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## Atomic Genetics and Origin of the Universe- Volume-2

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### Abstract

In new model of the universe made by participatory science , it has been established that with the creation of hydrogen and cold dark matter , nature did not create ether . This has been further confirmed in Michelson Morley experiment in 1887 , as no shift in the fringes were found [1]. This is positive result i.e. absence of ether in the universe. It does mean that structure of the wave theory of light and the theory of electromagnetic phenomenon will have to be modified. It means photon is neither wave nor electromagnetic in nature. Light does not have dual nature. Similarly matter particles like electrons etc. do not have dual nature. It was assumed that ether is there but this experiment had failed to detect it making it a negative result which is a wrong inference . Hence Einstein took wrong inferences of this observation i.e. no shift in the fringes found in experiment and he postulated theory of relativity on the assumption that velocity of light is constant in free space and there is no absolute rest as a frame of reference . Einstein also made velocity of light as universal constant . In new model of the universe, it has been shown that there are particles moving more than velocity of light beyond 4239 Mpc. These particles are tachyons and their velocity is 305224-km/sec and there is stationary ( absolute rest ) frame of reference i.e. center of universe. This abolishes foundation of theory of relativity and its two assumptions . While explaining bending of starlight ,electron motion in CRO and radar test by participatory science , it has been found that photon has mass ( new inference of bending of star light ) , it is energy mass that is added while increasing velocity of electrons in CRO and electron's rest mass remains the same. Impure matter mass (electron's inertial mass) and pure energy mass (energy inertial mass) are separate and absolute and they are not inter convertible. So  $E=mc^2$  is fictitious equation ( new inferences of electron's motion in CRO ) .Finally that velocity of light is not constant in free space. ( new inference of Radar test).

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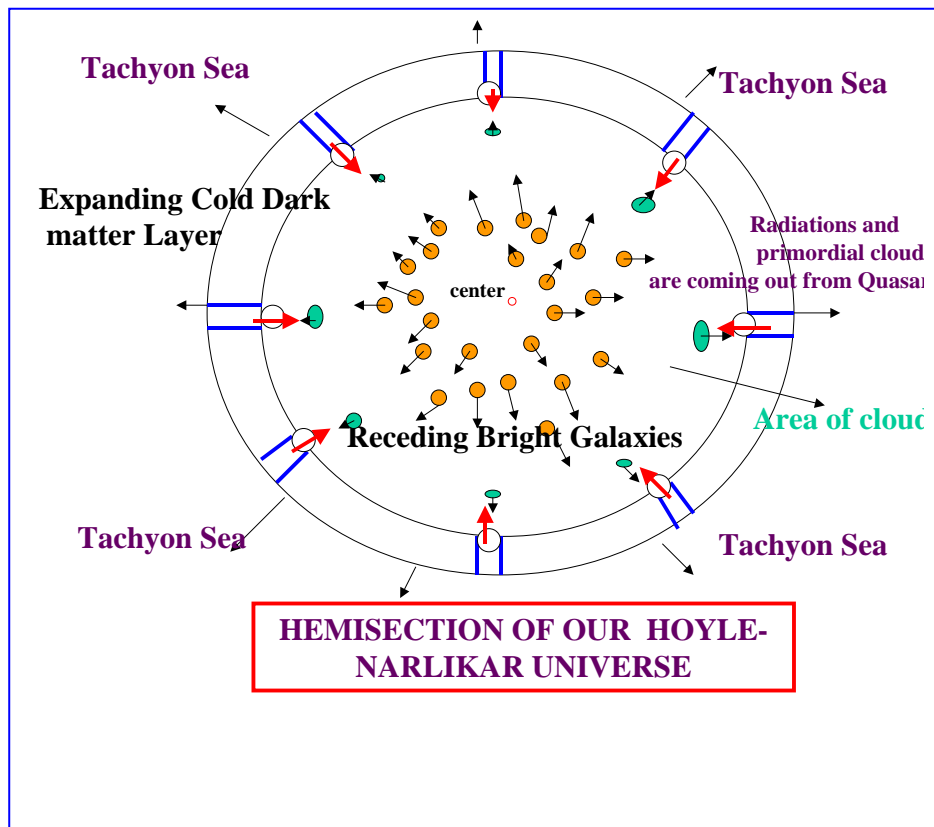
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**Key words:** Michelson Morley experiment, Universal constant, Tachyons, Theory of relativity, Bending of star light, Radar test.

### 1.Introduction

Wave particle duality of light and matter has been modified with introduction to absence of ether in the universe. In new model of the universe made by participatory science figure 1, it has been found that with the creation of hydrogen and cold dark matter, creation of ether has been observed. This has been confirmed by Michelson Morley experiment. It has been observed that tachyon exists in invisible universe beyond 4239 Mpc having velocity 305224k m/sec. Further, postulations of theory of relativity have been abolished and it has been confirmed that mass, length are absolute and there exists no mass energy conversion relationship as electron inertial mass remains the same and it is energy mass that is added to increase the velocity of electron in CRO. Mass less property of photon has been modified and now photon has mass and it is Newton's law of gravitation that causes bending of star light near massive body rather than space time curvature. In the last but not the least, it has been found that velocity of light is not constant in free space in radar test but Einstein thought that it is constant which is due to taking wrong inference of Michelson Morley experiment.



(Figure 1 - New model of the universe made by participatory science)



Table 2, Michelson Morley experiment.---[1]

Procedure	Observations	Inferences
<p>Michelson Morley experiment.</p>	<p>Careful observations showed that there was no shift in the fringes.</p> <p style="text-align: center;"><b>Negative result</b></p> <p>means ether is there but they have failed to detect it.</p> <p>So, the greatest experiment in the history of Physics had failed.....[1]</p>	<p>The negative result of the Michelson Morley experiment can be explained by following three explanations.</p> <ol style="list-style-type: none"> <li>1. This negative result suggests that it is impossible to measure the speed of the earth relative to ether. Therefore, the effects of ether are undetectable. Thus, all attempts to make ether as a fixed frame of reference failed.                     <p style="margin-left: 40px;">The earth dragged along with it the ether in its immediate neighborhood. Thus there was no relative motion between the earth and ether. This is the explanation proposed by Michelson himself.</p> </li> <li>2. Fitzgerald Lorentz contraction hypothesis. This contraction hypothesis easily explains why the Michelson Morley experiment gave the negative result.</li> <li>3. The proper explanation for the negative result of the Michelson Morley experiment was given by Einstein. He concluded that the velocity of light in space is a universal constant. This statement is called the principle of constancy of the speed of light. The speed of light is <math>c</math> rather than <math>(C+V)</math> in any frame.....[2]</li> </ol>

1. The first postulate is that the ether cannot be detected. Hence he said that it was impossible by any means to demonstrate ‘absolute motion’ motion in respect of the ether and absolute position. To speak of absolute motion is meaningless. Only the motion of bodies relative to one another had any physical meaning. In the other words, there is no absolute motion according to Einstein, and it is impossible to detect the motion of one system of reference with respect to another system. This is Einstein’s principle. Principle of Relativity. Einstein’s special theory of relativity does not use the concept of ether, although it does not reject its existence. It simply says ether cannot be detected.

2. The result cannot be apparently reconciled and we are, therefore, forced to concluded that the velocity of light has the same value no matter how and in what system the interferometer moves. This was Einstein’s second postulate, the law constancy of velocity of light i.e. The speed of light is the same in all directions, no matter whether the source of light is moving or stationery, or whether the velocity of light is measured relatively to the medium in which it travels relatively to a moving observer. Also its value at one place is the same as at any other place in the universe and it is the **greatest velocity obtainable**. This is the fundamental assumption of the theory of relativity. It does away with need of an ether .....[3]

According to new model of the universe (figure 1), there is no creation of ether along with creation of hydrogen and cold dark matter layer from tachyons. So, there is no ether present in the whole visible as well as in invisible universe. This inference of participatory science modifies the inferences of Michel son Morley experiment.

Table 3, Modified Inferences of Michelson Morley Experiment

Procedure	Observation	Inferences
Michel son Morley experiment	There is no shift in the fringes.--[1]  This is <b>Positive</b> result and this is the greatest success in the history of Physics that there was no shift in the fringes.	There is no ether.  or  Absence of ether.

So, all explanations explaining the **Negative** result (ether is there but it had failed to detect it) are fictitious including Einstein’ view as regard to constancy of velocity of light. This Michel son Morley experiment does not confirm constancy of velocity of light rather it confirms absence of ether in whole cosmos. As far as principle of constancy of velocity of light is concerned, it would be realized to learned reader that it is not constant in free space and it is a separate discussion and it is being discussed while giving modified explanation of **Radar Test**.

Now, the second postulate of the theory of relativity i.e. constancy of velocity of light is without any observation or it is now not being supported by any experiment. As far as first postulate is concerned, it is also fictitious. Firstly, according to new model of the universe, there is a point called center of the universe, which is

at absolute rest and it is unique frame of references. No doubt universe is filled with motions but it does not mean that concept of absolute rest is meaningless. As we cannot measure other motions with respect to center of the universe, due to limitation of measuring technique, that is why we can discuss at present relative motion. Secondly, there is no ether and it has been confirmed by Michel son Morley experiment.

Having equipped with new information's, we conclude more modified inferences which are related with absence of ether. Before that, I would like to acquaint you about the knowledge as far as *Nature of Light* is concerned . This would help the learned reader to review their memory.

### **Evolution of Theories of Light**

**1. Maxwell's electromagnetic theory of light:**-To explain electrical and magnetic action a distance from a source, Faraday had postulated the existence of Polarizable particles, called 'ether molecules', which are transformed into electrical and magnetic dipoles. *It was this state polarization of the ether particles which constituted electrical and magnetic field.* Thus according to him, the condition of the ether at a point is affected by the existence of an electrical and magnetic field.

Maxwell said that if such a medium as postulated by Faraday actually exists, it must be possible to produce in this medium displacement current and periodic vibrations of electrical and magnetic field intensities which have all characteristics of waves. He was able to show, in 1846 by means of equations that if such waves exist, they travel through this medium with the speed which should numerically be equal to the number of electrostatic units of electricity in one electromagnetic unit of the same.

Now light waves travel as a wave motion in the same medium. Thus, if the properties of the medium in which electromagnetic action takes place are the same as those of the luminiferous medium or the medium through which light wave travel, we may conclude that light and electromagnetic phenomena are identical. The identity of the velocity of electromagnetic waves with of lights suggested to Maxwell that light itself is an electromagnetic wave motion. Maxwell's equations also show that an electromagnetic disturbance travels as transverse waves as in the case of light.

