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Time is Either Positive Evolution or Negative Evolution of Matter-Energy to Attain New State of Equilibrium or New State of Stability: The Rate of Change of States of Matter is Evolution and Hence, Time

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Abstract: ***Mass is a very important property of matter. The Higgs field is an energy field that exists everywhere in the Universe. The field is in existence because of a fundamental particle called the Higgs Boson. This field continuously interacts with the other particles to provide resistance to the other particles. The Higgs field interacts very very strongly with matter particles to provide strong resistance to the matter particles that provides the property of mass in the matter particles. The denser are the matter particles, the higher the interactions per unit area of matter particles with Higgs field, the higher the mass per unit area. Very dense particles like solid acts as if cumulative interactions of all particles with Higgs field are there to provide cumulative mass and develop own identity as individual matter of collective masses of all the particles associated with and its evaluation is its own measure of time. Without external force, every matter has its own measure of evolution, and hence its own measure of time. In this paper, I will show two types of evolution to measure time and will also show how rate of change of states of matter is the measure of evolution and hence, time.***

Keywords: Positive and Negative Evolution, The rate of change of States of Matter, Higgs Field, Higgs Boson Particle, Mass

1. Introduction and Theory

Theory 1: Without any external forces or disturbances, the rate of change of states of matter is evolution of matter which itself is its own the measure of time.

Theory 2: If a matter were at absolute rest, it would have infinite potential energy and thus, infinite mass. But no matter in practice is in absolute rest just to avoid infinity by nature. The kinetic energy produced from potential energy of the matter opposes the very cause of producing it just to limit the potential energy into a finite value and sustain the matter in motion to avoid absolute rest.

Theory 3: The total amount of mass and energy of the Universe is a constant which is conservation of mass-energy.

If a matter would be at absolute rest, it would have infinite potential energy [1, 2] and hence, it would have infinite mass but in practice, no matter has infinite potential energy because nothing is at absolute rest in the Universe. The Higgs field has a particular speed of rotation. The mass of a particle depends on the difference in speed of the matter particle and Higgs field. If the matter would be stationary at absolute rest, mass of it would be very very high or tends to infinity. The higher the velocity, the lower the difference in speed between the particle and Higgs field, the lower the mass of the particle. If the speed of the particle synchronizes with the Higgs field, the mass of the particle would be zero. Thus, mass is a relative quantity of a particle, and it depends on its own speed and the speed of the Higgs field. If the particle is at absolute rest, it would provide infinite mass and we know the particle at the speed of light also provides infinite mass too, thus, the speed of the Higgs field must be in around half of the speed of light, at that speed we can get massless property of a matter particle.

Speed of light (C) = 3, 00, 000 km/sec = 1, 86, 000 miles/sec [3, 4].

Speed of Higgs field ($\forall$) = $\frac{C}{2}$ = 1, 50, 000 km/sec =93, 000 miles/sec (approximately).

Suppose at a particular speed υ, the mass of a particle is m.

$$m \propto |\forall - \upsilon|$$
$$or, m = | k(\forall - \upsilon) |$$
$$But, \forall = \frac{C}{2}(approximately)$$
$$m \approx | k(\frac{C}{2} - \upsilon) |$$

When υ is zero, the maximum possible mass of a matter particle is,

$$m = | k\frac{C}{2} |$$

When υ is $\frac{C}{2}$, the mass is zero of a matter particle,

$$m = | k(\frac{C}{2} - \frac{C}{2}) |$$
$$or, m = 0$$

When υ is C, the matter particle again gains highest mass possible,

$$m = |k(\frac{C}{2} - C)|$$

$$or, m = |k\frac{C}{2}|$$

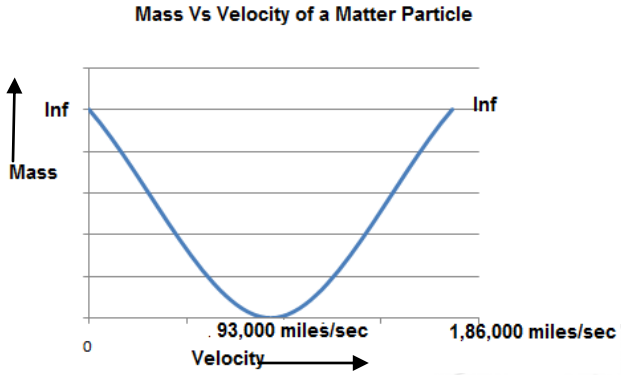

Figure: Mass versus velocity of a matter particle.

