A NOVEL ANALYSIS ON LIGHT ESCAPING FROM BLACK HOLE

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ABSTRACT

Science must be fact. All the black hole theories said that the light can't escape from the black hole; it will be bent by either gravity or curved space, but this paper proves that the light does not affected by any gravity. It does not falsify black hole theories as a whole. The intent is to fortify space science. It brings some empirical evidence to prove the intention. The escape velocity concept is not applicable for light. The general theory of relativity has no valid basis in science. The only evidence Eddington's experiment also proved by this article as in valid. Black hole may exits but light bending, absorption concepts have no possibilities. This paper also presents a novel reason for bending light. The light bending happens near the stars only by refraction in the atmosphere of the stars like refraction of light in water, not by the gravity. This paper fully supports newton's theory of gravity.

Keywords: Escape velocity, light bending, Black hole, General relativity, Refraction in star.

INTRODUCTION

The purpose of this paper is to prove that the light is independent from gravity. The basic idea of a black hole is simply an object whose gravity is so strong that light cannot escape from it. It is the only problem in black hole theories. Light bending predicted by the scientists based on the escape velocity. There is an error. Light does not influenced by any gravity! The first reason is that the mass of photon is zero. All the gravity equations are only for the object which has mass not equal to zero. Hence the equations are not applicable for light.

The general theory of relativity is still an accepted theory. On philosophical, mathematical and empirical grounds, there are nevertheless many valid objections against the theory to be found. This article also have some concepts show that the invalidity of it. In physics a theory is a mathematical model based on various assumptions and valid for a limited range of physical conditions. Newton's law is a mathematical model that is limited to non-relativistic speeds and low gravitational fields, and within those limits it is exceedingly accurate. There is no sense in which Newton was proved wrong by Einstein. The relativity did only the explanation of anomalous precession of mercury but it has no valid basis. This paper brings proofs against general relativity and analyzes the existence evidence.

The predictions of this paper are that Light is not influenced by any gravity and curved space; General relativity is wrong; Light bends near the stars by Refraction in the atmosphere; Light can be escaped from any massive object like black hole also.

LIGHT ESCAPING – AN ANALYSIS

Escape velocity and light

The escape velocity is that, the escape speed is the minimum speed with which a body must be projected in order that it may escape from the gravitational pull of the planet. Why does an object return to the earth when we throw it up? The object carries our force. The force of the object gradually decreases with respect to the height from the earth. At a particular point force becomes zero. Then due to the gravitational field, the object fall down to the earth. Note that the object has mass M. Since, it travels on a parabolic path. But light is not same as that. It has zero mass. Hence light does not travel on the parabolic path.

Let us consider an object with mass M. it is thrown away from the earth with velocity 6km per second. The velocity of the object decreases gradually because of gravity of the earth. At the height of 10 km, the velocity of the object may be 4km/s. In 20 km height, Velocity may be 2km/s. Also in 30 km height, velocity becomes completely zero. Since, object get down to the earth. Note the point; the object does not have self-energy. It only carries energy given by us.

Let us consider a flying plate. Assume it has self- energy like fuel and an engine. It is able to fly upward with the velocity only 2km/hr. This velocity does not depend on the gravity. Even at any height, the velocity is constant. Finally, it can escape from the earth's gravity. Note that the escape velocity concept is only for the object which not has a self-energy. Example: stone, ball. Same as that, assume a light ray is thrown away from the earth (or a black hole). The velocity is constant at all the heights because it has self- energy. There is no velocity loss, since light does not affected by escape velocity.

Newton's law –the first evidence

According to newton's gravity law, the gravity is directly proportional to the product of both masses and inversely proportional to the square of the distance between them. The important thing is mass! This equation says that an object which has mass, that will be involved in the gravity facts. Light consists of photons. There are only energy packets. They have absolutely zero mass. Let we have to calculate the gravity between light and a big object. Consider a light photon in a large gravity. Let M1 be the mass of large object and M2 be the mass of light. r be the distance between them. The gravity,

$$F = \frac{Gm1(0)}{r^2} \qquad m_2 = 0$$

$$\boxed{F = 0}$$

Light has only energy. It does not consist of any mass material. According to newton's theory $F = 0$ since, there is no gravity between them.

