

## Space-time or Space-force

In general relativity Einstein describes gravity not as a force, but as a consequence of curvature of this combined space-time. In our experience this curvature can be ignored. The Principle of Equivalence: The Laws of Physics have the same form in every uniformly accelerated laboratory as they do in an un-accelerated laboratory in a uniform gravitational field. Einstein showed that the path of light in gravity field is not straight and it is curveting. He did use tensors for showing space-time's equations in curveting space.

### Relationship between force and relativity mass-energy

When force  $F$  works on a particle/object, the energy of particle/object does change. By according relativity we have;

$$E^2 = E_0^2 + (pc)^2 \text{ and } m = m_0 / (1 - v^2/c^2)^{1/2}$$

The above relations are questionable deduction. Increasing mass is really or no? We know velocity is a relative quantity and it depends to frame and observer. Suppose in frame  $k$  a force applied on object  $A$  with mass  $m_0$  and object takes velocity  $v$  and other objects are at rest condition in frame  $k$ . So, it is acceptable that relativity mass-energy of object  $A$  does increase. Any observer does accept it by compare the mass of object  $A$  with other objects.

Now please take a new look at the effect of gravitational field on objects. When an object is moving upward the earth, it loses its kinetic energy. In formal physics have been accepted that the object's kinetic energy changes to potential energy. And when it is falling, its potential energy changes to kinetic energy.

We can do stop on this acceptance. I will propound a new looking on this phenomenon. In during that object is moving upward and toward the earth, what happens for gravity force?

By according relation  $W = E_2 - E_1$  and  $fd = \Delta E$  when object is moving upward the earth,  $E_1 > E_2$  and object loses its kinetic energy and potential energy does increase. By according relation  $F = -dU/dx$  a new question does propound. We know force is energy per unit distance. I suggest let do not stop on this deduction that kinetic energy and potential energy changes to each other. Because when force works on objects/particles, it produces energy. Does energy produce force? In the other word is energy and force convertible? If the answer was no, there is an imperishable source in nature. It is not a logically acceptance. There are many questions about relationship between force and energy without any explains in theoretical physics. We know when a photon leaves a body; photon does shift to red and loses its energy. What happens for photon's energy that it does lose? In during photon is leaving body, there is interaction between gravity field and photon only. Force does produce energy, energy produces force too. In the other word force and energy is convertible.

### Gravity and energy

The relativistic energy expression attributes a mass to any energetic particle, and for the photon.

$E=mc^2=hf$  and method gravitational potential energy is then

$$U = -GMm/r = -GMhv_0/rc^2$$

When the photon escapes the gravity field, it will have a different frequency

$$v = v_0 (1 - GM/rc^2)$$

Then photon does shift to red and its energy decreases. When escape velocity in a gravitational field was equal  $c$  a photon will be red-shifted to zero frequency. It means the energy of photon converts to gravity force.

Also when the photon is falling in the gravity field, it will have a different frequency

$$v = v_0 (1 + GM/rc^2)$$

Then photon does shift to blue and its energy increases. It means the gravity force does convert to energy. Let us taking a new look at this phenomenon. Is correct the above relation for the initial frequency equal zero? Does produce a photon by gravity force? Why is the speed of gravity same as light's speed? By according the speed of gravity is same as the light's speed in relativity, is it an accident that light and the gravity travel at the same speed? Why has photon zero rest mass?

The answer of all the above questions is this fact that gravity does produce energy and photon does carry energy. In fact gravity converts to energy and it produces photon. Photon does appear at light speed and it decay at light speed. So, photon never is at rest conditions.

### **The Principle of CPH:**

By according gravity produces energy and energy is quantized, so gravity force is quantized. In this article a quantum of gravity force calls Creation Particle Higgs or CPH. CPH moves with constant straight speed  $V_c$ , in empty space and without any external forces in all inertial frames. So that:

$$\text{grad } V_c = 0 \text{ in all inertial frames and any space} \quad (1)$$

The external forces can not increasing or decreasing the amount of speed of CPH. The external force is the factor that changing the route of movement of CPH from straight motion to other motion and vice versa. Any contact between CPH, they repel each other and absorb each other again. These interactions continue till distance between them reaches to near zero.

### **Matrix of fundamental force**

Suppose two CPH are moving with speed  $V_c$ , Distance between them is  $R$ .

We can choice two matrixes  $2 \times 2$ .

Matrix  $R$

$$\begin{bmatrix} R & 0 \\ 0 & -R \end{bmatrix}$$

R is distance between tow CPH and  $-R$  shows distance and its direction.

Matrix CPH

$$\begin{bmatrix} \text{CPH} & 0 \\ 0 & \text{CPH} \end{bmatrix}$$

Matrix R cross Matrix CPH give Matrix A;

$$\mathbf{A} = \begin{bmatrix} R & 0 \\ 0 & -R \end{bmatrix} \begin{bmatrix} \text{CPH} & 0 \\ 0 & \text{CPH} \end{bmatrix} = \begin{bmatrix} \text{torque 1} & 0 \\ 0 & -\text{torque 2} \end{bmatrix}$$

Torque1 is equal  $R \times \text{CPH}$ . By according that;

**grad  $V_c = 0$  in all inertial frames and any space**

CPH starts its rotation and find spin then graviton does find. We never can CPH at linear speed  $V_c$ . in fact there is not any straight motion in nature.