We thus find that, James Maxwell's mathematical analysis of Faraday's experiments on electromagnetic induction, led the former to conclude that there was a definite connection between light and electricity and he predicted the existence of electromagnetic waves having the properties of light waves. He established, by means of mathematical equations, that we may regard light as a transverse electromagnetic wave of extremely small wavelength with the electrical and magnetic field intensities E and H respectively as mutually perpendicular to each other as shown in (figure 2). In other words a source of light produces lines of forces which spread out or are radiated through space, and **the ether is thought of as a region with certain electrical properties of a dielectric constant and a magnetic permeability.** According to Maxwell an unpolarised beam of light is a beam in which the electrical and magnetic fields are rotating rapidly around the direction of propagation of the beam. A plan-polarized beam is one in which the planes of electrical and magnetic field are fixed perpendicular to each other.

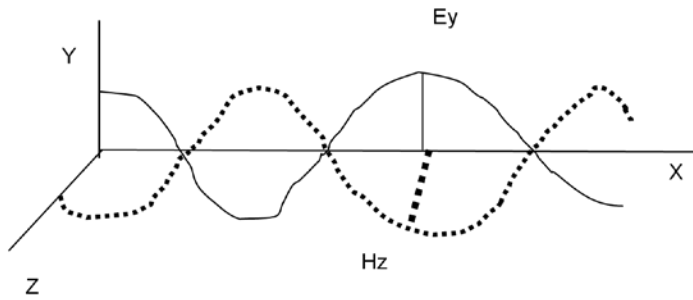


figure.2 light as a transverse electromagnetic wave of extremely small wavelength with the electrical and magnetic field intensities E and H respectively as mutually perpendicular to each other

**2) The Photon or Quantum theory: Wave mechanics**

In 1905 Einstein extended Planck’s quantum theory and said that the energy in a light beam, instead of being distributed through space in the electrical and magnetic fields of an electromagnetic wave, was concentrated in a small packets or photons. The energy of a photon is given by  $E=hc/ \lambda = h\nu$ . Thus photon was considered to have a frequency and the energy of the photon was proportional to its frequency. *Thus the wave nature of photon was still retained.* These photons propagated like particles, and the photoelectric effect consisted in the transfer of energy from a photon to an electron. The Compton effect and Raman effect are striking confirmations of the photon nature of light. Compton and Raman succeeded in determining the motion of a photon and a single electron, before and after collection, and found that *they behave like material bodies having kinetic energy and momentum.*

We thus find those on the one hand stand all the phenomena of interference, diffraction and polarization, which are so well explained on the wave theory. On the other hand modern experiments, extending over a long range are readily explained in terms of photons. *The electromagnetic theory, therefore, has no place for the photons and the photon theory has no place for the wave theory. But the quantum or photon theory is not the last word. Both the theories, however, point to the conclusion that matter is made of electrons and photons, and although these are considered to be corpuscular in nature, they may be behaving like waves under certain circumstances.*

In 1925 Louis De Broglie, suggested that a photon may be considered as a particle, and that a particle might have associated with it a wave. He postulated such a wave for an electron. To show that the moving electrons behave as waves, De Broglie and Schrodinger have worked out a new form of mechanics, called wave mechanics. The essential point in the new wave mechanics is that particles of matter also possess wave like properties. A particle of mass m and velocity v has associated with it waves which have a wavelength given by

$$\lambda = h / mv-----(23.1)$$

or a frequency =  $mv^2/h$ ,

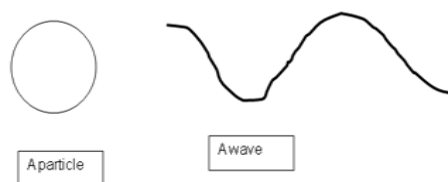
where  $h$  is planck's constant,  $m$  is not the rest mass  $m_0$ , but a mass proper to the velocity of the particle, given by Einstein's theory of relativity in which  $m = m_0 / \sqrt{1 - v^2/c^2}$

where  $c$  is the velocity of light. Equation  $\lambda = h/mv$  is the De Broglie equation. Thus an electron in a motion is considered a wave extending in a circle around the nucleus. Equation also shows that the faster an electron moves the smaller is the wavelength associated with it. Similarly the energy of photon of a frequency  $\nu$  is  $E = h\nu$  or  $hc/\lambda$

Where  $c$  is the velocity of light photon, and  $\lambda$  is the wavelength. Since a photon is a packet of energy, we must have by Einstein's mass energy equivalence equation.  $hc/\lambda = mc^2$

The theory of reflection of X ray from the surface of crystals is based on the wave theory of radiation. Davison and Germer have shown that streams of electrons striking a crystal are diffracted in the same manner as light waves. Similarly the phenomenon of diffraction of electrons from the layer of is similar to that of diffraction of X ray from those layer. Thus the free electrons are endowed with wave properties. There is also evidence to show that a moving proton is also associated with a wave. Hence, according to new wave mechanics, *we concluded that there is no ultimate particle of matter, and everything is reducible to wave motion.* Wave mechanics sees the electron not as a point mass but as a **standing wave**. As to what these waves are and how they are created, remains yet to be solved.....[4].

At the atomic level, matter has dual aspects; it appears as particles and as waves. Which aspect it shows depends on the situations. In some situations the particle aspect is dominant, in others the particles behave more like waves; and light and all other electromagnetic radiation also exhibited this dual nature. Light, for example is emitted and absorbed in the form of quanta, or photons, but when these particles of light travel through space they appear as vibrating electrical and magnetic fields which show all the characteristic behavior of waves. Electrons are normally considered to be particles, and yet when a beam of these particles is sent through a small slit, it is diffracted just like a beam of light in the other word electrons, too, behave like waves.



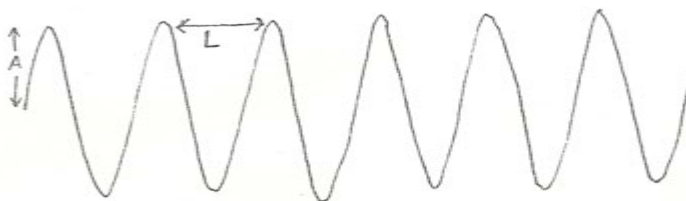
( figure 3 The picture of a wave, which is always spread out in the space is fundamentally different from the particle picture)



The picture of a wave, which is always spread out in the space is fundamentally different from the particle picture, which implies a sharp location. Looking at the two pictures ( figure 3), a lay person might be tempted to think that the contradiction can be resolved by saying that the picture on right hand side simply represents a *particle moving in a wave pattern*. Particles moving in wave patterns do not exist in nature. In water wave, for example, the water particles do not move along with the wave but in circles as the wave passes by. Similarly, the air particles in a sound wave merely oscillate back and forth, but do not propagate along with the wave. *What is transported along the wave is the disturbance causing the wave phenomenon, but not any material particle.*

In quantum theory, these forms are used again to describe the waves associated with particles. This time however, the waves are much *more abstract*. They are closely related to the statistical nature of quantum theory, i.e. to the fact that atomic phenomena can only be described in terms of *probabilities*. The waves associated with particles, however, are not 'real' three dimensional waves, like water waves or sound waves, but are *probability waves*; abstract mathematical quantities which are related to the probabilities of finding the particles in various places and with various properties. To see how one can switch back and forth between the particle picture and the wave picture in atomic physics, let us examine the concepts of waves and particles in more detail. *A wave is a vibrational pattern in space and time*. We can look at it at a definite instant of time and will then see a periodic pattern in space, as in the following example. The pattern is characterized by amplitude  $A$ , the extension of vibration, and a wavelength  $L$ , the distance between two successive crests ( figure 4).

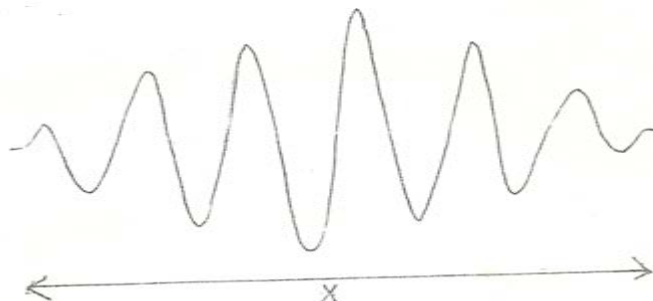
Alternatively, we can look at the motion of a definite point of the wave and will then see an oscillation characterized by a certain frequency, the number of times the point oscillates back and forth every second. Now let us turn to the particle picture. According to classical ideas, a particle has a well-defined position at any time, and its state of motion can be described in terms of its velocity and its energy of motion. Particles moving with a high velocity also have a high energy. Physicists, in fact, hardly use 'velocity' to describe the particle's state of motion, but rather use a quantity called 'momentum' which is defined as the particle's mass times its velocity.



(figure – 4 -The pattern is characterized by amplitude  $A$ , the extension of vibration, and a wavelength  $L$ , the distance between two successive crests)

A wave, which is spread out like the one in our example does not tell us much about the position of the corresponding particle. It can be found anywhere along the wave with the same likelihood. Very often, however, we deal with situations where the particle's position is known to some extent, as for example in the description

of an electron in an atom. In such a case, the probabilities of finding the particle in various places must be confined to a certain region. Outside this region they must be zero this can be achieved by a wave pattern like the one in the following diagram, which corresponds to a particle confined to the region X. Such a pattern is called *wave packet* (figure 5).



(figure – 5 A wave pattern like the one in the following diagram, which corresponds to a particle confined to the region X. Such a pattern is called *wave packet* )

a wave packet corresponding to a particle located somewhere in the region X

It is composed of several wave trains with various wavelengths which interfere with each other destructively outside the region X, so that the total amplitude and thus the probability of finding the particle there is zero, whereas they build up the pattern inside X. This pattern shows that the particle is located somewhere inside the region X, but it does not allow us to localize it any further. For points inside the region we can only give the probabilities for the presence of the particle. (The particle is most likely to be present in the centre where the probability amplitudes are large, and less likely near the ends of the wave packet where the amplitudes are small.) The length of the wave packet represents therefore the *uncertainty* in the location of the particle.

The important property of such a wave packet now is that it has *no definite* wavelength, i.e. the distances between two successive crests are not equal throughout the pattern. There is a spread in wavelength the amount of which depends on the length of the wave packet; the shorter the wave packet, the larger the spread in wavelength. This has nothing to do with quantum theory, but simply follows from the properties of waves. *Wave packet does not have a definite wavelength.* Quantum theory comes into play when we associate the wavelength with the momentum of the corresponding particle. If the wave packet does not have a well-defined wavelength, the particle does not have well momentum. This means that there is not only an uncertainty in the particle's position, corresponding to the length of the wave packet, but also an uncertainty in its momentum, caused by the spread in wavelength. The two uncertainties are interrelated, because the spread in wavelength (i.e. the uncertainty of momentum) depends on the length of wave packet (i.e. on uncertainty of position). If we want to localize the particle more precisely, that is, if we want to confine its wave packet to a smaller region, this will result in an increase in the spread in wavelength and thus increase in the uncertainty of the particle's momentum.