Error in the derivation of escape velocity

Simply we can derive the escape velocity as written below. Kinetic energy of an object,

$$E = \frac{1}{2}mv^2 \qquad (1)$$

Gravitational energy between a planet with mass M and the object with mass m, r be the radius of the planet.

$$E = \frac{GMm}{r} \qquad (2)$$

Equate the both equations

$$\frac{1}{2}mv^2 = \frac{GMm}{r}$$

$$mv^2 = 2\frac{GMm}{r}$$

$$v^2 = 2\frac{GM}{r}$$

$$V_e = \sqrt{\frac{2GM}{R}}$$

$$g = \frac{GM}{R^2} \qquad (3)$$

$$V_e = \sqrt{2gR} \qquad (4)$$

In above equations "m" is the mass of the object which is thrown away from the large mass. These equations are only applicable for only the object which is having mass not equal to zero. The light photons are having mass is zero. Hence light is not applicable for the concept of escape velocity.

Same error is in the derivation of gravity equation

Consider a body of mass m on the surface of the Earth as shown in the Fig. 4.3. Its distance from the center of the Earth is R (radius of the Earth). The gravitational force experienced by the body is

$$F = \frac{GMm}{R^2} \qquad (5)$$

Where, M is the mass of the Earth. From Newton's second law of motion, Force

$$F = mg. \qquad (6)$$

Equating the above two equal forces,

$$\frac{GMm}{R^2} = mg$$

This equation shows that g is independent of the mass of the body m. But, it varies with the distance from the center of the Earth. If the Earth is assumed to be a sphere of radius R, the value of g on the surface of the Earth is given by $\qquad g = \frac{GM}{R^2}$

Here also "m" is the mass of the object which is thrown away from the large mass. These equations are only applicable for only the object which is having mass not equal to zero. The light photons are having mass is zero. Hence light is not applicable for the concept of gravity.

Serious problem

If the light bends by the gravity, the basis of the science *will* fail. Yes! It is true. The basis of the science is that the velocity of the light is constant.it is also the basis of all science and Einstein's relativity. If the light is influenced by the mass or space or a black hole then the velocity of the light also changes. Hence the light which comes from larger mass is having velocity less than its constant velocity. Also the light which comes from smaller mass is having velocity more than its constant velocity. Consider a space vessel which has an ability to move with high velocity. If it is launched from the earth the speed of the vessel becomes low due to the attraction of the earth. The remaining force (speed) is used to against the gravity. But if the same space vessel is launched to the earth .then it comes with the velocity more than its own velocity. The excess speed is produced due to the gravity of the earth. Same as the velocity of the light will vary with respect to the gravity of the earth and directions. Also if a light is

passed through a high massive star then the velocity of the light becomes more than its constant velocity (3,000,000 km/s) approximately 4,000,000 km/s. is it possible? Is the light velocity constant? If the velocity of the light varies by gravity then how "c" can be used as a constant? On the basis of "c" the equation $E=mc^2$ is formed.is it false?

PROBLEM IN GENERAL RELATIVITY

The black hole, gravitational waves, and the Big Bang cosmology have no valid basis in science. It is demonstrated herein that Einstein's field equations violate the usual conservation of energy and momentum and are therefore in conflict with experiment on a deep level, so that General Relativity is invalid. This fact alone proves the invalidity of the black hole, gravitational waves, the Big Bang cosmology and Einstein's conception of the gravitational field. [1]

A short introduction is that, the mass of the object caused a distortion in space time. Imagine setting a large body in the center of a trampoline the body would press down into the fabric, causing it to dimple. A marble rolled around the edge would spiral inward toward the body, pulled in much the same way that the gravity of a planet pulls at rocks in space. According to Einstein, matter is the cause of the gravitational field and the causative matter is described in his theory by a mathematical object called the energy momentum tensor, which is coupled to geometry (i.e. space-time) by his field equations, so that matter causes space-time curvature (his gravitational field) and space-time constrains motion of matter when gravity alone acts.

This paper does not against Einstein's theory. It purely supports newton's theory. There are some issues which state that the invalidity of general relativity.

