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A Most Probable Theoretical-Physical Model of the Universe

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Abstract: ***Only a theoretical-physical appropriate and accurate model can describe the properties and characteristics of the Universe. Proper mathematical and graphical representation of the Universe can reveal the behavior of our Universe. Observations and experiments are to confirm in all possible ways the proposed most probable accurate model. The physical time plays the key role to model the Universe, an accurate explanation of history always a key source of proposed accurate model. Psychologically it seems to us that there can be all possible histories but what already happened is actually the only way it can be happened, and thus due to causality, the history is one and unique. The history is not that what happened is most likely to happen, but it is rather what happened is the sole way it can happen only. Thus, the physical time plays key role to model the Universe with adequate accuracy. In this paper, a most probable theoretical model is proposed with mathematical and graphical representation. The total energy of the Universe is conserved with an assumption that matter is also a kind of energy. A condensed and compressed form of energy is matter. Where space-time curvature is so curved that the energy forms a loop and the loop vibrates to form a matter. The different elements have different vibrations with different natural frequencies. Example, the intense gravitational force of Black Holes produce particle and anti-particle pair, which are all energy trapped in a closed loop form. As we are made of particle, the physical time runs forward for us, we even cannot recognize the backward physical time movement of the physical time of an anti-particle, because we cannot recognize negative velocity, it seems to us that the anti-particle is moving with positive velocity is opposite direction.***

Keyword: The negative velocity, particle and anti-particle pair, the model of the Universe, closed loop, the conservation of energy.

1. Introduction

The theoretical model of the Universe need to be appropriate and accurate enough to represent the actual physical Universe we live in. The Universe is a dull, cold, dark place with microwave background radiation which will raise only temperature 2.7 degree centigrade above absolute zero (-273 degree centigrade) [1]. It is believed that this is the radiation that is left over from the hot early stage of the Universe [2]. The noticeable thing is that the radiation is nearly the same from every side of the Universe. The variation is so small that only one part in 100,000 which means that 99,999 parts out of 100,000, the microwave background radiation is same in every side. It implies that the Universe is very evenly smooth from every side at least on a macroscopic scale. Also, the background radiation is red shifted, which implies that the Universe is expanding [3]; for the more distant galaxies, the background radiation is more red shifted, which implies that the more distant galaxies moving away faster. Since the time of Copernicus, we have been demoted to a minor planet orbiting a very average star in an outer edge spiral of a typical spiral galaxy (with an average diameter of 100,000 to 120,000 light years) which is one of the hundred billion galaxies in the observable Universe [4, 5]. In fact, we become so modest that we no more claim any special position or significance in the Universe [6]. Why the Universe is expanding in a very critical rate just to avoid gravitational collapse [7]? The Universe is so fine tuned for its stability; we can resemble the Universe as on the knife edge [8]. Had it been in first one second the initial density is greater by one part of a thousand billion, the Universe would have collapsed again after 10 years [9, 10]. On the other hand, if it would be less than by the same amount, the Universe would be empty by 10 years or so. The collapse of the Universe is the most probable as one tenth of the critical density required to be collapsed again and we have ample of particle including dark matters are yet to be detected [11, 12]. The Universe is running with a shy less mass of the critical density required to avoid collapse again. Although it is believed that the Universe is growing in an inflationary manner [13], even if so, the inflation is always in a catching mode to the critical density required to be collapsed again. The Universe is growing in an inflationary manner, as from the Big Bang, the Universe has enormous debt in terms of negative energy which is none other than the gravity [14, 15]. The negative energy is in the sense that one has to do work to be escaped from it [16]. The proportional amount of positive energy creating matters which is never enough to catch up negative energy, but more matter does the chemistry in the gravitational force to slow down its rate of expansion; the Universe has slowed down to just shy above critical rate just to avoid collapse again. The Black holes plays the key role to swallow masses to release energy in terms of thermal radiation just to limit the matter formation below the critical density required to be collapsed again.