The precise mathematical form of this relation between the uncertainties of position and momentum of a particle is known as Heisenberg’s uncertainty relation, or uncertainty principle. It means that, in the subatomic world, we can never know both the position and momentum of a particle with great accuracy. This limitation is not caused by the imperfection of our measuring techniques, but is a limitation of principle. The fundamental importance of the uncertainty principle is that it expresses the limitations of our classical concepts in a precise mathematical form. *As described previously, the subatomic world appears as a web of relations between the various parts of a unified whole.* Our classical notions, derived from our ordinary macroscopic experience, are fully adequate to describe this world. *To begin with, the concept of a distinct physical entity, like a particle, is an idealization which has no fundamental significance.* It can only be defined in terms of its connections to the whole, and these connections are of a statistical nature probabilities rather than certainties.

For better understanding of this relation between pairs of classical concepts, Niels Bohr has introduced the *notion of complementarity*. He considered the particle picture and the wave picture as two complementary descriptions of the same reality, each of them being only partly correct and having a limited range of application. Each picture is needed to give a full description of the atomic reality, and both are to be applied within the limitations given by uncertainty principle.....[5]

Having equipped with views as regard to evolution of the theories of light, participatory science concludes some more inferences, which are related with the absence of ether.

Table 4, Michelson Morley experiment.

Procedure	Observations	Modified Inferences
Michelson Morley experiment.	No shift in the fringes --- [1]i.e. <i>positive result.</i>	1. Absence of ether in the universe. 2. It does mean that structure of the wave theory of light and the theory of electromagnetic phenomenon will have to be modified.....[6] 3. It means photon is neither wave nor electromagnetic in nature.  or  Light does not have dual nature. Similarly matter particles like electrons etc. do not have dual nature.

**Modification in concept of Media: The Ether Hypothesis :**

A material medium is a necessity for the propagation of waves. It was considered that light propagates through ether as sound waves propagate through air. Ether pervades all space. An interesting question is whether relative motion between the earth and ether can be detected, if such a motion can be detected, we can choose a fixed frame of reference in a stationary ether.....[7]

**A search for Ether:**

So, far we have seen that the structure of the propagation of light (whether in form of waves or as particles or photons), is based on the existence of ether endowed with continuity, elasticity and density. The fact that light travels freely through transparent bodies, and that other forms of electromagnetic waves are able to penetrate all material bodies, compel us to assume that the atoms of bodies are embedded in ether.....[8]

To summaries the result of Special Theory of relativity, we find that:

1.It is impossible for an observer to detect ether or its absolute motion in space.....[9]

Why did Einstein say that we couldn't detect ether? It means concept of media was not clear to modern physicists of that time Having equipped with views as regard to concept of media, participatory science modifies it.

**Concept of media by participatory science:**

In water waves, the waves move in the media (water) which can be detected. Similarly, in sound waves, the waves (longitudinal waves) move in the media (air), which can be detected. It means, media should have following properties.

*It has to be matter media and there is no difficulty in detecting it.*

Such type of solid elastic media was postulated for light also because transverse waves can only travel in solid elastic media. If experiment (Michelson Morley) cannot detect such media, it means media does not exist. To say, that, it is impossible to detect ether is to play a foul game and to misguide the conscious of other scientists [1]. Simultaneously, he gave wrong inference of Michelson Morley experiment making principle of constancy of velocity of light. Now the questions are: 1.What is water wave and how does it propagate in media? 2.What is sound wave and how does it propagate in media? 3.What is photon and how does it move without media? How does photon give phenomena of interference, diffraction, polarization, photoelectric effect, and Compton effect etc? 4What is matter like electron, proton etc & how do they interact? All these questions shall be answered after knowing the search and properties of *basic building blocks* (B. B. BS.) of the universe, which is also the main part of my *original* work and it would be explained in *creation physics*.

At the end of this section and as a conclusion we can summarize the following:

1. According to the new model of the universe (figure 1) made by participatory science, there is no creation of ether (matter media), along with creation of hydrogen and cold dark matter. There is also a unique stationary frame of reference, which is centre of the universe.

2. According to modern physics, it is being presumed that there is existence of ether in whole cosmos which experiment like Michelson Morley had failed to detect it and that is why they have called *negative result* when no shift in the fringes were observed. Einstein concluded that the negative result is due to Principle of Constancy of velocity of light and on this basis he postulated two postulations of the theory of relativity i.e.

a. Ether cannot be detected that is why absolute rest is meaningless.

b. Velocity of light is constant in free space. ---[1]

But participatory science has corrected the inferences of Michelson Morley experiment realizing that no shift in the fringes is *positive result* means absence of ether in the whole universe and further this experiment does not confirm constancy of velocity of light rather it confirms no ether in the universe.

3. According to modern physics, light and other radiations are electromagnetic waves. The electrical and magnetic properties of light is due to existence of polar sable particles called ether molecules, which are transformed into electrical and magnetic dipoles. It was this state of polarization of the ether particles which constituted electrical and magnetic field. But participatory science has proved absence of ether in the whole cosmos by modifying the inferences of Michelson Morley experiment. It does mean that structure of wave theory of light and theory of electromagnetic phenomenon will have to be modified. The modification is *photon is neither wave nor electromagnetic in nature or light does not have dual nature*. Similarly matter particles like electrons etc do not have dual nature.

4. We shall discuss again as regard to nature of light and other matter particles and their interactions after knowing the search and properties of *basic building blocks* of the universe, which would be explained in *creation physics*.

## 2.2 Modification in concept of universal constant

According to modern physics, it is believed that light is the fastest moving particle. Einstein has established a theory of relativity in which he regarded the speed of light as limiting velocity of the universe. Nothing could move faster than it. The theory also took the speed of light and all electromagnetic radiations to be constant.

Can anything travel faster than light? The equation used in relativity say 'no' because a body mass becomes infinitely great and its length zero

$$m = m_0 / \sqrt{1 - v^2/c^2} \text{ ----(1.2.1)}$$

$$m = m_0 / \sqrt{1 - c^2/c^2} \text{ ----(1.2.2)}$$

$$m = m_0 / \sqrt{0}$$

$$m = \alpha \text{ ----(1.2.3)}$$

$$l = l_0 \sqrt{1 - v^2/c^2} \text{ ----(1.2.4)}$$

$$l = l_0 \sqrt{1 - 1} \text{ ----(1.2.5)}$$

$$l = 0 \text{ ----(1.2.6)}$$

No one, however, has actually observed tachyons. During my studies of origin of the universe, I have realized that there is (in invisible universe) something present beyond 4239 Mpc which is having velocity 305224-km/sec. Revising literature, I found that these are tachyons which move more than velocity of light. After further study, I realized that their velocity is *constant* there, as it is not being influenced by any natural force. So, I concluded this velocity is actually a constant velocity rather than velocity of light. The basis of Principle of Constancy of light is due wrong inferences of Michelson Morley experiment. Further, I would realize you that velocity of light is not constant in free space (please see modified inferences of Radar test).

Now, participatory science has coined a new *Universal Constant* i.e. velocity of tachyon particle which is 305224-km/sec. It is new constant called constant—P. Now, putting new constant P instead of velocity of light in equations of theory of relativity. According to modified equations, what would be the mass of photon when it moves with velocity of light—

$$m = m_0 / \sqrt{1 - c^2/P^2} \quad (\wedge \text{ means to the power of}) \text{ ----(1.2.7)}$$

$$m = m_0 / \sqrt{1 - 3^2/3.05^2}$$

$$m = m_0 / \sqrt{1 - 9/9.3025}$$

$$m = m_0 / \sqrt{1 - .9674} \text{ ----(1.2.8)}$$

$$m = m_0 / \sqrt{.0326} = m_0 / .1805 = 5.540 \text{ ----(1.2.9)}$$

**INFERENCES:**

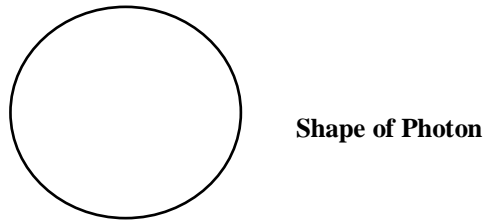
Inferences that participatory science concludes from above modifications are— 1.The equation is fictitious and the theory of relativity is wrong. 2.Indication of rest mass of photon is illusion but indication of inertial mass is true.3.It is an illusion that photon mass increases with velocity (electron’s motion would be discussed explaining why its mass increases with velocity in CRO). 4.It is true that photon has got inertial mass. What so ever may be, but it is too small to detect at present. 5.There is no value of rest mass as far as energy particle is concerned because it is never at rest. According to modern physics, photon is mass less (having no inertial mass) particle. But modified equation of theory of relativity predicts that photon has inertial mass (moving mass) what so ever may be. But it is too small to detect at present.

**Concept of mass and mass less and different type of mass nomenclature in physics**

**Concept of Mass less:-** According to participatory science, mass less (having no inertial mass) is a hypothetical concept, which means nothing.

**Concept of Mass :-** According to participatory science, mass (inertial mass) is defined as the part, which gives shape to the nature, is called mass. For example- shape of particles, shape of atoms, shape of molecules, shape of living and nonliving matter, shape of earth, solar system, stars, planets and galaxies etc.

**Modified Concept of Matter:-** (This definition of matter is different from definition of m (matter) of  $E=mc^2$ ). Matter is defined by participatory science as mixture of fermions and bosons (like leptons and quarks or baryons and mesons etc.) or only bosons (like photons, gluons and vector bosons and Higgs bosons etc.) which are made up of mass (inertial mass). That is why we realize their shape (particle shape), is called matter. According to modern physics, photon is a mass less particle. But participatory science would confirm by observation and realization that photon has got inertial mass or it is a *concrete object* in next chapter. In the other words photons occupies space. As shown in (figure -6).



( figure. – 6 ,photon has got inertial mass or it is a *concrete object*)

Participatory science has coined some new words and there are some words which already exist in physics. Both these words are defined here and the definitions are according to participatory science. It has no relation with the definitions given in modern physics.

**1.Mass** -The part which gives shape to the smallest mass unit i.e. basics building blocks (B. B. Bs.) is called mass.

**2.Matter :-**Mixture of fermions and bosons or only bosons which are made up of mass (B.B.Bs) and that is why we realize their shape is called matter.

**3.Inertial mass :-**Mass (smallest mass units i.e. B. B. Bs) having inertial properties (classical inertia) either absolute rest or uniform motion in straight line is called inertial mass. Or Number of B. B. Bs. Per unit space present in bigger units is called inertial mass. Or. Total matter contained by the bigger units or total number of fermions and bosons contained by the bigger units is called inertial mass. Therefore it never changes from place to place.

**4.Gravitational mass :-** The mass (interacting surfaces) which takes part in gravity (divine energized gravitons theory) interaction ( which is due to mind ) is called gravitational mass. When gravity interaction increases (number of divine energized gravitons increases) the interacting mass (interacting surface) also increases or

when interacting mass (interacting surfaces) increases, gravity interaction (number of divine energized gravitons ) also increases. Therefore gravitational mass (interacting mass or surfaces) changes from place to place. It is the fed mind that decides gravity interaction. We shall discuss it in gravity chapter and in atomic genetics.