The first question is that why does space gets distorted by mass of an object. Consider the famous experiment a massive ball is in the center of a trampoline. Our earth sucks the ball therefore the trampoline gets bent. If you conduct the same experiment in empty space, it will not happen. The ball can fly freely because there is no massive object to suck so it does not disturb the trampoline. Same as that if sun is the object and the trampoline is the space, sun does not make any change in space because there is no other massive object below the sun to suck it.
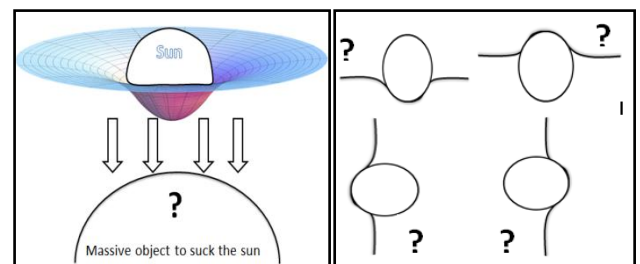

Fig.1 Space curve questions

The next question is very important. What is the bottom or top in the space? Note that the sentence, space is bent downward due to the mass of the objects. Where is downward in space. Why the space bents in upward or either side?

If the space bents as per the general relativity, it should have mass. How can a massless space carry the objects? According to the Einstein's assumption, all the stars and planets are placed in a same plane but the real is just opposite to it. Stars are in various heights not in a plane. Are any various spaces for various stars?

The space is not a particle. It does not have any mass, why space get disturbance by mass? How can light get bend by the space?

Light bending means light cannot penetrate the space curve then only it can bend. If it is correct, why does not sun light get bend?
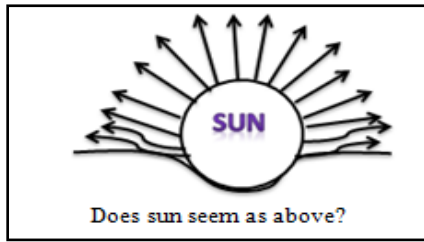
Fig.2 Space cure below the sun

Light bending evidence

Dr. Einstein made his prediction in a paper published in 1916. Although astronomers who had read earlier unpublished drafts of Einstein's paper tried to test his prediction during the total solar eclipses of 1912 and 1914, But a study of the conditions of the 1919 solar eclipse showed that the Sun would be very favorably placed amongst a group of bright stars at that time. Moreover, the Sun's light would be totally blocked by the Moon for over five minutes, allowing both the Sun and the stars to be photographed at the same time.
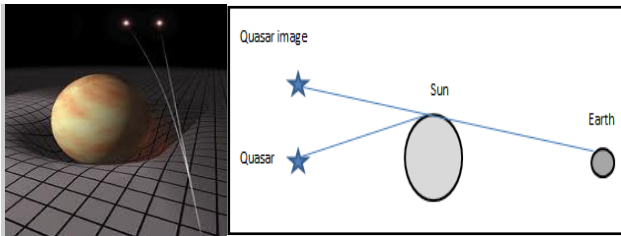

Fig.3 Light bending

Prof. Eddington himself decided to lead an expedition to the island of Principe, in the Gulf of Guinea close to the coast of West Africa, near the end of the path of totality. He also convinced the Astronomer Royal—Sir Frank Dyson, Director of the Royal Observatory, Greenwich—to send another expedition else-where, to minimize the chances of clouds inter-firing with the observations. Led by Dr. Andrew Crommelin from the Royal Observatory, it set up instruments at Sobral in northern Brazil, near the beginning of the path of totality. At each of these places, if the weather were pro-pitious on the day of the eclipse, it would be pos-sible to take during totality a set of photographs of the obscured Sun along with a number of bright stars which happened to be in the vicinity.

PROPOSED REASON FOR LIGHT BENDING

The light bends near the stars such as sun. The exact reason is neither gravity nor curved space. A simple physical phenomenon is that refraction of light in optics. Refraction is the change in direction of a wave to a change in its transmission medium. The light of stars usually travels in vacuum space. Every star has an atmosphere around it. If the light goes to vacuum to atmosphere, it gets refraction. It is essentially a surface phenomenon. Due to the change of medium, the phase velocity of the wave is changed but its frequency remains constant. This most commonly observed when a wave passes from one medium to another at any angle other than 90 or 0 degree. It is described by Snell's law, which states that for a given pair of media and a wave with a single frequency, the ratio of the sins of the angle of incidence θ_i and angle of refraction θ_r is equivalent to the ratio of phase velocities (v1/v2) in the two media, or equivalently opposite ratio of the indices of refraction (n1/n2)

