The Effect Density Has on the Speed of Light, Time, and the Dimensions of the Multiverse

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Abstract

We show that as the dimensions of the Multiverse increase so does its density. This increase in density has the effect of decreasing the speed of light, slowing down time, and increasing the life span of each higher dimension and the life span of human beings occupying that higher dimension. We use the tenth dimension as the highest dimension as a special case but show that it is not possible to exactly determine its value because of varying factors that can end the Multiverse, sending all the Energy back into the original levels of the Quantum of the void that started the creation process.

Keywords

Density, Gravity, Time, Speed of Light, Higher Dimensions

1. Introduction

Consider a sphere of density ρ and radius R. The formula for gravity is $g = G4\pi\rho h/3$ where h takes the values between 0 and R. As density increases, gravity increases, which slows time down due to the larger value of gravity. Since $c = dx/dt$ if dt increases because of time slowing down in a denser medium like glass, then c decreases by the same factor that dt increases. This same phenomenon applies to higher dimensions of the Multiverse whose vacuum densities increase with dimension because of the way higher dimensions are formed. **As time slows down, so do space contracts, according to Einstein's Special and General Theories of Relativity, both time and space factors increase the density of higher dimensional space.**

Table 1 shows that as the Density of the medium increases the Speed of Light decreases. Even though Vacuum space has almost zero matter density, it has energy density (ε_v) in it, which corresponds to the mass density (ε_v/c^2) of the

Table 1. Experimental data in our 3-D universe.

SUBSTANCE	SPEED OF LIGHT	DENSITY ρ
AIR	3×10^8 m/s	1.225 kg/m³
WATER	2.25×10^8 m/s	1000 kg/m³
GLASS	2×10^8 m/s	2500 kg/m³
DIAMOND	1.25×10^8 m/s	3500 kg/m³

different dimensions. Higher dimensions have greater energy in them which comes from the higher number of the Quantum of the void that contains more energy to be able to build the higher dimensions. It is difficult to estimate the vacuum mass density $\rho_m = \varepsilon_v / c^2$ of our 3-D Universe, and so we will leave it as an unknown. Greater mass density in the vacuum spaces of the higher dimensions is what affects the speed of light, time, and the dimensional and human life spans.

Two first dimensions create the second dimension, three second dimensions create the third dimension, four third dimensions create the fourth dimension, five fourth dimensions create the fifth dimension, six fifth dimensions create the sixth dimension, seven sixth dimensions create the seventh dimensions, eight seventh dimensions create the eighth dimension, nine eight dimensions create the ninth dimension, and ten ninth dimensions create the tenth dimension. [1]. Since it takes Energy to expand these dimensional parts to the next higher dimension and to combine them, using these factors for each of the dimensions to calculate the energy density of the next higher dimension will give a lower limit to the energy density of that higher dimension. The speed of light will give a higher limit while time and the life spans will give a lower limit as has been calculated in Tables 2-4.

In Table 2, we use the vacuum mass density ρ_m and the speed of light in vacuum of our 3-D Universe = 3×10^8 m/s, to calculate the vacuum mass density and the speed of light in all the dimensions. In Table 3, we start with 1 second in our 3-D Universe (time between ticks of clock getting longer means time is slowing down as dt increases) to see how time and the life span of each dimension are affected using the life span of 16.4 billion years for our 3-D Universe [1]. In Table 4, we use the life span of 80 years of an average human in our 3-D Universe to calculate the life span of human beings in all dimensions of the Multiverse.

The total time required to construct a 10-dimensional Multiverse is greater than 11.06 quadrillion years.

2. Main Text

Since time is relative, the life span of 48,384,000 Years would feel no different to the human being living in 10-D space than it does to the life span of 80 Years for the human being living in our 3-D Universe because in higher dimensions all

Table 2. For ρ_m, values displaced are greater than the row in which they are displaced, but much smaller than their value in the next higher dimensional row. For c_n, values displaced are smaller than the row in which it is displaced, but much greater than its value in the next lower dimensional row.

VACUUM MASS DENSITY ρ_m IN THE nth DIMENSION.	SPEED OF LIGHT c_n in THE VACUUM SPACE OF DIMENSION n.
$1^{ST} > (1/6)\rho_m \, kg/m^3$	$c_1 < 1.8 \times 10^9 \, m/s$
$2^{ND} > (1/3)\rho_m \, kg/m^3$	$c_2 < 9 \times 10^8 \, m/s$
$3^{RD} = \rho_m \, kg/m^3$	$c_3 = 3 \times 10^8 \, m/s$
$4^{TH} > 4\rho_m \, kg/m^3$	$c_4 < 7.5 \times 10^7 \, m/s$
$5^{TH} > 20\rho_m \, kg/m^3$	$c_5 < 1.5 \times 10^7 \, m/s$
$6^{TH} > 120\rho_m \, kg/m^3$	$c_6 < 2.5 \times 10^6 \, m/s$
$7^{TH} > 840\rho_m \, kg/m^3$	$c_7 < 3.57 \times 10^5 \, m/s$
$8^{TH} > 6720\rho_m \, kg/m^3$	$c_8 < 4.46 \times 10^4 \, m/s$
$9^{TH} > 60,480\rho_m \, kg/m^3$	$c_9 < 4.96 \times 10^3 \, m/s$
$10^{TH} > 604,800\rho_m \, kg/m^3$	$c_{10} < 4.96 \times 10^2 \, m/s$

Table 3. Time and life of dimension values displaced are greater than the row in which they are displaced but much smaller than their values in the next higher dimensional row.