**5.Pure m (matter) mass :-** matter mass (smallest mass unit or B.B.B) which have got inertial property of absolute rest.

**6.Energy mass:-**Energy mass (smallest energy mass unit B.B.B) which have got inertial property of uniform motion in straight line and which also gives shape to the bigger energy mass ( Higgs Bosons etc ) units.

**7.m (impure matter ) of  $E=mc^2$  :-** Matter particles (fermions) which have got spin property are called impure matter particles.

### 2.3 New inferences of Bending of starlight

Having equipped with modified concept of mass and matter, we shall realize by observation that photon has got inertial mass. With Einstein's idea that the gravity is the result of bending of space time around a massive body. It is a universe of Riemannian construction in which gravity is seen as a distortion of space-time rather as a property of matter.....[10] Relativity theory tells us that gravitation is a curvature of space-time. But is it really so? Does space curve , do we live in a Riemannian universe?.....[11]

Now the participatory science would explain the truth. The truth is that which does not contradict our common sense.

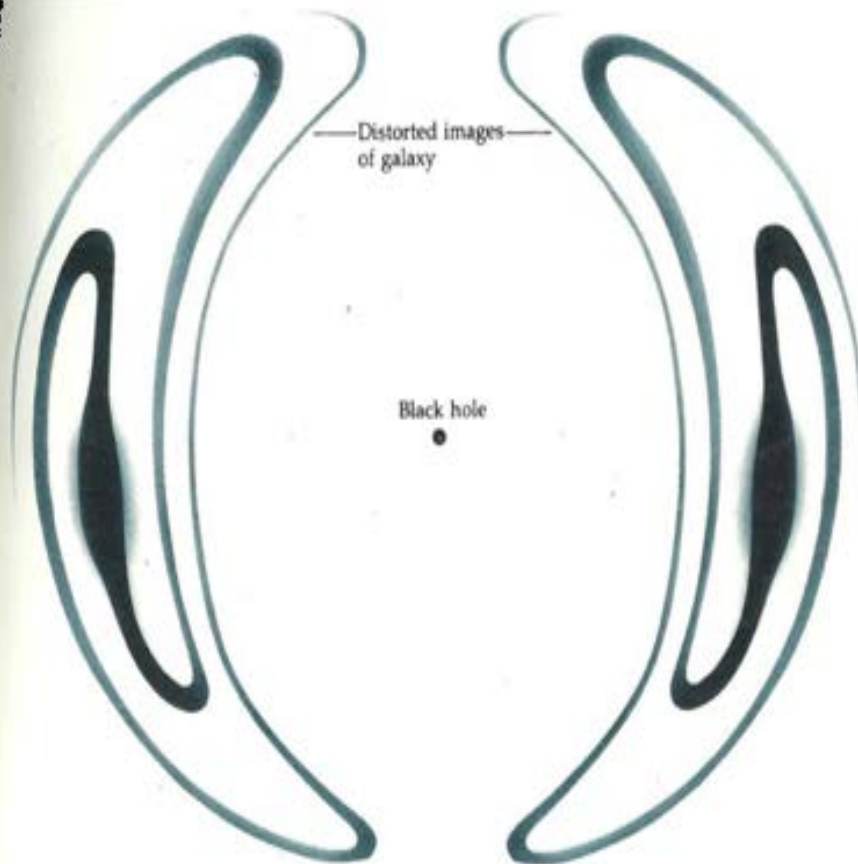
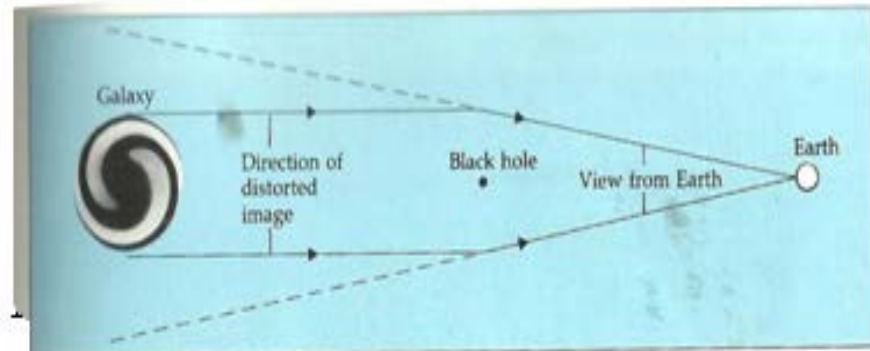
**Modification in concept of space - Riemannian Geometry and Euclidean Geometry:** Looking at the new model of the universe figure 1, we realize that we live in a closed sphere which is bounded by cold dark matter layer and it is expanding with velocity of light and thus more space is vacating. This gives simple picture of Euclidean geometry.

The universe in which we live is basically *positive curvature* or sphere. If one draw's triangle inside hollow sphere, it will be always straight irrespective of the size of the sphere leading to straight space-time unrelated to gravity (figure 8).The supporter of Riemannian geometry mapped it out on the surface of sphere leading to illusion (figure 9). We are inside positive curvature or sphere and we are one of the *Participator* not the observer. If a line is drawn between two points inside sphere, it will be always straight. (figure 10).

There are multiple models exist in geometry. Which geometry has to be applied on the universe, has to be chosen with full conscious or common sense. Common sense contradicts with concept of Riemannian universe in which closed universe is bounded by space-time i.e. *no boundary condition* or it does not have any matter boundary rather it is bounded by space-time and which is expanding more than velocity of light. The new model (figure 1) has shown that our universe is bounded by *cold dark matter* layer, the boundary of the universe, and which is expanding with velocity of light. So, no boundary condition is a hypothetical concept and it also contradicts my common sense. Unfortunately Einstein has chosen wrong geometry i.e. Riemannian geometry,



which is not applicable on universe rather Euclidean geometry, a simple geometry is applicable on universe. Our universe is as simple as one's common sense and one does not need to make it complex by one's uncommon thoughts or unnatural thoughts.

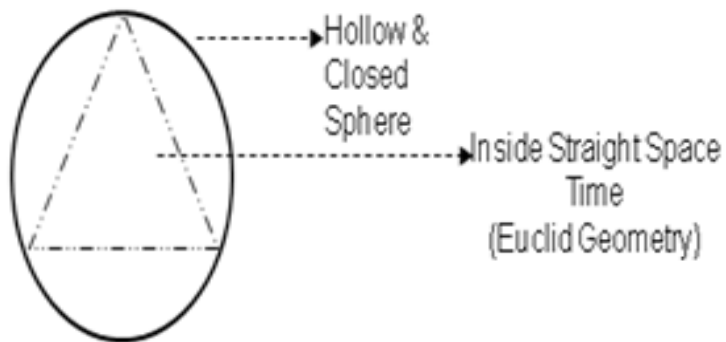


The distortion of space caused by a black hole is responsible for the gravitational lens effect (top). Light travelling past a black hole is bent so that the observer sees two distorted images (above).

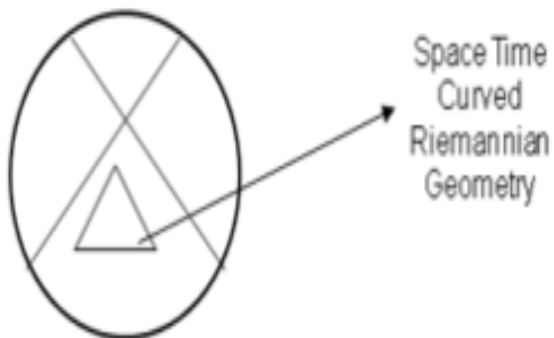
( From – Colin A. Ronan—Deep space ,Roxby &Lindsey Press, London 1982 ,p 83) Gravitational Lens Effect, Double Image, (figure 7)

Table 5, New inferences of Bending of starlight

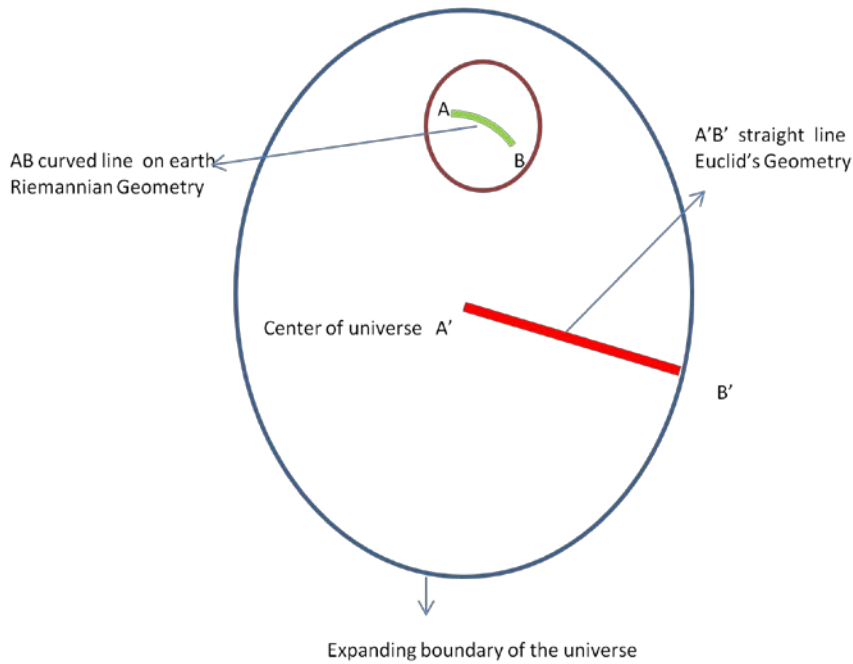
Procedure	Observations	Inferences
When star light passes near massive body. (figure 7)	It gets deflected by that body and one sees gravitational lens effect i.e. the image of the star or quasar gets deflected, distorted and magnified. Sometimes two images are seen or double image is seen.	<ol style="list-style-type: none"> <li>1. Bending of light near massive body can be explained by Newton's law of gravitation: <math>F \propto M_1.M_2/d^2</math></li> <li>2. This is one of the property of light and it is due to its inertial mass and interaction with gravitons.</li> <li>3. Since we cannot calculate inertial mass of photon, at least this observation confirms that photon has inertial mass and it obeys Newton's law of gravitation.</li> <li>4. Gravity never attracts mass less concepts, as space-time are mass less concepts and hence space-time can never be curved.</li> <li>5. Gravity is the property of matter not the property of mass less concept like space-time.</li> <li>6. Gravity is the force mediated by strings made up of gravitons.</li> <li>7. These gravitons have come from matter of massive body by a phenomenon called <i>decay of matter</i>.</li> <li>8. The details of concept of gravity &amp; its interaction with photon shall be discussed after knowing the concept of <i>basic building blocks</i> of the universe.</li> </ol>