2. A Most Probable Theoretical Model of the Universe

The Black holes are natural oven in the mass-energy conversion process. Black holes swallow masses to release thermal energy in terms of radiation which is free to hover around the Universe. The black holes can radiate energy, as according to uncertainty principle, the masses that went inside the black holes should have well defined position, thus the theory allows highly uncertainty with the velocity that allows higher velocity than light possible for a short distance to be free from the black holes to release energy in terms of thermal radiation. The Universe is a natural oven in the mass-energy conversion process too. The positive energy is responsible to create mass [17], actually, the positive energy forms a loop in the condensed and compressed form with the energy hovering around the loop in one direction makes the energy to behave like a particle and the energy

hovering in the opposite direction produces anti-particle. The physical time, which is associated with the particle, is a fraction of the condensed and compressed energy which moves in the forward direction for particle due to hovering of energy in one direction, and the physical time runs backward due to hovering of energy around the loop in the opposite direction. The vibration of the compressed and condensed energy loop with different frequencies produce different elements. As an observer like us which made up of particle, never understand time reverse, thus never understand negative velocity. For example, if a particle is moving from D at time T to D' at time T', then the velocity V is positive with time in forward direction from T to T'

$$V = \frac{D - D'}{T - T'}$$

Where V is the positive velocity; for anti-particle, because the time reverses, the velocity V' is negative.

$$V' = \frac{D - D'}{-(T - T')}$$

As we are made up of particle, we never understand time reverse or negative velocity. The observer like us, always seems that the positions D and D' are interchanged to have positive velocity. Thus the observer like us, it seems to us that the anti-particle is a particle which moved from D' to D at time interval in the forward direction T to T', and for observer like us, the velocity is V'' which is positive to us.

$$V'' = \frac{D' - D}{T' - T}$$

Then if an anti-particle falls on the black hole, we will observe that it is coming out of the black hole. If a galaxy composed of anti-particle moving towards us, we will observe it is going away from us with the same speed but opposite direction. Thus, an observer like us, velocity is always positive, unless we build a machine to detect anti-particle and its negative velocity or rather time reverse effect. Another aspect of modeling the Universe is that the observed evidence show that, the more distant galaxies moving faster away from us, it is more like that because the observers like us perceive galaxies of way previous state when the Universe was expanding more rapidly; by no means we can perceive more distant galaxies in the present state of expansion rate. Thus, it is very feasible that we can assume that the Universe is expanding very evenly with time but slowing down gradually with time too as it is becoming more massive in an inflationary manner [18] and producing more masses to counter the debt of negative gravitation than producing energy in terms of thermal radiation by black holes by swallowing masses [19]. Another aspect in modeling the Universe is that the Universe is in a virtual nutshell, where the upward pull of the upper shell is exactly cancelled by the pull of the lower shell. Thus the Universe is not thrown over to infinity or not falling apart either. The pull in all the direction is so even that the Universe is smoothly expanding just the shy above the critical rate needed to avoid gravitational collapse again. As the Universe is slowing down to just above the critical rate, in the future, it will start contracting to the big crunch.