$$\frac{sin\ \theta i}{sin\ \theta r} = \frac{v1}{v2} = \frac{n2}{n1}$$

In general, the incident wave is partially refracted and partially reflected. The reflected light forms an illusion image in atmosphere.
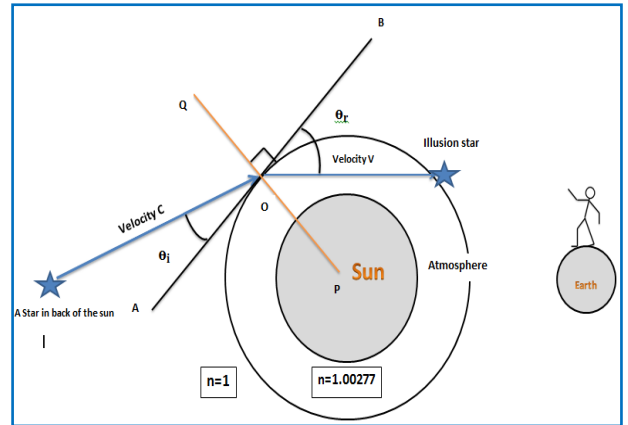

Fig.4 Light Refraction around the Sun

The stars which are in the back of the sun cannot be seen directly but they have apparent positions. They can be seen near the sun due to refraction. The ratio of RC/RA is called the index of refraction, and denoted by the letter n. it is the property of the two media on either side of the refracting surface. For vacuum and air, the ratio is 1/1.000277.

The refraction of any apparent zenith distance (or altitude, which is the complement of the zenith distance) as the apparent (refracted) altitude h_{app} is just the sum of the true altitude h_t and the astronomical refraction R.

$h_t = h_{app}$-R

h_t (h_{app}) is often called the transfer function for astronomical refraction. Star-core is enveloped by dense & diluted gaseous surroundings (or atmosphere) with varying density & refractive-index. It is thus difficult to estimate the equivalent height h of star's atmosphere, within which properties are assumed to be uniform. Factors such as gravitation, temperature, pressure, density, radiation-pressure etc., can influence it.

Let n2=1.000277 (atmosphere)

   n1=1 (vacuum space)

$$\frac{sin\ \theta i}{sin\ \theta r} = \frac{v1}{v2} = \frac{1.000277}{1}$$

$sin\ \theta i = 1.000277\ sin\ \theta r$

Consider a quasar which is 33 light years away from the sun. Even though it behind the sun, it seems near the sun. The exact reason is that refraction by sun's atmosphere.

In figure, $\theta2$ is the incident angle. $\theta1$ is slightly greatly zero degree because the height of the triangle is 33 light years and the breadth is nearly 69500km. hence $\theta2$ nearly 90 degree.