( figure 8 triangle inside hollow sphere, it will be always straight irrespective of the size of the sphere leading to straight space-time unrelated to gravity )

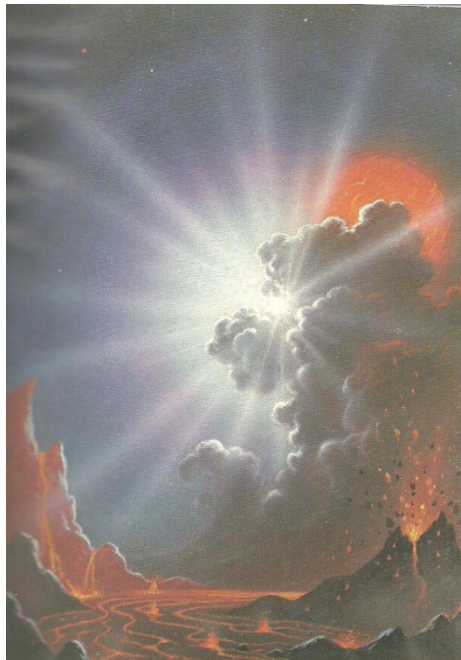


( figure 9 The supporter of Riemannian geometry mapped it out on the surface of sphere leading to illusion)

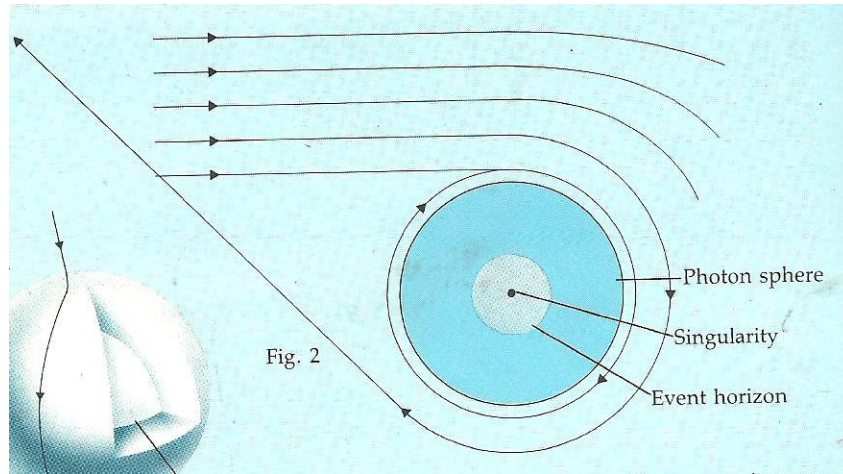


( Fig -10 . If a line is drawn between two points inside sphere, it will be always straight.)

**Modified Concept of Space:** It is realized as an area without any mass or object, which has no property of bending or gravitation. It is simply a *void*.. Concept of time as well as its unification with the space shall be discussed separately.



(figure 11 Straight sun light shafts- Gravity effect depends upon critical value of mass, Earth mass ( $m_1$ ) is less than critical value , Newton's law of gravitation does not work on earth for photon(  $m_2$ ),from – David Baker-Hamlyn Guide to astronomy, London 1989,p59)



(Figure 12 Photons obey Newton’s Law of Gravitation  $F \propto M1.M2/d^2$  Gravity effect depends upon critical value of distance which is different in a different frame of reference .from- Colin A. Ronan: Deep space , London Roxby & Lindsey Press ,1982,p 84)

Having equipped with modified concept of space and gravitation, now we look forward as regard to *straightness* of *sun shafts*. Modern physicists believe that straightness of sun shafts is an illusion.

“ If you look at sunlight shining through clouds, you can see great shafts of light coming through. You will notice that they are straight shafts of light coming through. You will notice that they are straight shafts, not curved in any way. But this straightness is an illusion. As we have seen, curves that are very gentle often seem to us to be straight lines. If this can seen on Earth it must of course, be even more marked when we consider distances in space because they are so much greater. Light beams will appear to travel straight in space and astronomers make all their measurements as if light does travel in straight lines. Yet if space is curved, the light beams must be curved as well.”.....[12]

Table 6, New inference of Straight sun light Shafts

Experiment	Observations	Inferences
Sun light coming through clouds.  ( figure. 11)	<i>Straight Sun Light Shafts</i> coming through clouds.	1. Newton’s law of gravitation does not work on photon on earth,  <b><math>F \propto M1.M2/d^2</math></b>  because there has to be critical value of mass for gravitational force to work. Earth’s mass is very less than (for photon only) that of critical mass. There fore earth is unable to apply force of attraction on photon. Hence, force of attraction is nil (for

		<p>photon only).</p> <p>Since photon has property to propagate in straight line, therefore we observe straight sun light shafts and this straightness is <i>Truth</i> not illusion.</p> <p>2. Gravity like other natural events also depends upon critical value of both mass and distance in a defined frame of reference.</p> <p>(figure 12)</p>
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At the end of this section and as a conclusion we can summarize the following:

1. Photon does not obey Newton's law of gravitation on earth while it obeys the same law on sun. why it is so? It would be clarified during the discussion of *Genesis of Physical Laws* i.e. how laws of physics are formed and how do they work. It comes under teaching of *Atomic Genetics* i.e. the *Memory System* of the nature.

#### 2.4 New Inferences of Motion of electron in CRO

Difference of matter (m) and energy (E) on the basis of concept of inertia: We shall now discuss famous equation of relativity i.e.  $E=mc^2$ , E= energy, for example-photons, gluons and vector bosons.,m= matter, for example – protons, neutrons and electrons etc..These protons or neutrons are not *pure m* rather they are mixture of fermions (quarks) and bosons (gluons), which are more fundamental particles.

According to participatory science, quarks are not the ultimate structure of the atom or matter. The search for ultimate structure of the matter shall be discussed in creation physics. But today we shall discuss the difference between energy particles (bosons) and so called matter particles (fermions, like proton, neutron and electrons). According to participatory science, these are *impure matter particles* as they (only proton and neutron) are mixture of fermions (quarks) and bosons (gluons). About electron, we shall discuss about its constituents or composition in creation physics.

I have coined two word i.e. *pure m and impure matter particle*. Let me defined these two new words.

**Impure matter particle:** Matter particles (fermions) which have got spin property are called impure matter particles.

**Pure (m) matter particle:** It shall be defined after knowing the definition of energy (E) and matter (m) on the basis of concept of inertia.

As far as modern physics is concerned, it has not defined m and E of the equation  $E=mc^2$ . According to them, m is nothing but *frozen energy*. They have not defined their difference on the basis of their properties. Today, participatory science will define energy (E) and matter (m) on the basis of their property and their confirmation by observations. As far as their masses are concerned, both have got inertial mass and it has been proved by participatory science that energy has got inertial mass.

**Concept of Inertia** 1.Mach's Principle 2.Classical Concept

1. Mach's Principle: Inertia is not an intrinsic property of matter, but a measure of its interaction with all the rest of the universe. According to modern physics, there is no absolute rest of the matter, and whenever they are at rest (relative rest) it is due to external forces. Material objects not only determine the structure of the surrounding space but are, influenced by their environment in an essential way. According to the physicist and philosopher Ernst Mach, the inertia of a material object- the object's resistance against being accelerated – is not an intrinsic property of matter, but a measure of its interaction with all the rest universe. In Mach's view, matter only has inertia because there is other matter in the universe. This conception of inertia, which has become known as Mach's principle, had a deep influence on Albert Einstein and was original motivation for the constructing the general theory of relativity. Thus modern physics shows us once again – and this time at macroscopic level – that material objects are not distinct entities, but are inseparable linked to their environment; that their properties can only be understood in terms of their interaction with the rest of the world. According to Mach's principle, this interaction reaches out to the universe at large to the distant stars and galaxies.....[13]

**2. Classical Concept:** It is defined as inherent property of matter by which it continues unless constrained in its *State of Rest* or *Uniform Motion* in a straight line.

According to new model of the universe, made by participatory science, it is being realized that external forces exist only up to 3750 Mpc. Beyond 4239 Mpc i.e. in Tachyon Sea no external forces work. So, Mach's principle is not applicable beyond 4239 Mpc up to infinity. (figure.- 13)

The remaining part of the universe i.e. 489 Mpc i.e. inside quasar ,is the right place where integrity of the classical concept can be tested as no external force works during creation of the matter ( gravity of CDM is ineffective on B.B.Bs.). Before the matter, nature created force particles and before that no forces were there rather nature (ultimate particle of the atom) existed in its original behavior. Basic building blocks which are supposed to be the ultimate particle of the atom must be present in side quasar because creation is going on there and tachyons might have broken into basic building blocks before natural forces and other matter particles are created there. ( figure 13.1)

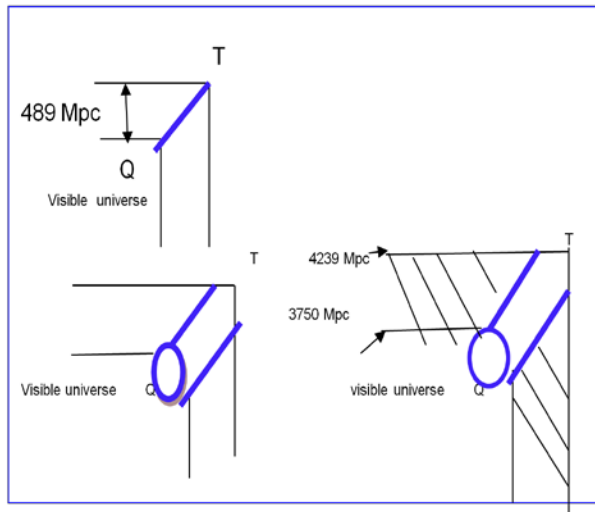
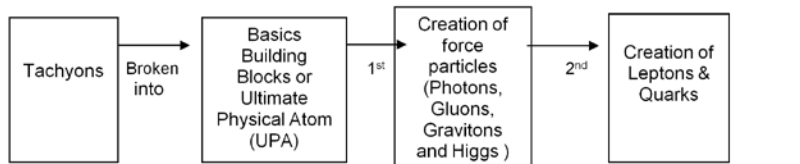


Diagram of blank area ( figure – 13 -The remaining part of the universe i.e. 489 Mpc i.e. inside quasar ,is the right place where integrity of the classical concept can be tested as no external force works during creation of the matter )



**Basic (Predicted) Steps of Creation**

( figure 13.1 Basic predicted steps of creation)

Classical concept cannot be tested in visible universe as it is filled with impure matter (fermions) and pure energy (bosons). Classical concept can only be tested when:

- 1.Effect of external forces must be absent.
- 2.The matter must be present in its basic building blocks form i.e. nature must be in its original behavior.