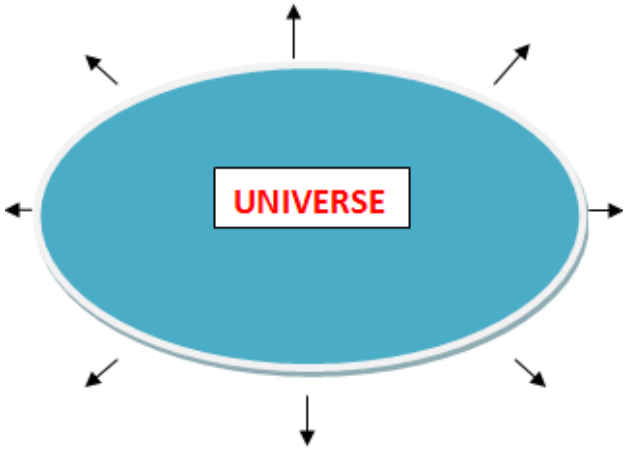

Figure: The Gravitational Pull is same in every side

The Universe would not expand if it would not have been Gig Bang. It is neither static, nor chaotic on a large scale, but very stable. During expanding phase, formation of masses greater than energy release, and during contracting phase energy release is greater than formation of masses, thus the total mass will decrease in the contracting phase until it come to a perfect point with zero mass and all positive energies hovering around until it trapped again by some reason. There need not be any singularity because there will hardly any mass left with of infinite density; all masses will be evaporated to the positive energy. For certain state of energy, it produced an infinite density mass in a point which eventually exploded which we termed as Big Bang [20, 21]. The infinite density mass formation and explosion was so fast that there was hardly any time for the Big Bang singularity. For some reason the energy trapped to a single point to have the Big Bang. If the sufficient energy trapped to form element, it must produce the simplest element possible, the hydrogen atom, and the reason why the early baby Universe was in abundance of hydrogen only. The Universe is expanding because of the domination of negative gravitational energy, the positive energy is doing chase to balance the negative gravitational energy, and the role of physical time is running forward with the expanding Universe [22]. Thus matter and the physical time paying the debt of negative gravitational energy. During the contracting phase, the positive energy will dominate, as masses will be converted to the positive energy, the negative gravitational energy will be gradually reduced as the masses will decrease, and the negative direction of the physical time will pay the deficit between the positive energy and the negative energy. As the deficit will increase in the contracting phase, the physical time will be faster to pay the deficit. As the Universe is highly massive at present state and is becoming more massive gradually, the physical time is getting slower and slower gradually in forward direction.

3. The Role of the Physical Time

The Physical time is nothing but an energy-particle duality, which in fact energy. The role of the physical time is to chase the deficit of the difference between the negative and

positive energy. It runs forward in positive direction [23] when the deficit is negative in expanding phase of the Universe and it will run backward when the deficit will be positive in the contracting phase. The rate at which the physical time runs is directly proportional to the magnitude of the deficit of the energy. Also the physical time in forward direction is directly proportional to the rate of mass production in the expansion of the Universe. In the contracting phase, the rate of mass decrease will be directly proportional to the physical time in reverse direction. As the Universe is getting more and more massive, its expansion slows down gradually, so as the physical time. If T is rate at which the Universal time is moving forward, and M is the rate mass formation of the universe, then,

$$T \propto M$$
$$T = KM$$

If Ep and En are the total positive and negative energy respectively at the present state, for the expanding Universe the deficit is positive.

$$\Delta E = En - Ep$$
$$T \propto \Delta E$$
$$T = K'\Delta E$$

We know that, $E = mc^2$, thus $\Delta E = Mc^2$

$$T = K'\Delta E = K'Mc^2 = KM$$

$K'c^2 = K$, Is the proportionality constant that relates rate of mass formation with the rate at which the physical time is moving in forward direction. The same relationship holds for contracting phase too. For contracting phase, if T' is rate at which the Universal time is moving backward, and M' is the rate mass diminishes in the universe, then,

$$T' \propto M'$$
$$T' = KM'$$

If Ep and En are the total positive and negative energy respectively at the present state, for the expanding Universe the deficit is positive.

$$\Delta E' = Ep - En$$
$$T' \propto \Delta E'$$
$$T' = K'\Delta E'$$

We know that, $E = mc^2$, thus $\Delta E' = M'c'^2$

$$T' = K'\Delta E' = K'M'c'^2 = KM'$$

$K'c'^2 = K$, Is the proportionality constant that relates rate of mass diminishes with the rate at which the physical time is moving backward direction and c' is the light velocity when time is in the backward direction, thus $c' = -c$. The observer like us will never understand the negative velocity or the time reversal.

4. Conclusion

There are different proposed models of the Universe. The first noticeable work, although wrong, was made by Aristotle, who believed that Earth was at the center of the Universe, and all planets, stars are moving around the Earth. First and reasonably good and accurate model was proposed by Sir Isaac Newton at 1687 published his Philosophiae Naturalis Principia Mathematica, probably the most important single handed work in the Physical Science. In it, Newton not only put forward a theory of how bodies move in space and time, but he also developed the complicated mathematics needed to analyze those motions. Einstein introduced a cosmological constant to put forward the Newtonian concept of static Universe which he later admitted as the greatest mistake of his life; without this cosmological constant, his mathematical equations suggested that the Universe is expanding, which he was not ready to accept it. Later in 1929, Edwin Hubble made a landmark in observation that wherever you look, the distant galaxies are rapidly moving away from us. In other words, the Universe is expanding. Since then, we are trying to unify the general theory of relativity with the Quantum Mechanics with other ingredients to develop the theory of everything that can describe all possible observations of the universe. In this paper, I tried to make a good reasonable model of the Universe and its most probable model. More evidence and observations are required for the validity of the model and to be regarded as a good model with remarkable accuracy. It must agree all possible observational evidence before any modification on this model.

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