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The Space – Time is Flat at an Absolute Free Space. It is the Mass that Makes Space – Time Curved in. The Physical Time is Discrete or Continuous is An Observer Dependent Realism only.

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Abstract

According to Einstein, the astronomical bodies try to move in a straight line – it is the curved space – time that makes their paths curved in. This paper proposes that the space – time is originally a flat space – time (at an absolute free space), it is the presence of mass that makes space – time curved in. Whether the physical time is discrete or continuous, is an observer dependent realism only. An observer like human being uses neither too small units of time nor too big units of time. An observer like human being uses average or moderate units of time which makes time continuous and flat. The physical time is discrete and flat for too small units of time. The physical time is continuous and curved in for too big units of time. The space – time can be curved in into a point for infinite mass concentrated into a point. Theoretically, it should be the center of our universe.

Keywords : Absolute free space, Discrete, Continuous, The physical time, Infinite mass.

I. Introduction

Theory1: Without any significant mass or energy, any free space is an absolute free space. A free space is called an absolute free space if it is devoid of any significant and effective mass or energy.

Theory2: The space – time is absolutely flat at an absolute free space.

Theory3: The presence of significant mass or energy makes space – time curved in.

Theory4: The physical time is discrete and flat for too low units of time, whereas, the physical time is continuous and curved in for too big units of time. An observer with average or moderate units of time sees everything continuous and flat (Human beings see everything continuous and flat with their eyes).

Theory5: The space – time can be curved in into a point for infinite mass concentrated into a point. Theoretically (without any experimental proof), it is the center of our universe.

Theory 6: The physical time is discrete or continuous is an observer dependent realism only. Some observers can prove that time is discrete and flat, some other observers can also prove that time is continuous and curved in. Apart from them, some other class of observers can prove that time is curved in into a point with infinite derivatives.

Theory7: The total space times the total time around a boundary is a constant, it is called the boundary condition of space – time of the Universe.

The space – time is flat at absolute free space, a free space devoid of any significant mass or energy. The example can be the space between two adjacent galaxies. That is why all astronomical bodies try to travel in a straight line because originally the space – time is flat. It is the presence of mass that makes space – time curved in. The Earth would follow a flat space – time if it were in the absolute free space, because of the presence of Sun, Earth follow a curved in curvature path around the Sun. Due to the presence of significant mass or energy, the space – time looks curved in curvature. A huge energy trapped into a small space is called mass. Let's take, mass is m, energy is E, the speed of light is C. Then, according to the Einstein's mass-energy equivalence famous equation [I] –

$$E = mC^2 \tag{1}$$

It proves that mass and energy are different phenomena of the same thing [II]. There is no known easy way to release energy from a given mass except the Hawking's Radiation which releases huge amount of energy from a huge mass consumed by super massive Black Holes at the center of every galaxy [III]. Without mass and energy, the Universe would be three dimensional space – time, thus, would be flat space – time with two dimensional space surface and one dimensional time. Because of the presence of mass and energy make the Universe a four dimensional space – time with three dimensional spaces and one dimensional time. Thus, mass and energy have created an extra spatial dimension in the Universe to make it four dimensional space – time. Thus, extra third spatial dimension makes original flat space – time into a curved in curvature space –time.

II. The Universe Obeys Repetitive Nature

The Universe obeys repetitive nature [IV]. We start with atoms made up of protons, neutrons and electrons [V]. All atoms are made up in the same way in all elements and their compounds [VI]. The basic building block is the same and it is repetitive every time. It has a center with concentrated mass and electrons are revolving around the mass called nucleus [VII]. The solar system is the repetitive nature of an atom with concentrated mass at the center (Sun) and planets are revolving around the center [VIII]. There are billions of solar system in our galaxy,

thus our solar system is repetitive in nature to produce billions of solar systems. Each galaxy has a center with super massive Black Hole which has the concentrated mass of the galaxy in the center and billions of solar systems are revolving around it [IX]. Each galaxy is repetitive in nature to have billions of galaxies in our Universe. Thus, the Universe must have a center with infinite concentrated mass that makes space – time curved in into a point with infinite derivative of space – time. And billions of galaxies are revolving around the center to make our Universe. So, there is a center in the Universe, at least theoretically (without any experimental proof). Anything curved in will be ended up as circles or ellipses (distorted circles). So there are two possible space – time in the Universe; one is a circle and the other is an ellipse.

Let's take, space is S, the physical time is T, then a circle looks like

$$S^2 + T^2 = K^2 \tag{2}$$

Where K is a cosmological constant.

An ellipse looks like

$$\frac{S^2}{a^2} + \frac{T^2}{b^2} = K^2 \tag{3}$$

Where K, a, b are cosmological constants.

An ideal circle is a theoretical abstraction only. Practically we get ellipses in the Universe as most common shape. At the center of the Universe, the space – time is curved in with infinite derivative. The curvature of space – time and its derivative gets reduced with the increase of a, b in the ellipse. Thus, the further away from the center of the Universe, the lesser is the curvature of space – time and its derivative.