CPH take spin and one of them takes right spin and other one takes left spin. Distance between them decreases and their spin do increase. Any contact between CPH, they repel each other and absorb each other again. This interaction continues and electromagnetic wave appears. These interactions continue till distance between them reaches to near zero. When R goes to near zero, the unit of energy does find. We call it CPH2, it means there are two CPH. CPH2 has not spin.

Suppose there is a CPH that acts on CPH2, then CPH and CPH2 take spin. So, any electromagnetic wave has spin, because they are not alone.

Distance between CPH2 and CPH goes to near zero and CPH3 does find. In the other word a photon with frequency 3 does find. Also it has spin.

Choice two Matrixes  $n \times n$

Matrix of distance cross Matrix of CPH

Matrix of production electromagnetic waves

$$\begin{bmatrix} d_{11}, d_{12}, \dots \\ d_{21}, d_{22}, \dots \\ \dots \\ d_{n1}, d_{n2}, \dots, d_{nm} \end{bmatrix} \begin{bmatrix} \text{CPH}, \text{CPH}, \dots \\ \text{CPH}, \text{CPH}, \dots \\ \dots \\ \text{CPH}, \text{CPH}, \dots, \text{CPH} \end{bmatrix} = \mathbf{E}$$

Then interaction between them produces a lot of photons or other particle.

These productions depend to density of gravitons in space and interaction between other bodies.

### Production of photon

By according the size of a gamma photon and its energy, we can calculate the density of CPH in structure of photon. A gamma photon produces a pair electron-positron. The diameter of electron is less than  $10^{-18}$  meter.

So, suppose volume of a photon is 2 time of electron's volume.

The density of CPH in structure of photon is equal;

Volume of gamma photon is about;

$V=4.2 \times 10^{-74} \text{ m}^3$  and its energy is equal 10.2 MeV. So density of energy  $\rho$  in structure of photon gives with;

$$\rho_E = E/V = 2.4 \times 10^{80} \text{ eV/m}^3$$

Space is full of gravitons. Gravitons have interaction between each other. They absorb and work on each other and convert to electromagnetic wave. When they convert to photon, then density of work (work and energy are same) reaches to;

$\rho_E = E/V = 2.4 \times 10^{80} \text{ eV/m}^3$ . So, for space we have;

Force works on force  
And produces electromagnetic energy

$$\int_0^{\rho_E} dw = E$$

Integral on work of CPH of zero to  $\rho_E$ , E is electromagnetic energy.

In the other word integration of gravitons on each other is a projection to production electromagnetic energy. Also the production of photon happens at light speed. So observer never is able see photon at rest condition. In the rest condition photon decay and produces other particles, (remember pair production).

### Energy Converts

When a photon is falling in a gravity field, its frequency does shift to blue. By consider the following relations energy and speed of photon increases.

Photon in gravitational field

$$\begin{aligned} c &= c_0(1+U/c^2) \\ v &= v_0(1+U/c^2) \end{aligned}$$

Question is that this increasing goes to what amount?

The velocity has a limit in universe. So, the increasing speed of photon has a limit too. When photon is falling gravity force works on it till photon's speed reaches to gravity force. Then energy decay and it converts to force and becomes same as other CPH in that gravity field. Suppose the limit of speed in a gravity field is L. When c reaches to L, E decay and converts to f. then  $dE/dx=f$ . and we have;

Energy converts to force

$$\mathbf{c \rightarrow L \text{ then } E \rightarrow f}$$

Also when photon is leaving a body, gravity force works on it. By consider part falling (see above part) there is an interaction between photon and body and a flow of CPH comes to pass to photon and body. But the number of CPH arrives to photon is less than number of CPH that leaves it. So, the energy and frequency of photon decreases and it does shift to red. This interaction does continue till photon leaves gravity field or all of its energy converts to force.

Other case is that the speed of photon reaches to zero in an inertial frame. Then photon does decay. If photon has energy enough, energy converts to other particles. Pair production happens when the speed of photon reaches to zero. When energy is not enough, it decay and converts to other photons with lower energy or converts to CPH.

Energy converts to mass

$$\mathbf{c \rightarrow 0 \text{ then } E \rightarrow m}$$

In a strongly gravity field the energy of photon does increase speedy. Photon in interaction with other particles (like heavy nuclear) converts to matter and anti-matter. Also, all clocks do form by external forces. All of atoms, earth, sun and solar system etc did form by external force.

Also, time is a function of force. Time depends to force.

In fact external force produces time. And gravity force produces particles. So, universe is not space-time, it is space-force.

With Best Regards  
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