Model would have to be extended to the 4<sup>th</sup> dimension to incorporate 4<sup>th</sup> dimensional matter elementary particles within its structure. When time begins to reverse its direction starting from the final (n + 1)st level of the void, antimatter will become dominant and the columns of the Standard Model will be filled with the anti-portion of these generations of elementary particles viz. anti-up and anti-down quarks, positrons and electron anti-neutrinos, and the anti-part of the gauge bosons for the first generation of elementary particles, and so on for all the higher dimensions with all the elementary particles of the higher dimensions decaying into the elementary particles of the first dimension. Finally, all Energy will be deposited back into the “n” levels of the void from which it was removed in the form of photons to stabilize the system by bringing the Entropy of each level “n” of the void back to its original value.

## Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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