

Time Function and Absolute Black Hole

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Abstract

Einstein's theory of gravity is not consistent with quantum mechanics, because general relativity cannot be quantized. [1] But without conversion of force and energy, it is impossible to find a grand unified theory. A very important result of CPH theory is time function that allows we give a new description of absolute black hole and before the big bang.

Keywords: dilation time, black hole, positron, repulsive gravity force, graviton, clock, spin, time function and Hamiltonian.

1- Introduction

Einstein's theory of gravity is not consistent with quantum mechanics, because general relativity cannot be quantized. Although the super string theory is the only theory which provides a consistent quantum description of gravity.

Supper string theory reclaims that it unifies gravity with the other forces, and so it is a theory that could provide a unified description of all the forces and the all matters in the universe. [1]

But Creative Particles of Higgs Theory (CPH Theory) claims that without conversion of force and energy, it is impossible to find a grand unified theory and to combine general relativity with quantum mechanics. Also, we should reconsider the four theories; classical mechanics, quantum mechanics, relativity and Higgs simultaneously. A very important result of CPH theory is time function that allows we give a new description of absolute black hole and before the big bang. The CPH theory is based on a definition and a principle which will be described as the CPH Principle and it will be discussed as below.

2- What a CPH is?

A CPH is an existence unit of nature, which has being named Creative particle Higgs and everything, is made of CPHs. A CPH has been named a particle, because there would be found no any word in physics for calling this existence unit of nature. But there is no idea about the formation of a CPH in the CPH Theory.

3- Definition of a CPH

A CPH is a Particle with constant mass, m_{CPH} that moves with a constant speed of V_{CPH} in any inertial reference frame when it is alone. According the relation mass-energy;

$$E=mc^2=h\nu \longrightarrow m=\frac{h\nu}{c^2} \quad (1)$$

The mass of photon

$$m_{\text{CPH}} < m = \frac{h\nu}{c^2} \quad (2)$$

for all ν

m_{CPH} is mass of CPH

mass of a CPH defined relative to photon's mass

According to this fact that photon moves by speed of light c and it has spin. So, if we image a photon as a sphere with radius r , for a point on it we have $\mathbf{v} = \mathbf{r}\boldsymbol{\omega}$ here $\boldsymbol{\omega}$ is angular velocity. So, according to relation (2) when a CPH is alone (without spinning) it moves with V_{CPH} so that $V_{\text{CPH}} > c$. Also, when a CPH is alone and it has spin, it calls graviton in CPH theory (Fig; 1).

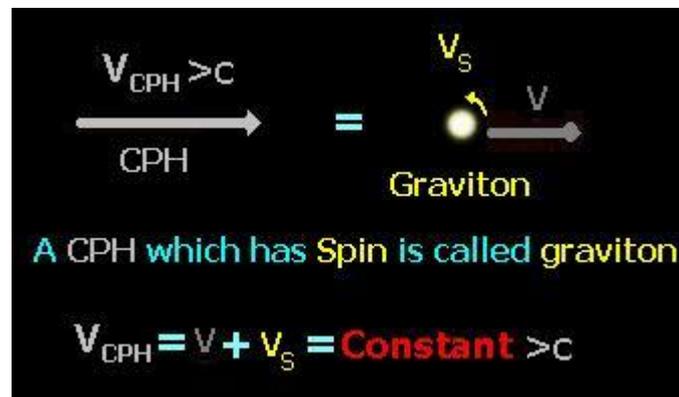


Fig1- a CPH in two cases without spin and with spin

So, a CPH is a tiny energy (or mass) with momentum $p = m_{\text{CPH}} V_{\text{CPH}}$.