Any external force or disturbance can change speed of the matter particle, thus can change its mass too. Because the maximum allowable mass is fixed, that is why, the Universal speed limit of the Universe is a constant, the speed of light C (3, 00, 000 kilometer/second or 1, 86, 000 miles per second) [5, 6]. It also proves that photon is never a matter particle but a force carrying particle and it propagates only just like exchange of energy only.

2. Evolution of Matter and Time

The rate of change of states of matter is evolution [7, 8]. Every matter has its own evolution. Some evolutions are slow and some are fast on a comparative study with respect to the some reference frame. 70 years might be the complete life of human being and hence, complete evolution [9, 10]. On psychological point of view, life is composition of some positive evolutions and some negative evolutions. Positive evolutions are evolutions which give psychological advantages like becoming rich, growing good and stout health, getting married to a very honest and good person etc. These evolutions confirm higher states of stability at least on psychological ground. These 70 years of complete evolutions of human being is actually very insignificant for celestial bodies like Earth, Sun, Stars, and Moon etc. [11, 12]. Hence, every matter has its own measure of evolution which itself measure of its own time. We measure evolution of other bodies with respect to our evolution as reference frame; hence, we measure time of other bodies with respect to our time of reference. For matters, if evolution is slow, time runs slow of that body and for some matters, if evolution is fast, time runs fast for it, on a comparative study with our evolution reference frame. 7 days might be complete evolution for mosquito but very insignificant time for evolution of human being [13, 14]. The evolutions might be positive or negative or combination of both, we do averaging of all to conclude net positive or net negative evolution of life; hence, there are some lives where nothing going right for them, or some lives averaging zero gain or some lives with highly successful events. Matters do get into evolution to attain higher states of stability or equilibrium, but some evolutions are positive and some end up with negative evolutions. This is the reason why we try to attain higher states of stability or equilibrium at the time of an accident too (a very negative evolution). As evolution is a comparative study of matter, and as evolution is a measure of time of that matter, the physical time is not a physical property of matter, but a relative property of matter which states the state of matter with respect to our evolution reference frame. Thus, mass and the physical time are relative property of matter.

3. Higgs Field has a direction

We know that the Higgs field has a velocity approximately half of the speed of light. The Higgs field has also a direction because we know that all fields are nothing but vectors [15, 16]. Matter's velocity is such that to oppose the Higgs field, in other words, velocity of matter and associated Higgs field opposes each other [17, 18]. Because of the opposition of the Higgs field, it provides resistance to the matter which is nothing but the measure of the mass of the matter. Because of the opposition of the Higgs field, ordinary matters clump to form a collective unique identity. Thus, all particles that clump are matter particles and they have mass. Force carrying particles never have masses, thus they do not clump, hence Higgs field does not provide any resistance to the force carrying particles, in other words, Higgs field never opposes the force carrying particles. That is why they are massless. To attain the states of equilibrium or states of stability, Higgs fields have erratic motion in a local area of isolation of the Universe; that is why, celestial bodies have erratic motion in a local area of isolation. The total mass and energy of the Universe is a constant, but because Higgs field interacts with mass and energy differently, the mass and energy distribution in a local area of isolation is uneven, hence, masses move erratically in a local area of isolation of the Universe to attain states of equilibrium or states of stability. Obeying the Einstein Mass-Energy equivalence equation [19, 20] -

$$E = mC^2$$

The total amount of mass in the Universe is not a constant which contradicts the theory of conservation of mass [21, 22]; similarly, the total amount of energy is also not a constant which contradicts the conservation of energy [23, 24]. But the total mass-energy of the Universe is a constant which can be termed as conservation of mass-energy. One can be smoothly transformed into the other and vice versa.

4. Conservation of Momentum and Black Holes

Conservation of momentum is still valid with all possible experimental results. It states that the total amount of momentum of the universe is a constant.

$$Momentum = mass \times velocity$$ [25, 26]

It implies that the momentum of Black Holes is also a finite quantity. Because Black Holes tend to have infinite mass, they tend to have zero velocity. The velocity is tends to zero but not zero. Thus, black Holes have very low velocity which is not zero, in other words, Black Holes move.

Because of very very low velocity of Black Holes ($\upsilon \approx 0$), the difference in velocity with Higgs field is $\approx \frac{C}{2}$. Thus, Black Holes have highest possible mass per unit area.

$$m \approx | k \frac{C}{2} |$$

Thus, Higgs field provides highest possible resistance to the Black Holes and Black Holes have highest possible clump to have maximum possible mass per unit area.