$(\theta i \sim \pi/2)$

$sin\ (\pi/2) = 1.000277\ sin\ \theta r$

   $1 = 1.000277\ sin\ \theta r$

$sin\ \theta r = 0.999723$

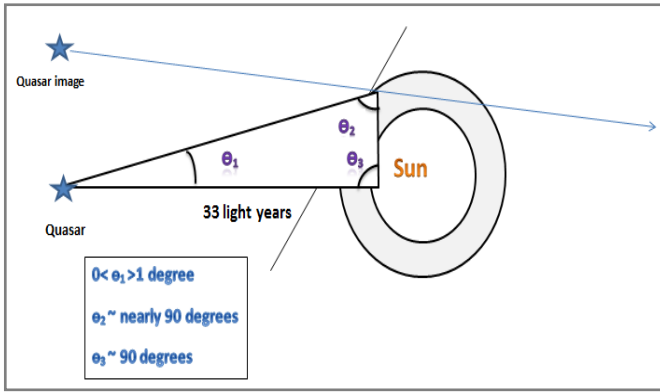$\theta r \sim 88.65157314$ degrees

Fig.5 Quasar Light Incident Angle

The solar atmosphere has thickness about 3000km (photosphere thickness: ~500 km, chromosphere thickness: ~2500 km) usually refraction takes place in chromosphere.
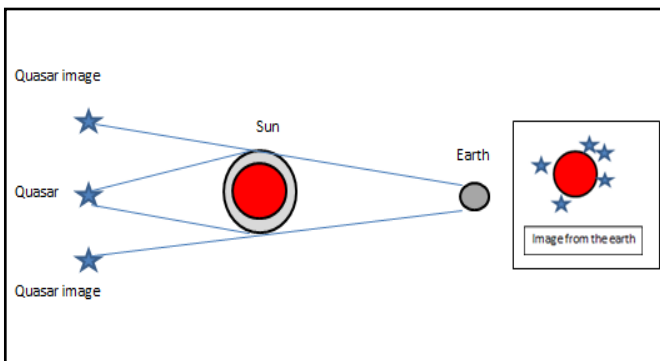

Fig.6 light bending by refraction

CONCLUSION

According to the formal predictions, the gravitational concepts and theories are not applicable for light. The general theory of relativity does not satisfy all the scientific perspectives. This paper brings empirical evidence to prove that the space is not curved. This refraction explanation will help for better understanding the light bending near the stars. The results obtained by Eddington's experiment exactly match the refraction based explanation of light bending. The Light can escape from any black hole. It doesn't bent by any mass. Newton's repeated attempts to unify various branches of physics led him to the concept of wave/particle duality and to a model of gravity in which the gravitational field could be described as a density gradient, and in which the deflection of light or matter by the field was modeled as the effect of a variation in refractive index. In singly-connected space, this approach can be topologically equivalent to a curved-space model of gravity. A thorough review of our physical paradigm appears to be necessary.

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REFERENCES

1. Broadbridge. P. and Zulkowski P**.** (2005) *'Dark energy states from quantization of boson fields in a universe with unstable modes '*, Elsevier Journal, Mathematical Physics Volume 57, Issue 1 , Issues 5-7 , February 2006, Pages 27-40.
2. Richard Cushman. and. Wilberd van der Kallen. .(2005) *'A new interpretation for the mas**s** of a classical relativistic particle'*, Elsevier Journal, Physics Letters Volume 24, Issue 3, May 2006, Pages 230-234
3. Sigalotti Leonardo Di G. and. Antonio Mejias(2006) *'The golden ratio in special relativity'*, Elsevier Journal, Physics Letters Volume 24, Issue 3, May 2006, Pages 230-234
4. A. Ashtekar, *100 Years of Relativity. Space-time Structure: Einstein and Beyond* (World Scientific, Singapore, 2005).
5. C. Will, *Was Einstein Right?* (Basic Books Inc., New York, 1986).
6. S. Chandrasekhar, *Truth and Beauty. Aesthetics and Motivations in Science* (Penguin Books, India, New Delhi 1991), particularly Chapter 7.
7. K. C. Wali, Chandra, A Biography of S. Chandrasekhar, (Penguin Books, India, New Delhi 1990).
8. [8] A. Ashtekar, in The Universe: Visions and Perspective, N. Dadhich and A. Kembhavi, eds (Kluwer Academic, Dodrecht, 2000)
9. A. Ashtekar, *Einstein and the changing world view of physics*, (Springer, Berlin, at press); also available as physics/0605078.
10. S. Wadia, editor, *Special Section on Legacy of Albert Einstein*, Current Science, 89, 12 2034- 2046
11. A. Einstein, "*On the Influence of Gravitation on the Propagation of Light*" (1911), translated in The Principle of Relativity (Dover, NY, 1952) pp.97-108.
12. A. Einstein, '*Aether and the Theory of Relativity*' (1920), translated in Sidelights on Relativity (Dover, NY, 1983) pp.1-24.
13. D.T.Whiteside (editor) *The Mathematical Papers of Isaac Newton*, Volume VI ,1684-1691 (C.U.P. Cambridge 1974), Appendix 3,4 footnotes pp.422-437.
14. Kip S. Thorne, *Black holes and timewarps: Einstein's outrageous legacy* (W.W. Norton, NY, 1994)
15. Ronald Gautreau. '*Cosmological Schwarzchild radii and Newtonian gravitational theory*,' Am.J.Phys. 64 1457-1467 (1996)