4- Principle of the CPH theory

A CPH is a particle with constant mass (m_{CPH}) which moves with a constant magnitude of speed, which is equal to V_{CPH} . The CPH has a momentum of inertia \mathbf{I} in any interaction between itself and the other existing particles, the magnitude of V_{CPH} is constant and it never changes. Therefore,

$$\text{grad } V_{\text{CPH}} = 0 \text{ in all inertial reference frames in any space}$$

5- Energy and Momentum of a CPH

As $V_{\text{CPH}} = \text{constant}$, so, in general case a CPH has two movements; one transfer and the other one spin. Also a CPH has two kinds of energy, transferring and spinning. So, if we use Hamiltonian for a CPH, then we can write as the followings:

$$E_{\text{CPH}} = T + S = \text{constant}$$

here T is transferring energy and S is spinning energy of a CPH.

Properties of a CPH

(1) **Mass of a CPH** $m_{\text{CPH}} < m = \frac{h\nu}{c^2}$ for all ν

(2) **Speed of a CPH** $V_{\text{CPH}} > c$ = 
 CPH Graviton

(3) $V_{\text{CPH}} = V + V_S = \text{Constant} > c$, c is speed of light

(4) $E_{\text{CPH}} = T + S = \text{Constant}$

E_{CPH} : Total energy of a CPH

T : Transferring energy of a CPH

S : Spining energy of a CPH

Properties of a CPH

Therefore, according to above properties of a CPH, spin of CPH is a fundamental quantity in the CPH theory, so in Hamiltonian relation, potential energy has been replaced by spinning energy.

6- Everything is made of CPHs

As General Relativity theory has predicted and also experiments show, the frequency of photons changes in a gravitational field that given by;

$$\nu' = \nu \left(1 \pm \frac{GM}{rc^2} \right) \text{ and } E = h\nu$$

Under gravitational field, increasing and decreasing of photon's energy accomplish gradually. As photon's energy has been combined of electrical energy and magnetic energy, so in red-shift (energy decreasing) and blue-shift (energy increasing) electrical and magnetic energy of photon do change.

According to the above relation when photon is falling in gravitation field, gravity works on it and the energy of photon (also, it's mass) increases. According to the graviton conception, the gravitational field is made of gravitons. Gravity is a force and force is energy per distance, $F = -du/dx$. So, when photon is falling inside the gravitational field, graviton enters to the structure of photon. During this action, a graviton disappears and the energy of photon increases. Therefore, when energy decays, it produces Matter and Anti-Matter. In fact everything has been formed of CPHs (Fig 2).

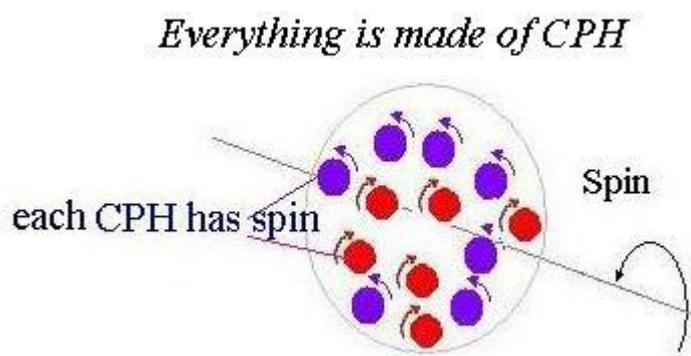


Fig 2- a CPH essentially has spin in structure of everything.

Also, when a photon is escaping of a gravitational black hole, it shifts to zero and the energy of photon converts to gravitons.

7- CPH Theory and Special Relativity Theory

The special relativity has been provided with two principles:

1. The laws of physics are the same in all inertial frames of reference.
2. The speed of light in a vacuum is a universal constant (c) which is independent of the motion of the light source.

Why the speed of light is constant? According to relation (3) of CPH properties and the above section, a photon is made of CPHs; all elements in structure of photon obey the following relation:

$$V_{\text{CPH}} = v + v_s = \text{Constant}$$

Therefore, V_{CPH} is dependent to nothing. Also, v and v_s depend to the external forces that apply to a photon (or a CPH). When a photon moves in a vacuum in inertial frames no force acts on it, so v_s and v never change. A part of v relates to movement of CPH around the y and z axis and the other part is photon's propagation on x axis which is constant (Fig 3).