5. Conclusion

The rate of change of states of matter is evolution which is also the measure of time. Every matter has its own measure of time. Both mass and time are relative property of matter with respect to our evolution frame of reference. The Higgs field has a fixed velocity which is roughly half of the speed of light. If a matter attains the velocity of Higgs field, its mass can be zero as at this speed, the total potential energy is equal to the total kinetic energy of the matter which opposes each other. If a matter is at absolute rest, it has infinite potential energy, thus would have infinite mass too. Because no matter is at absolute rest, the part of potential energy converted to kinetic energy to provide its speed. This kinetic energy opposes the potential energy of the matter to attain speed and to make potential energy to be finite quantity. Thus, kinetic energy produced from the potential energy opposes the very cause of it. Because nature hates infinite mass, no chance of getting a matter at absolute rest in practice. The mass-energy equivalence equation of Einstein disproves the theories of conservation of mass as well as conservation of energy. But conservation of momentum is still valid with all possible experimental results. Higgs field has also a direction with velocity which is a vector quantity. Because Higgs field is erratic to attain the state of equilibrium or state of stability, celestial bodies have erratic motions too. Because Higgs field interacts with matter particle and force carrying particle differently, matter particle has mass whereas force carrying particles do not have intrinsic mass, matter particles clump and force carrying particles never clump. Because Higgs field acts differently to matter particles and force carrying particles, there are uneven distribution of mass and energy in a local area of isolation of the Universe makes erratic motion of celestial bodies. On psychological point of view, evolutions have two divisions – positive evolution which is beneficial for us and negative evolutions which is bad for us because we urge for "good morning" and not for "bad morning". Negative evolution is part of life, nothing can be done if it is a "bad morning" although we urge for only "good morning". Because the evolution of a matter has its own shape, the physical time has a shape too. The physical time might not have a physical shape, but it certainly have a relative shape for a particular matter with respect of some frame of reference.

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References

[1] http://en.m.wikipedia.org/
[2] http://www.astronomy.ohio-state.edu/
[3] http://www.curious.astro.cornell.edu/
[4] Barrow, John D., Tipler, Frank J. "The Anthropic Cosmological Principle", Oxford University Press, ISBN 978-19-282147-8, LCCN 87028148, 1988.
[5] Cirkovic, M.M. "On The First Anthropic Argument in Astrobiology", Earth, Moon, and Planets. 91 (4):243-254, doi:10.1023 /A:1026266630823, 2002.
[6] Cirkovic, M.M. "The Anthropic Principle and the Duration of Cosmological Past", Astronomical and Astrophysical Transactions. 23(6): 567-597, 2004.
[7] Roger Penrose, "Cycles of Time", Vintage Books, London, pp. 50-56.
[8] Stephen Hawking, "A Briefer History of Time", Bantam Books, London, pp. 1-49.
[9] Stephen Hawking, "Black holes and Baby Universes and other essays", Bantam Press, London 2013, ISBN 978-0-553-40663-4
[10] Stephen Hawking, "The Grand Design", Bantam Books, London 2011
[11] Stephen Hawking, "A Brief History of Time", Bantam Books, London 2011, pp. 156-157. ISBN-978-0-553-10953-5
[12] Stephen Hawking, "The Universe in a Nutshell", Bantam Press, London 2013, pp. 58-61, 63, 82-85, 90-94, 99, 196. ISBN 0-553-80202-X
[13] Stephen Hawking, "The Beginning of Time", A Lecture.
[14] Stephen Hawking, "Stephen Hawking's Universe: Strange Stuff Explained", PBS site on imaginary time.
[15] Gerald D. Mahan, "Many-Particle Physics", Third Edition, Springer, 2000
[16] Uno Ingard, K "Fundamental of Waves & oscillations", Cambridge University Press. P. 38, ISBN-0-521-33957-XOxford: The British Academy, 1999
[17] A. Zee, "Quantum Field Theory in a Nutshell", Princeton University Press, 2003
[18] Storrs McCall, "A Model of the Universe", Oxford: Clarendon Press, 1994
[19] Craig Callender, "Time, Reality and Experience", Cambridge, UK: Cambridge University Press.
[20] Craig Callender, "Thermodynamic Asymmetry in Time", The Stanford Encyclopedia of Philosophy (Spring 2002 Edition)
[21] Storrs McCall, "A Model of the Universe", Oxford: Clarendon Press, 1994
[22] Robin Le Poidevin and Murray McBeath, "The Philosophy of Time" Oxford: Oxford University Press, 1993
[23] Whitrow, G., "The Natural Philosophy of Time". Oxford: Oxford University Press, 1961. (2nd edn., 1980.)

[24] Smart, J. J. C., "Problems of Space and Time". London: Macmillan, 1964
[25] Stephen Hawking, "A stubbornly persistent illusion-The essential scientific works of Albert Einstein", Running Press Book Publishers, Philadelphia, London 2011.
[26] William L.Craig, "Time and the Metaphysics of Relativity", Dordrecht: Kluwer Academic Publisher, 2001

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