These two conditions are only full filled inside quasar as creation is going on there and weaving of impure matter (fermions) and pure energy (bosons) starts from basic building blocks of the universe. The search for basic building blocks i.e. ultimate physical atom (UPA) shall be discussed in creation physics. It is very difficult at present to prove which concept of inertia is correct because both concepts are opposite and both cannot stand as truth. It requires search for basic building blocks of the universe as well as to know about pure m (matter particle if it exists really) . Before I would like to discuss creation physics, I would like to discuss and study of classical concept of inertia more clearly.



### **Inertial Property of the Matter:**

According to participatory science inertia is the property of mass (inertial mass) of the particles. The definition of classical concept of inertia states two properties of the mass (inertial mass). As photon also has inertial mass, therefore energy (photons etc.) as well as matter (fermions etc.) can be defined on the basis of their inertial properties and their difference can be realized while studying their inertial properties.

The two properties of mass that classical concept of inertia states are : 1. Inherent property of rest (absolute rest)  
2. Inherent property of uniform motion in straight line.

We know that energy inertial mass or photons are never at rest (relative rest) so it has got inherent property of uniform motion in straight line. While matter inertial masses (fermions) are at or can be brought at rest (only relative rest). So absolute rest is not the intrinsic property of *impure matter* or (fermions). So the inherent property of absolute rest is only left for *pure matter* particle i.e. matter mass particle without spin. The search for pure m particle would be discussed in creation physics only. Firstly I will hypothesize: the concept of motion of pure m particle on the basis of concept of classical inertia or the inertial property of the mass (inertial mass) and secondly, I would discuss motion of electron (impure matter particle) in CRO.

### **Hypothesis of Concept of Motion of Pure m i.e. matter particle at absolute rest.**

#### **Classical concept of Inertia**

According to participatory science, motion of pure m particle is the effect of interaction of two power of *opposite behavior* (concept of unity of opposite). One power is inherent property of absolute rest (inertia of pure m) and the other power is inherent property of uniform motion (inertia of energy particle). During interaction inertia of energy overpowers inertia of pure m and the resultant effect is motion of pure m particle. According to participatory science, pure matter particle as well as energy particles have mass and it is the effect of interaction of their masses. It is shown in ( figure 14 and 14.1). The interaction will be further clarified after knowing fifth natural force as during locking and unlocking of particles this force comes into play. Without this fifth natural force fermions cannot have motion phenomenon.

Definition of E and (m) of  $E=mc^2$  on the basis of their inertial properties:

**Definition of pure m particle:** It has got intrinsic property of absolute rest. It is the property of pure m (matter) mass.

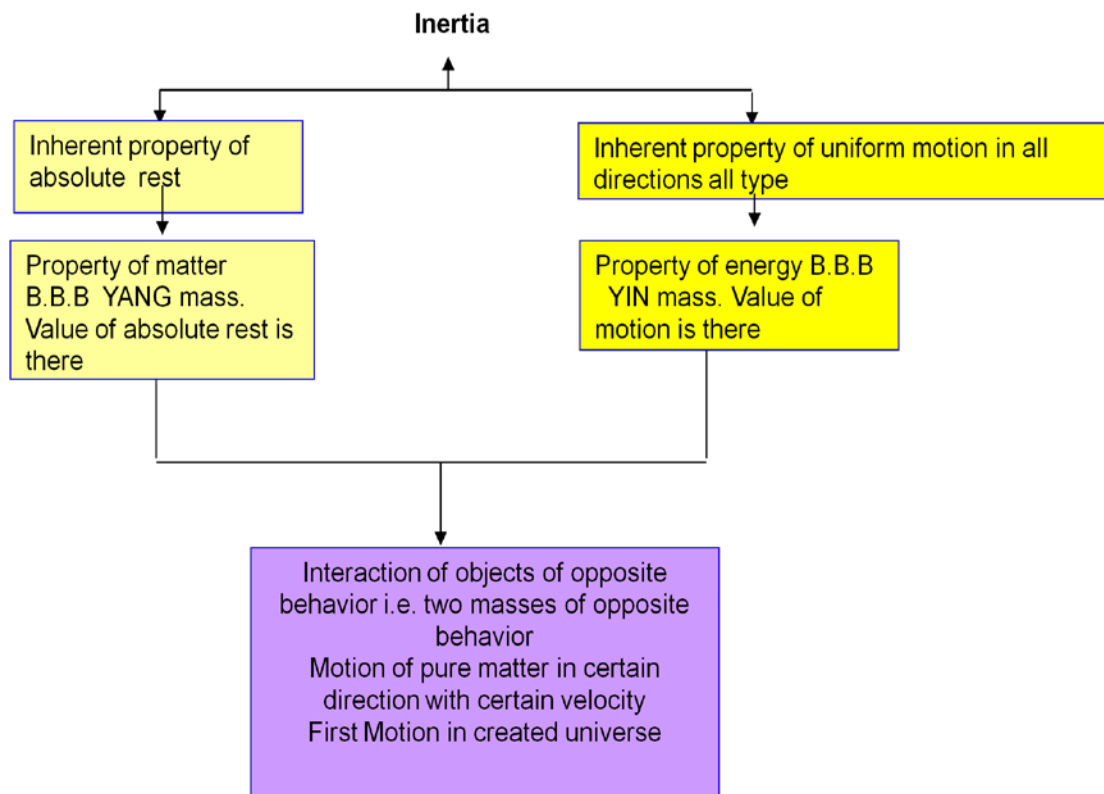
**Definition of pure E particle:** It has got intrinsic property of motion in straight line . It is the property of pure E (energy) mass.

### **Concept of Motion of Impure Matter Particle i.e. Electron in CRO By Participatory Science.**

**Definition of impure matter particle:** Matter particles (fermions or created matter particles) which have got spin property (that is why they are not at absolute rest rather they are at relative rest) are called impure matter particles.

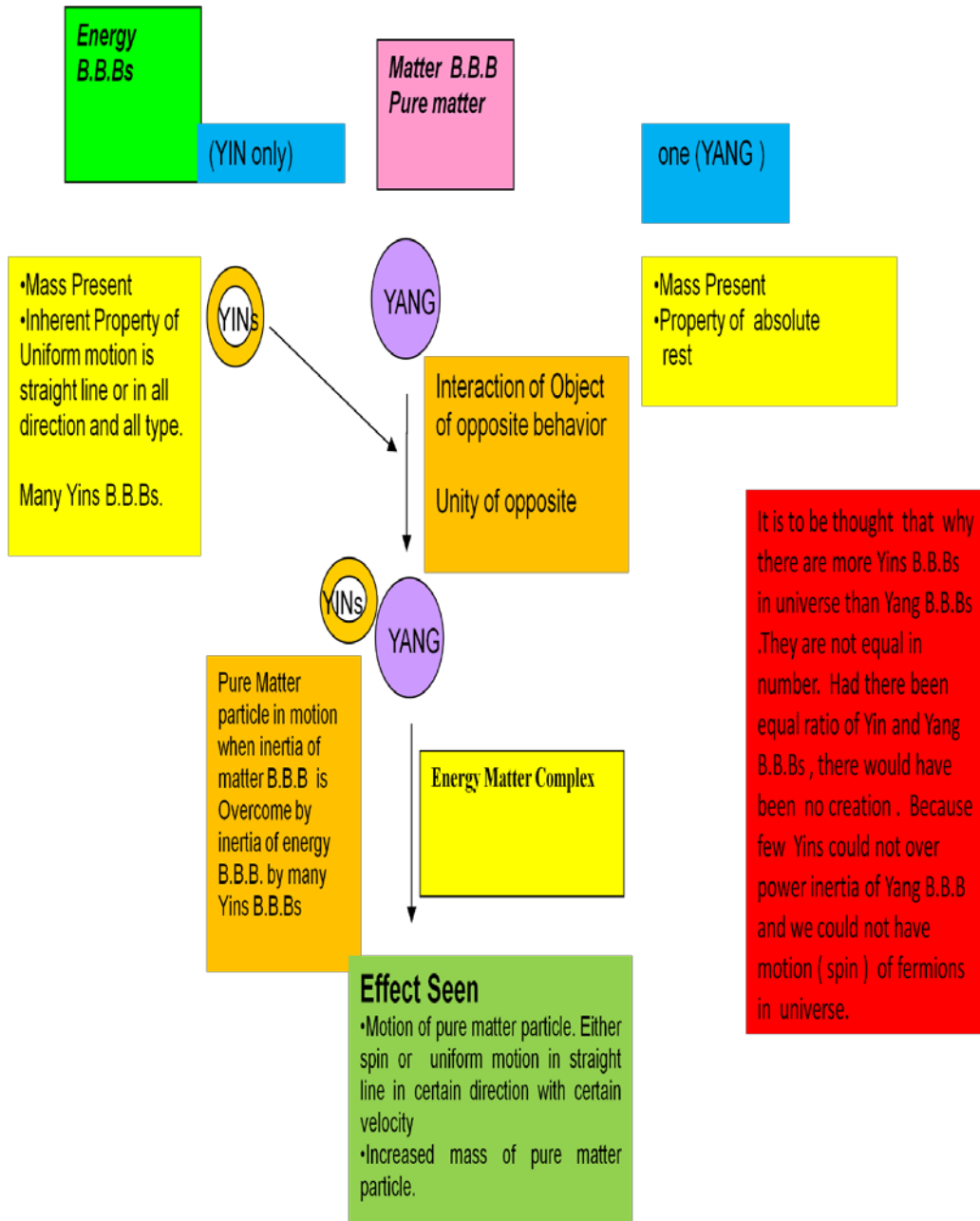
Having equipped with concept of inertia and property of pure m, pure E (bosons) and impure matter (fermions) particles, now we shall study, why does electron's mass increase with increase in velocity? According to participatory science (P.S.), concept of motion of electron is as under: According to theory of relativity, matter owing to its electrical structure, shrinks when it is moving and the contraction occurs in the direction of motion. They also suggested that the contraction depends on the relative velocity; the greater the relative velocity the greater the contraction. This is called *Fitzgeraid- Lorentz* contraction Hypothesis.

At this stage Einstein re-examined the fundamental units of length, mass and time upon which are based all our measurement of physical quantities.....[14]



First motion in the created universe is spin of particles ( fermions and bosons) . Type of spin is decided by atomic genes of that particles i.e. half integer spin is decided by thought of half integer and integer spin is decided by thought of integer spin of that particles.

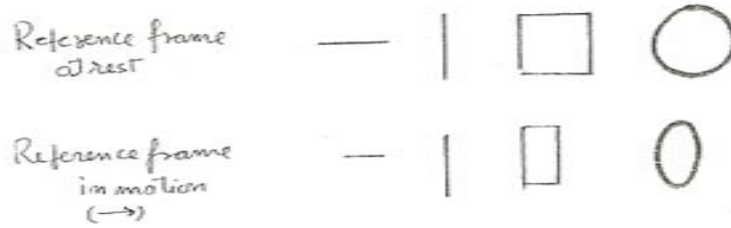
( figure 14 pure matter particle as well as energy particles have mass and it is the effect of interaction of their masses. )



(figure– 14.1 pure matter particle as well as energy particles have mass and motion is the effect of interaction of their masses.)