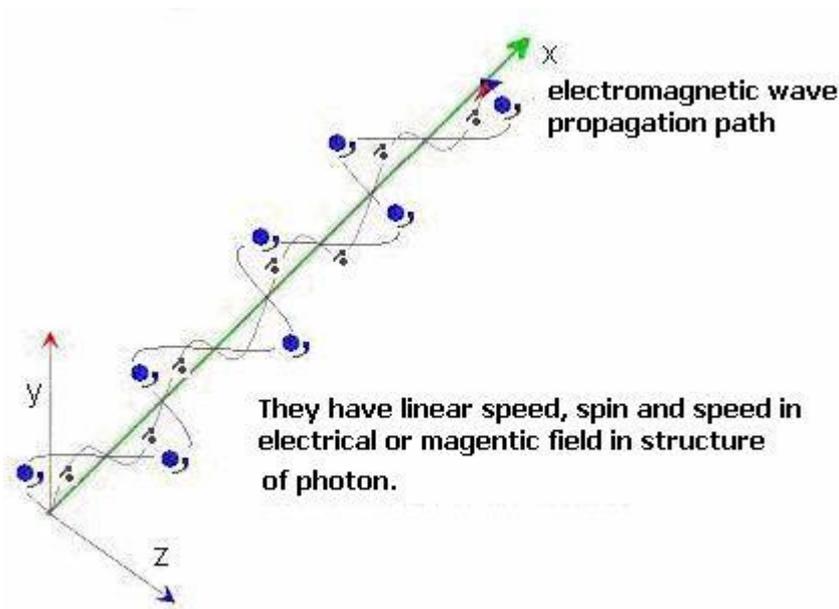


Fig 3- Two CPH paths as a part of photon

The spin of a CPH and its movements around y and z axis depend on interaction between CPHs in structure of a photon. It shows that v on x axis should be constant and equal to limitation of speed in inertial frame which is equal to c in vacuum. So, the constant speed of light in vacuum and in inertial frames is quite logical and it is not by chance.

We can conclude this fact that a photon appears at the speed of light, so no any observer would be able to see the photon at rest condition. Therefore, only and only photon exists at light speed.

8- Relativistic mass and CPH theory

In classical mechanics the linear momentum of a particle is defined by $\mathbf{P} = m\mathbf{v}$ and in a two-body collision, the total momentum $\mathbf{P} = M_1\mathbf{v}_1 + M_2\mathbf{v}_2$ is conserved, and the mass of an object is independent from its velocity.

Einstein was quite sure that momentum conservation must always hold that he rescued it with a bold hypothesis: the mass of an object must depend on its speed! In fact, the mass must increase with speed in just such a way as to cancel out the lower y-direction velocity resulting from time dilation. That is to say, if an object at rest has a mass M , moving at a speed v it will have a mass $M/\sqrt{1 - v^2/c^2}$. Note that this is an undetectably small effect at ordinary speeds, but as an object approaches the speed of light, the mass increases without limit! [2]

According the CPH Theory, the mass of anything depends on its speed, but increasing of its mass has a limit. Now, let us consider that in the elastic collision of two objects with masses M_1 , M_2 (M_1 , is moving with speed v_1 and M_2 is at rest) described below (Fig 4), the interaction is assumed to take place at a negligibly short time-interval and

the velocities of the objects observed on the O frame, before and after the interaction

Yellow object contains k CPH, so;

$$M_2: E(M_2) = \sum_{j=1}^k (T_j + S_j) \quad E(M_2) = \sum_{j=1}^k (T_j + S_j) = kE_{CPH}$$

are given below:

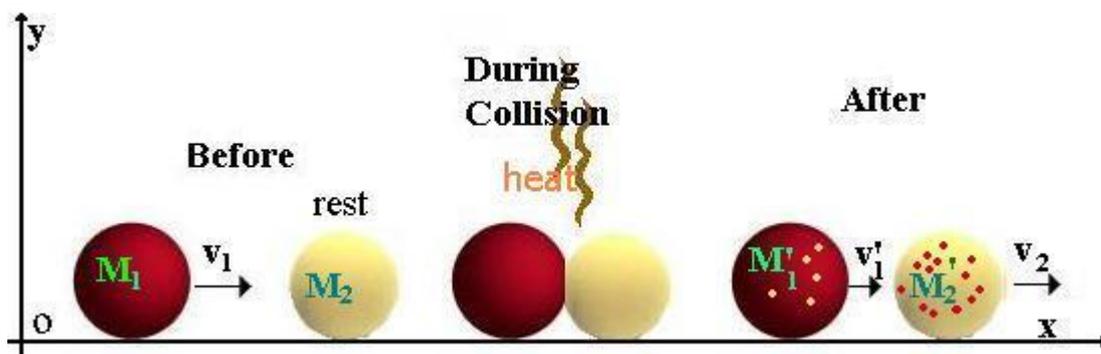


Fig 4- during collision, a lot CPHs exchange between objects

The total energy of a CPH is $E_{CPH} = T + S = \text{constant}$, according to relation (4) of CPH properties. Here T is transferring energy and S is spinning energy of a CPH .

8-1-Before Collision

Red object contains n CPH (relation 4 of CPH properties)

$$M_1: E(M_1) = \sum_{i=1}^n (T_i + S_i) \quad E(M_1) = \sum_{i=1}^n (T_i + S_i) = nE_{CPH}$$

$$E_{total} = E(M_1 + M_2) = (n+k)E_{CPH}$$

8-2-During collision:

According CPH Theory when a force applied on an object and object's velocity increases (in an inertial frame) a lot of CPH enters to the object. During present collision red object loses energy and yellow object gets energy. Because mass (or energy of an object depends to the number of CPH it). So, the mass of red object

decreases and the mass of yellow object increases. Exchanging CPHs between them is a current flow. A lot of CPH leaves yellow object and enter to red object, also a lot of CPH goes of red object to yellow object. But the number of CPHs which correspond are not equal (Fig 5). Suppose the number of CPHs which enters into yellow object is n_1 .

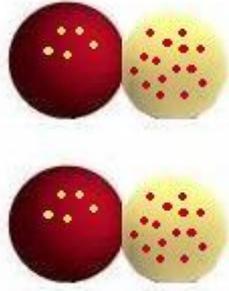


Fig 5- During collision, n_1 CPH enter into yellow object

The red object velocity changes from v_1 to v_1' and yellow object takes v_2 velocity. So:

$$\frac{dP_1}{dt} = \frac{M'_1 v'_1 - M_1 v_1}{dt} \quad \text{Red object velocity and mass changes from } M_1, v_1 \text{ to } M'_1, v_1'$$

$$\frac{dP_2}{dt} = \frac{M'_2 v_2}{dt} \quad \text{Yellow object mass and energy change from } M_2, 0 \text{ to } M'_2 \text{ and } v_2$$

$$\frac{dP_1}{dt} + \frac{dP_2}{dt} = 0$$

During collision when a CPH leaves the red object, it moves with a limit speed in the frame which the speed of transferring of energy is equal to c . So, the force which applied on objects given by:

$$F = \frac{dP}{dt} = \frac{n_1 m_{\text{CPH}} c}{dt}$$

$$\text{For red object} \quad F_1 = - \frac{n_1 m_{\text{CPH}} c}{dt}$$

$$\text{For yellow object} \quad F_2 = \frac{n_1 m_{\text{CPH}} c}{dt}$$

8-3- CPH Theory and Newton's second law

This force that has been applied on yellow object during dt is F that given by;

$$F = \frac{dP}{dt} = \frac{n_1 m_{CPH} c}{dt} = (M_2 + n_1 m_{CPH}) a$$

Because in dt the mass of M_2 increases of M_2 to M_2' that is $M_2' = M_2 + n_1 m_{CPH}$. But for finding pure mass in dt, we should consider that the number of CPHs which enters into M_2 is average between 0 and $n_1 m_{CPH}$, equals to $\frac{n_1 m_{CPH}}{2}$ because at the first, no CPH had entered into yellow object and n_1 belongs to at the end of dt time. So pure force given by;

$$F = \frac{dP}{dt} = \frac{n_1 m_{CPH} c}{dt} = (M_2 + \frac{n_1 m_{CPH}}{2}) a$$