DIMENSION NUMBER	TIME between ticks of Clock	LIFE OF DIMENSION
1st	>166.7 Milli Seconds	$>2.73 \times 10^9$ Years
2nd	>333.3 Milli Seconds	$>5.47 \times 10^9$ Years
3rd	=1 Second	$=1.64 \times 10^{10}$ Years
4th	>4 Seconds	$>6.56 \times 10^{10}$ Years
5th	>20 Seconds	$>3.28 \times 10^{11}$ Years
6th	>2 Minutes	$>1.97 \times 10^{12}$ Years
7th	>14 Minutes	$>1.38 \times 10^{13}$ Years
8th	>1.87 Hours	$>1.1 \times 10^{14}$ Years
9th	>16.8 Hours	$>9.94 \times 10^{14}$ Years
10th	>7 Days	$>9.94 \times 10^{15}$ Years

Table 4. Average human life span values displaced are greater than the row in which they are displaced but much smaller than their values in the next higher dimensional row.

DIMENSION NUMBER	AVERAGE LIFE SPAN OF A HUMAN BEING
1st	>13.3 Years
2nd	>26.7 Years
3rd	=80 Years
4th	>320 Years

Continued

5th	>1600 Years
6th	>9600 Years
7th	>67,200 Years
8th	>537,600 Years
9th	>4,838,400 Years
10th	>48,384,000 Years

processes occur more slowly. Having noted that all the calculations in the Tables above have taken place with values from our point of view in 3-D space, this is very similar to an astronaut in a spaceship entering the event horizon of a Black Hole in our 3-D Universe. While from our point of view the spaceship is frozen in time, but from the astronaut's point of view time is moving in a natural fashion apart from the fact that the immense gravitational tidal forces of the Black Hole will tear him and his spaceship to pieces. The elementary particles from the astronaut and the spaceship will enter 4-D space which is currently the Dark Matter of our 3-D Universe. For human life to exist in the gravity of the higher dimensions the process will have to start up slowly because human beings will take the shape of the higher dimension that they live in. Since we cannot picture the fourth or higher than the fourth dimensions it is impossible to predict what those higher dimensional life forms would look like.

We picked 10 as the final dimension of the Multiverse but that is only for a special case since the final dimension can vary due to several factors that can cause the end of the creation process of the Multiverse.

Factor 1: Instability caused by Entropy of the next highest value of Energy within the void that creates the Multiverse [2].

Factor 2: The next highest $n = 10$ value of the void required to build the eleventh spatial dimension not having more Energy in it than the tenth dimension of the Multiverse already created by the $n = 9$ value of the void [2].

Factor 3: The speed of light becomes smaller than the rotational Energy of the Multiverse, which causes the Multiverse to radiate away its Energy by the Cherenkov Effect [3]. Since the speed of light varies with dimension corrections have to be made for the formulas in Reference 2 which should be written as:

$$E_{n+1} = \left\{ 10!/(n+1)! \right\} \left\{ n^2 N^2/81 + (9-n)N/9 \right\} (n+1) P_{n+1} c_n,$$

where n goes from 0 to 9 to include c_n in place of c. $E_{10} = 10N^2 P_{10} c_{10}$ which is the total Energy contained in the 10th dimensional Universe. Also, for very large N, $P_{10} > 4480 P_2 c_2/c_{10} + 8960 P_3 c_3/c_{10} + 6720 P_4 c_4/c_{10} + 2987 P_5 c_5/c_{10} + 933 P_6 c_6/c_{10} + 224 P_7 c_7/c_{10} + 44 P_8 c_8/c_{10} + 7 P_9 c_9/c_{10}$ for the energy in E_{10} to be greater than $E_1 + E_2 + \cdots + E_9$.

Factor 4: A collision between the Matter and Antimatter Multiverses causes the destruction of the Multiverse with the lesser number of dimensions and a partial destruction of the Multiverse with the larger number of dimensions [3].

3. Conclusion

The quantum levels within the Quantum of the void provide the energy to create space, time, mass, and charge, to build the different dimensions of the Matter and Antimatter Multiverses. The higher dimensions are denser which makes the speed of light decrease, time slow down, and the life span of each dimension and human beings occupying that dimension increase. Even though their life spans increase due to time slowing down, humans do not feel the effect because everything around them also slows down.

Conflicts of Interest

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

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