For example, a body, which appears to be spherical to an observer at rest relative to it, will appear to be an oblate spheroid to a moving observer. Similarly, a square and a circle in one appear to the observer in the other to be a rectangle and an ellipse respectively.( figure 15).....[15]

We thus find that a body appears larger when it is at rest. When not at rest, it contracts in the direction of motion.....[16]

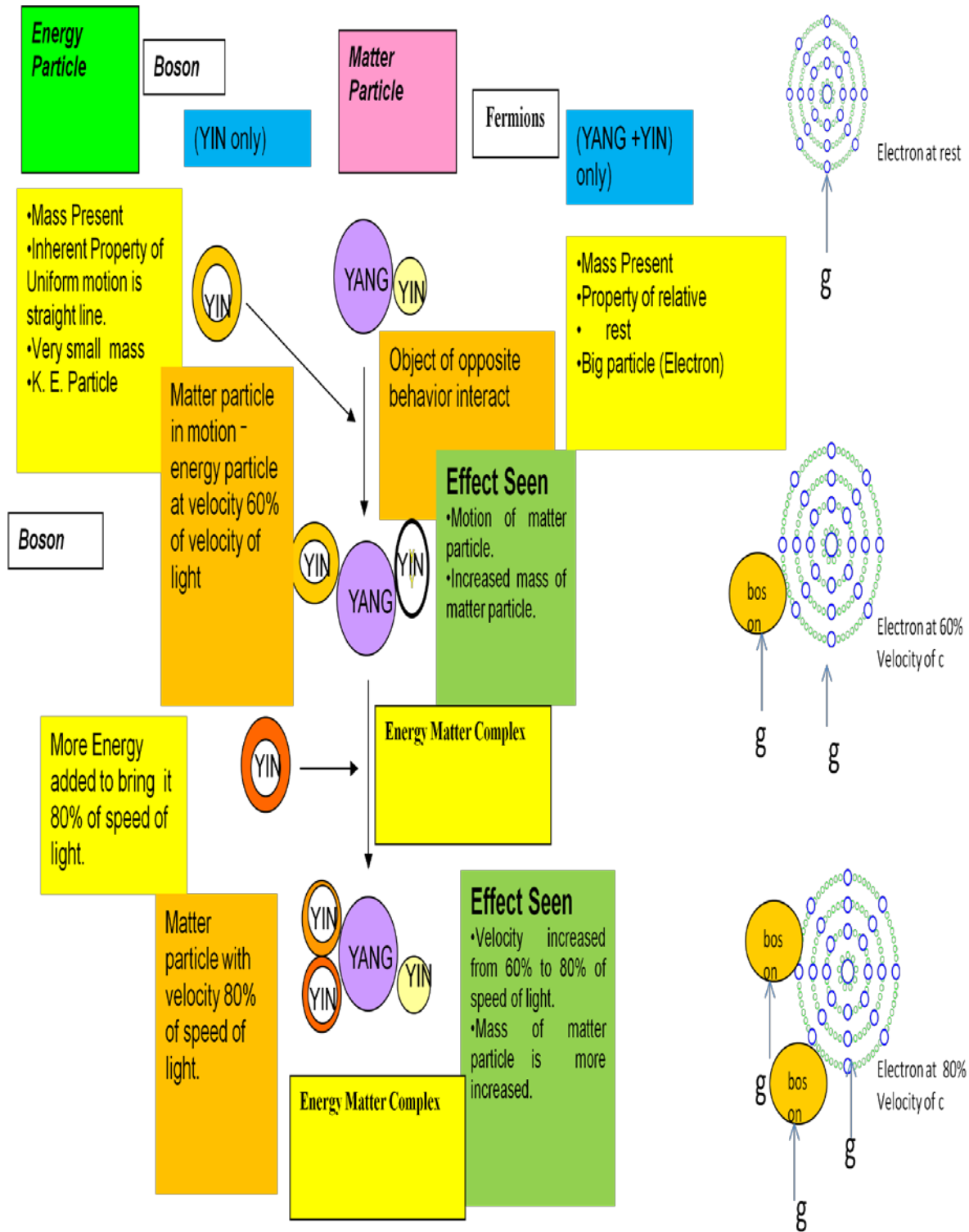


( figure 15 -A body, which appears to be spherical to an observer at rest relative to it, will appear to be an oblate spheroid to a moving observer ----[15] )

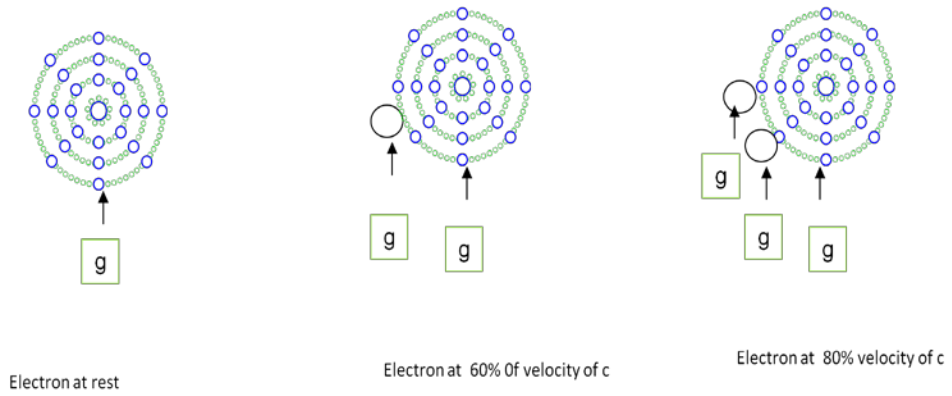
According to P.S., the volume (length), shape and inertial mass of electron remain the same what ever be the velocity of electron. No different shapes, volumes (lengths) and inertial masses of electrons at different velocities exist in the universe. Why gravitational mass (G.M.) changes with change in velocity shall be discussed again in *gravity* chapter.

Table 7, electron motion in CRO

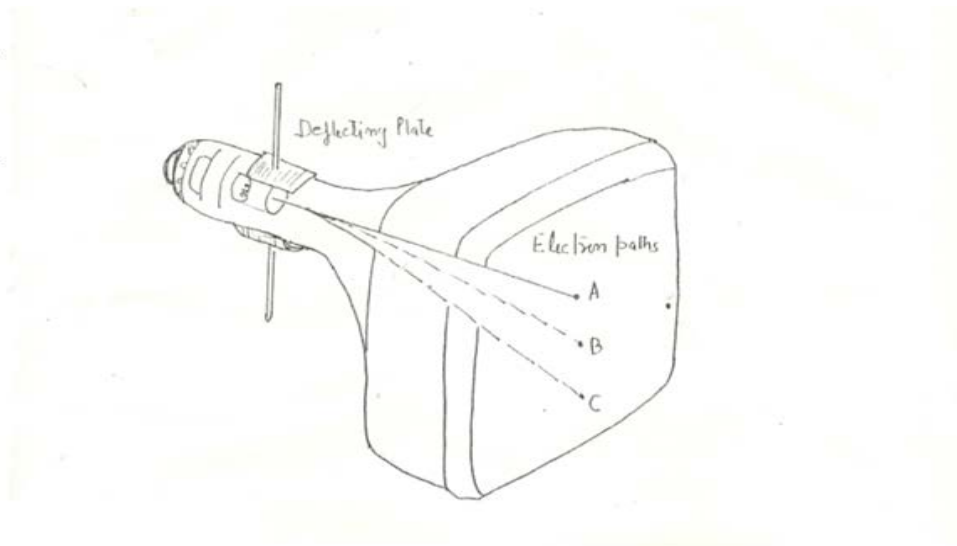
<p>(Figure 16 and figure 16.1))</p> <p>Electron at rest, hence picture of rest mass of electron.</p> <p>Rest mass means gravitational mass (G.M.) at rest.</p> <p>Inertial mass of electron is different than its G.M.</p>	<p>Electron's moving mass.</p> <ol style="list-style-type: none"> <li>1. Slow velocity.</li> <li>2. Less G.M. has increased. As gravitational interaction has increased.</li> <li>3. Less bending.</li> <li>4. Less energy mass is added.</li> <li>5. Inertial mass of electron remains the same.</li> <li>6. Less energy mass has increased.</li> </ol>	<p>Electron's moving mass.</p> <ol style="list-style-type: none"> <li>1. High velocity.</li> <li>2. More G.M. has increased. As gravitational interaction has more increased.</li> <li>3. More bending.</li> <li>4. More energy mass is added.</li> <li>5. Inertial mass of electron remains the same.</li> <li>6. More energy mass has increased.</li> </ol>
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(Figure 16 impure matter particle ( electron) as well as energy particles ( kinetic energy particles) have mass and it is the effect of interaction of their masses as well as interaction with energized gravitons )



(figure 16.1: picture of electron at rest and at different velocities )



(Figure 17 **Electron Motion in Cathode Ray Tube** An electron traveling through a cathode-ray tube will be pulled downwards by gravity. )

**Table 8, New Inferences of Motion of electron in CRO**

Experiment	Observations	Inferences
<p>An electron traveling through a cathode-ray tube as shown in (figure 17).....[17]</p>	<p>An electron will be pulled downwards by gravity. A slow moving electron ending up at B can be brought back along a straight path to A by placing a certain electrical charge across the deflecting plates. A fast moving electron is more massive and therefore curves further down to C. it needs a stronger charge across the plates to bring it back to a. --[17]</p>	<ol style="list-style-type: none"> <li>1. Energy has inertial mass.</li> <li>2. Electron's mass (inertial mass) does not increase with velocity rather energy mass (inertial mass) is added up in electron's inertial mass.</li> <li>3. If one adds more energy particles (K.E.) to increase the velocity; the electron's total mass (electron's inertial mass plus energy inertial mass) will also increase and this is what we observe in CRO i.e. bringing the electron from slow velocity (about 60% of speed of c) to high velocity (about 80% of velocity of c).</li> <li>4. The increased mass is gravitational mass i.e. interaction with gravity has increased. (What is gravity interaction and how does it increase with increase in velocity, shall be discussed separately in gravity chapter after knowing B.B. Bs. Of the universe.)</li> <li>5. Impure matter mass (electron's inertial mass) and pure energy mass (energy inertial mass) are separate and absolute and they are not inter convertible. So <math>E=mc^2</math> is fictitious equation.</li> </ol>

At the end of this section and as a conclusion we can summarize the following:

1. Mass as well as length is *absolute* quantities. One cannot get increased mass without adding extra mass. This is fundamental concept of universe and common sense contradicts relative concept of mass and length because it is based on simple logic without adding extra mass (inertial mass) how one can get increased inertial mass (i.e. high inertial mass content). 2. Concept of time shall be discussed separately. Concept of motion and laws of motion will be again discussed after knowing *Genesis of Physical Laws*.