The same force with opposite direction has been applied to red object. So ,yellow object acceleration is positive and red object takes negative acceleration. This is a different looking inside relativistic momentum. This conclusion is the mechanism of increasing of mass in relativity mechanics which its relation has been given as below:

$$p = \frac{m_0 v}{\sqrt{1 - \frac{v^2}{c^2}}} = \gamma m_0 v$$

8-4- Limit of increasing mass in CPH Theory

According to the relativistic length, and relativistic mass, volume decreases to zero and mass increases to infinity. But according the CPH principle, increasing the of volume of a mass is correct until the CPHs contact with each other in structure of mass. When CPHs touch each other, then at this time they repel each other like an explosion, because they all have spin. This is why that nothing is able to travel at the speed of light.

$$L = L_0 \sqrt{1 - \frac{v^2}{c^2}}$$

Before than length goes to zero, system explodes causes contact of CPHs

9- What time is really?

Previously it's quite clear that Isaac Newton founded classical mechanics on the view that *space* is something distinct from body and that *time* is something that passes uniformly without regard to whatever happens in the world. For this reason he spoke

of *absolute space* and *absolute time*, so as to distinguish these entities from the various ways by which we measure them which he called *relative spaces* and *relative times*. [6]

From the other hand, Einstein's Special Theory of Relativity predicted that time does not flow at a fixed rate: moving clocks appear to tick more slowly relative to their stationary counterparts. [4]

$$T = T_0 \sqrt{1 - v^2 / c^2}$$

T time on a moving clock
 T_0 time measured by rest observer

Time depends to velocity

But this effect only becomes really significant at very high velocities that approach the speed of light.

When "generalized" to include gravitation, the equations of relativity predict that gravity, or the curvature of space-time by matter, not only stretches or shrinks distances (depending on their direction with respect to the gravitational field) but also will appear to slow down or "dilate" the flow of time.

Using the equivalence principle we know that the same relation must apply of there is a difference in gravitational potential $\Phi_B - \Phi_A$ between two points B and A in a gravitational field. i.e. [5]

$$\Delta\tau = \Delta t \left(1 + \frac{\Phi_B - \Phi_A}{c^2} \right)$$

If $A \rightarrow \infty$ where $\Phi = 0$ (no gravitational field) and B is taken to be a general point with position vector \mathbf{r} , we expect

$$\Delta\tau = \Delta t \left(1 + \frac{\Phi(\mathbf{r})}{c^2} \right)$$

Since $\Phi(\mathbf{r})$ is negative, the time measured on B 's clock (as seen by A at infinity) is less than the time measured on A 's clock, i.e. clocks run slow in a gravitational field.

So, clocks run (that have proof by test) show following results:

- 1- In inertial frame; when velocity increases, clock runs slower (special relativity).
- 2- Gravitational field; a clock records time diminishes as gravity increases (general relativity).

Now in below the solution of CPH theory to the above problems will be given.

According to CPH theory everything is made of CPHs and definition of CPH, as below;

$$m_{\text{CPH}} < m = \frac{h\nu}{c^2} \quad (2)$$

for all ν

m_{CPH} is mass of CPH

A CPH is a tiny energy, unit existence in universe

Also, a CPH moves with limit of speed in universe (principle of CPH). And according to relativity, time stops in speed of light and photon moves with light speed, so, no time passes of CPH (the unit existence in universe). In the other word, everything in universe (and even universe) is made of units that no time has been passing of it. This conception is very important to understand the nature of time. What time is, really?