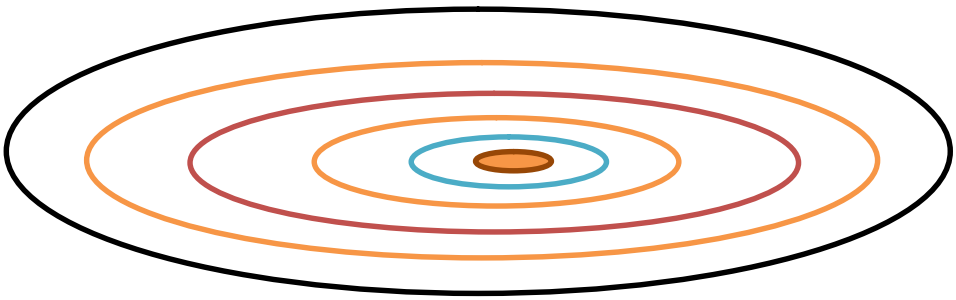

Fig 1.The Universe with a center with every loop is a boundary of the Universe

The figure one shows the elliptical shaped Universe with a center at the middle of the Universe. The loop (at the center) has huge mass concentrated into the center with infinite density. Because of enormous mass at the center, if we assume mass is the deformation of space – time, a huge space is concentrated into the center. The total amount of space times the total amount of time around a boundary of the universe is a constant.

Let's take, space is S , the physical time is T , then the Universe at any boundary

$$S_{Boundary} \times T_{Boundary} = Constant \quad (4)$$

Because at the center enormously huge space is trapped into a small volume $S_{Boundary}$ is tends to infinity, then $T_{Boundary}$tens to zero, but not zero. It means that time is very slow in the center of the Universe. As the Boundary gets bigger and bigger, time becomes faster and faster.That is why, distant galaxies moving faster than nearer galaxies because they are in outer boundary of the Universe. Because space is expanding, the Universe is getting more and more space, time becomes slower and slower for the Universe.

III. The Space – Time

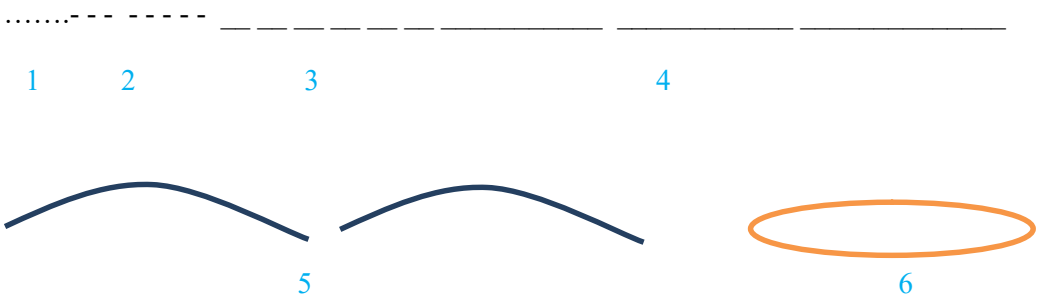

Fig 2.How space – time behaves at different ranges of time

The space – time is discrete and flat (1 – in figure 2) in the range of , say, billionth of seconds (very small range); the space – time is little more continuous (2 – in figure 2) in the range, say, millionth of a second;the space – time is further continuous and flat (3 – in figure 2) in the range of, say, micro – seconds; the space – time is further continuous and flat (4 – in figure 2) in the range of, say, seconds or minutes or hours, or days range; the space – time is continuous and curved (5 – in figure 2) in the range of, say, hundred or thousand years;the space – time is a loop (6 – in figure 2) in the range of, say, billion years. The observers like human beings are around the middle part of the measurement of time sees everything continuous and flat. Everything is continuous and flat for observers like human race.

III. Conclusion

Without any significant mass or energy, any free space is an absolute free space, although it is a theoretical abstraction only. Theoretically, a free space is called an absolute free space if it is devoid of any significant and effective mass or energy. The space – time is absolutely flat at absolute free space (a three dimensional space – time with two dimensional flat space and one dimensional time). The presence of significant mass or energy makes space – time curved in (a four dimensional space –

time with three dimensional space and one dimensional time).The physical time is discrete and flat for too low units of time (say billionth of a second), whereas, the physical time is continuous and curved in for too big units of time (say, billion years). An observer with average or moderate units of time (seconds or minutes or hours or days or years) sees everything continuous and flat (Human beings see everything continuous and flat with their eyes). The space – time can be curved in into a point for infinite mass concentrated into a point. Theoretically (without any experimental proof), it is the center of our universe. The total space times the total time around a boundary of the Universe is always a constant. The physical time is discrete or continuous is an observer dependent realism only. Some observers can prove that time is discrete and flat, some other observers can also prove that time is continuous and curved in. Apart from them, some other class of observers can prove that time is curved in into a point (say a loop) with infinite derivatives.

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