According to P.S. inertial mass is defined as number of basic building blocks per unit area. It never changes from place to place. While gravitational mass is defined as amount of interaction with the gravity. It is not constant and it changes from place to place.

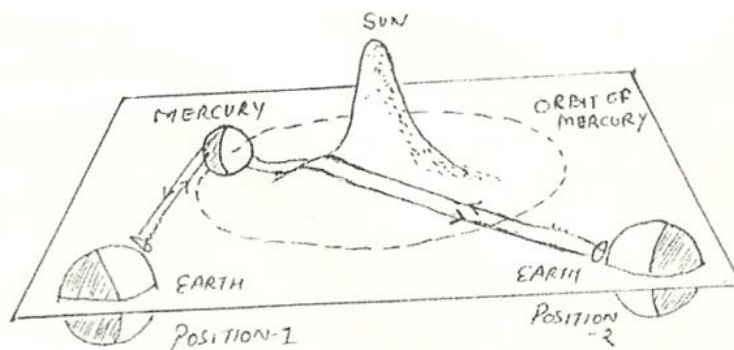
## 2.5 New inferences of radar test

New model of the universe has proved that we live in closed sphere which is bounded by cold dark matter layer and which is expanding with velocity of light (figure 1). Therefore concept like curved space-time and no boundary condition are hypothetical as well as Riemann geometry is not applicable on our universe. In modern physics, it is believed-

### Radar Test:

The radar technique for locating and tracking objects has been successfully applied to the nearby planets and in particular, to the planet Mercury whose orbit is nearest to the sun. A short pulse of radio waves is sent out from the earth, reflected from the surface of Mercury, and received back again after an appropriate time delay. The time lapse between transmission and reception determines the distance to the planet at the instant of reflection. The direction from which the echo returns provides the other information needed to locate the position of the planet completely at that instant. In this way the planet can be tracked over a period of several months and its orbit determined precisely.

The radar pulse travels along a straight line with a constant velocity which ( figure-18) is same everywhere. According to general theory of relativity, neither of these assumptions is valid in the strong gravitational field of the sun. We have already discussed the bending of the ray of light by the sun's gravitation's field. *There is another effect, more important in the present instance, which makes a light signal appear to travel more slowly the nearer it is to the sun.*



( figure-18 The curved space near the sun is represented by a mountain in the centre of a plain. A radar pulse passing near the sun is delayed by the need to climb the mountain.)



The situation can be understood in principle with the help of an analogy in which the three dimensional space on an imaginary surface. In the absence of the sun, this two-dimensional space would be a flat plain. The strong gravitational of the sun curves the space in its vicinity and so the sun can be represented by a steep mountain in the centre of the plain (figure 18 ). A radar pulse traveling across the plain far from the mountain is affected very little by it and has a velocity very close to the accepted velocity of light. *However, a radar pulse passing near the sun is forced to climb the mountain and this slows it down and delay its arrival time.* In fact, the pulse is observed to take a longer time than this because of the extra delay produced as it travels through the curved space near the sun. Moreover, the magnitude of the additional delay agrees with the value predicted by Einstein’s theory to within the experimental accuracy of about 20%.....[18]

Now the participatory science which rejects hypothetical concept of curved space, explains the above phenomenon like this:

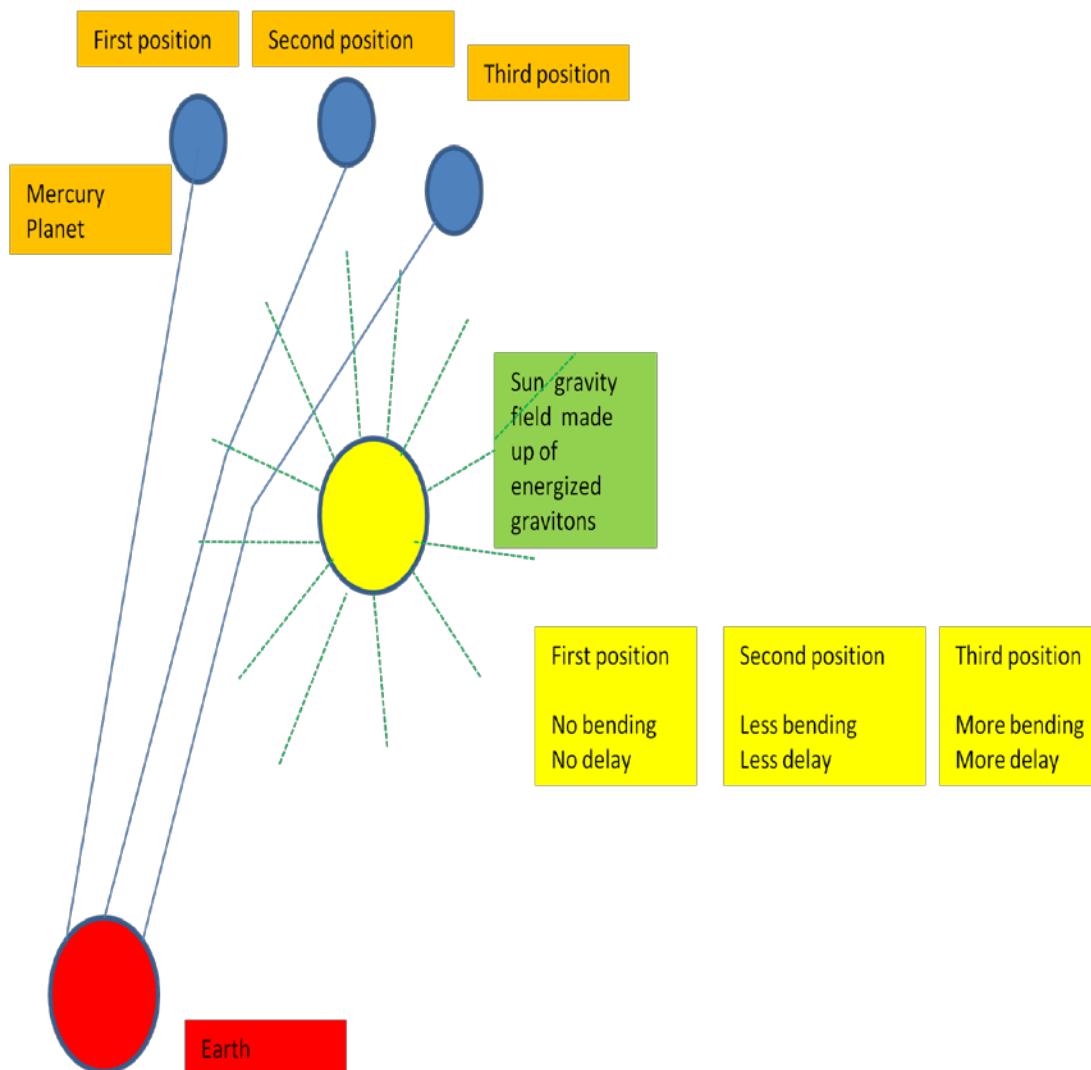


Fig – 19

Table 9, New inferences of radar test

Procedure	Observations	Inferences
Radar test ( Fig-19)	The light signal appears to travel more slowly the nearer it is to the sun.----[18]	<p>1. Photon obeys Newton’s law of gravitation.</p> <p><math>F \propto M1.M2/d^2</math></p> <p>2. Gravity force also depends upon critical value of distance.</p> <p>3. The delay is due to as photon obeys Newton’s second law of motion i.e.</p> <p>Gravitons, which are forming the strings, decrease the velocity of photon and the rate of retardation is proportional to the force applied and that is what Newton’s second law is.</p> <p>4. This phenomenon also shows that photon obeys Newton’s first law of motion i.e. any object is in state of rest or uniform motion remains in that state unless and until it is being constrained.</p> <p>5. <i>The velocity of light is not constant in free space.</i></p>

1. How does photon interact with gravitons, would be discussed separately. 2. Why is bending followed by retardation in the velocity of photon, shall be discussed after knowing basic building blocks (B.B.Bs.) of the universe. 3. Why does photon obey Newton’s first and second law on sun while it is absent on earth, shall be discussed after knowing *genesis of physical laws*.

At the end of this section and as a conclusion we can summarize the following:

1. According to the postulation of theory of relativity, velocity of light is constant in free space. But radar test has proved that this postulation is fictitious and velocity of light is not constant in free space. 2.

According to participatory science, concept like curved space is hypothetical. Common sense contradicts with concepts like curved space.

### **3. Conclusions**

Participatory science is a new discipline in science. It is different from observatory science . We need this science because we are still away from understanding our universe and phenomenon of the quantum and classical physics . There is lack of transparency and unable to see deep insight in any physical phenomenon .I have developed this science. Having known that there is no creation of ether with the origin of the universe, I found lacuna in the inferences of Michelson Morley experiment with the modification that the result of this experiment is not Negative rather it is Positive inferring absence of ether in whole cosmos. This led to modification in nature of light and other matter particles that they are neither wave nor electromagnetic in nature. How do they give phenomenon of interference, polarization, diffraction would be discussed after knowing research of atomic genetics and basic building blocks in third volume . Einstein took wrong inference from negative result of Michelson Morley experiment making first postulation of theory of relativity that velocity of light is constant in free space and it is universal constant as nothing could move faster than it. Einstein also abolished stationary frame of reference calling it meaningless as universe is filled with motions. On these two assumptions he postulated theory of relativity. The theory of relativity distorted our realization of absolute concept of basic quantities of Mass , Length and Time.( MLT) with the introduction of energy matter equivalence . With the introduction of General theory of relativity , Einstein also distorted our realization of space and time as a separate quantities with introduction of gravity as space time curvature . Thus we entered into a Riemannian universe rather than simple Euclid Universe. This time by making new model of the universe which is bounded by cold dark matter layer moving with velocity of light , I found that we live in simple sphere of Euclid geometry and thus study abolished space time curvature. I also found tachyons and its velocity i.e. 305224 km/sec . Having known this new universal constant P , I realized by putting this value in equation of  $m = m_0/\sqrt{1-c^2/p^2}$  ,and I found that photon has mass . Hitherto it is believed that photon is mass less particle. I have confirmed by observation and realization that it has not only mass but also it obeys Newton's law of motion and gravitation in bending of starlight near massive body and in radar test . While explaining electron motion in CRO by participatory science , it has been further confirmed that electron's gravitational mass increases by adding energy mass to increase its velocity from 60% to 80% velocity of light. Electron's inertial mass remains the same and it is boson inertial mass that gets increased . It also increases gravity interaction with increase in boson inertial mass that leads to increased gravitational mass of electron. . Hence to say that it is energy matter equivalence ( $E=mc^2$ ) that is the cause of increased gravitational mass is wrong inference. Finally it has been proved in radar test that velocity of light is not constant in free space. Participatory science should be taught in undergraduate classes so as to inform students that they have been misguided for the last 400 years. Coming volumes ( 3,4,5 and 6) would clear more as regard our understanding of universe and science by participatory science.

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