For finding the answer of above question, of the first we should answer this question: what is a clock? The answer of last question returns to this fact that everything is made of energy and converts to energy, too ($E=mc^2$). Energy is forming of CPHs, and on time has been passing of CPH. But everything behaves as a clock. In fact everything is a clock. A photon, an electron, an atom, earth, galaxy and even visible universe, each one is a clock. Everything has a starting point in space with its lifetime. So, in general form everything is a space time.

Our ideas about time come up of clocks. There is no time without a clock? Newton thought clock shows time, and there is a clock that shows absolute time in universe, and *time* is something that passes uniformly without regard to whatever happens in the world. Einstein showed running of clocks depends to velocity and gravity density, and time is stoppable. But something that stops is a clock running.

A man is a clock, and this causes we get an image of time differentiable of a clock. No one is able thinks about time without any imagining of a clock?

Time without clock never is imaginable. Time is a name for a clock running same as motion for an object movement. We are able to resolve many historical problems of time by this conception about time and clock. These problems explained down of present article.

10-Time Function

According to above view about clocks, so the properties of CPH enable us to explain that how a clock is running and how it slows. Properties of CPH relations (3) and (4)

show that transferring movement of CPH converts to spinning movement and vice versa. So, time function depends on (v, s) or (T, S) ,

$t=t(s, v)$ here s is spin and v transferring speed.

$t=t(S, T)$ here S is spinning energy and T transferring energy

Time function depends to spinning of CPH in clock structure

Everything is a clock and its time function defined by $t=t(s, v)$. When a clock has been forming, its running depends to perimeter conditions. When a force acts on it, s and v do change. An inertial observer is able to explain running clock in inertial frame and gravitational frame by function $t=t(s, v)$. There is a simple analysis about dilation time in CPH theory that is based on time function and work energy theorem. This analysis allows every inertial observer resolves dilation time problems so easy.

11-Time function and work-energy theorem

According the CPH principle the spin of CPH depends to intensity of external forces that applied on it. Usually an observer will compares running of a clock with other clock or with its last situation. Suppose an inertial observer is sawing a clock at situation A, a force applied on it and clock goes to situation B, suppose the work of force is W , then;

- 1- $W>0$, clock runs slow at situation B relative A.
- 2- $W<0$, clock runs faster at situation B relative A.
- 3- $W=0$, clock runs at situation B same as A.

Proof

In inertial frame; according work energy theorem $W=E_2-E_1$, if $W>0$, then $E_2>E_1$ and $v_2>v_1$. So, clock works slower than before. When $W<0$, then $E_2<E_1$ and $v_2<v_1$. For $W=0$, $v_2=v_1$. (See dilation time in special relativity).

In gravitational field; $W>0$, gravity force and replacement have same direction. Clock goes of high h_1 to h_2 , so $h_1>h_2$ and clock runs slow at h_2 relative h_1 . $W<0$, so $h_1<h_2$, clock goes upward and it runs faster at h_1 relative h_2 . $W=0$, $h_1=h_2$, clock runs same at h_1 and h_2 . (See dilation time in general relativity).

According CPH Theory, when CPH enters to clock, clock runs slower that before. If CPH leaves clock, it runs faster than before. According relation (4) of CPH properties, given by;

$$(4) \quad E_{CPH} = T + S = \text{Constant}$$

$$E(M_1) = \sum_{i=1}^k (T_i + S_i) = kE_{CPH} \quad (1)$$

$$E(M_2) = \sum_{j=1}^n (T_j + S_j) = nE_{CPH} \quad (2)$$

$$W = E(M_2) - E(M_1) = (n-k)E_{CPH}$$

$W > 0$ clock works slower

$W < 0$ clock works faster

Relative an inertial observer

When $W > 0$, then as collision explanation shows, a lot CPH enters into yellow object and its velocity increases, so yellow clock runs slow than before (everything is a clock). In gravitational field when $W > 0$, then object should goes of high h_1 to h_2 that $h_1 > h_2$. Compare weight of a clock at two high h_1 and h_2 relative the earth surface.

This view of a clock running is very simply and useful tool to calculate and comparison clocks running.

Example;

1- A satellite is moving around the earth at high h and with speed v . Compare its clock A with other one B on surface of the earth. Work on clock A relative clock B relative a far inertial observer:

$$W = W_A - W_B$$

$W_A = \text{kinetic energy clock A} + \text{work of earth gravity on clock A}$, and $W_B = 0$

work of earth gravity on clock A is negative.

2- Clock A on the surface of moon and B on the earth. Relative a far inertial observer;

$g_{\text{moon}} < g_{\text{earth}}$ and $v_{\text{moon}} > v_{\text{earth}}$, because moon is moving around the earth

12- Zero volume, infinity density and CPH theory

When a star collapses, its radius decreases. Then its intensity of gravity increases. So, according time function $t=t(s,v)$, s increases for everything in the block hole and every clock runs slow. The range R of a projectile given by;

$$R = \frac{v_0^2 \sin 2\alpha}{g}$$

So, the ranges of projectiles depend to intensity of gravity. Suppose projectile is a photon and $\alpha=45^\circ$, so $R=c^2/g$. R will be zero when g goes to infinity or c goes to zero. But g on the surface of a body given by $g=GM/r^2$, for g infinity there should M be infinity or $r=0$ in block hole. These items are unacceptable and intangible. But according principle of CPH it is acceptable that c goes to zero. Because as relation (3) of CPH properties shows all transferring velocity of CPH converts to spin. As time function $t=t(s, v)$ results, when s increases clock runs slow and for $v=0$, s will be maximize, then clock stops and no time passes in this kind of black holes.

When v goes to zero in black hole, then black hole will turns to an especial case that calls absolute black hole in CPH theory.

13- Repulsive gravitational Force

Newton's universal gravitational law shows that gravitational forces were always attractive. If gravity always attracts, then it is logical to ask why the universe doesn't collapse. Newton had answered this question by saying that if the universe was infinite in all directions, then it would have no geometric center toward which it would collapse; the forces on any particular star or planet exerted by distant parts of the universe would tend to cancel out by symmetric.

More careful calculations, however, show that Newton's universe would have a tendency to collapse on smaller scales: any part of the universe that happened to be slightly denser than average would contract further, and this contraction would result in stronger gravitational forces, which would cause even more rapid contraction, and so on.

When Einstein overhauled gravity, the same problem reared its ugly head. Like Newton, Einstein was predisposed to believe in a universe that was static, so he added a special repulsive term to his equations, intended to prevent a collapse. This term was not associated with any attraction of mass for mass, but represented merely an overall tendency for space itself to expand unless restrained by the matter that inhabited it. It turns out that Einstein's solution, like Newton's, is unstable. Furthermore, it was soon discovered observationally that the universe was expanding, and this was interpreted by creating the Big Bang model, in which the universe's current expansion is the aftermath of a fantastically hot explosion. An expanding Universe, unlike a static one, was capable of being explained with Einstein's Equations, without any repulsion term. The universe's expansion would simply slow down over time due to the

attractive gravitational forces. After these developments, Einstein said woefully that adding the repulsive term, known as the cosmological constant, had been the greatest blunder of his life. [3]

14- Repulsive Gravitational Force and CPH Theory

Black hole absorbs particles and objects. Its density increases, so gravity force does strongly so much. When v reaches to zero, in other word all transferring movements of CPH had been changed to spin, so body takes critical conditions (Absolute black hole), that given by:

$$V_{CPH} = V + V_S = \text{Constant} : V \longrightarrow 0$$

$$E_{CPH} = T + S = \text{Constant} : T \longrightarrow 0$$

Critical condition in an absolute black hole

So, $E_{CPH}=S$, and it is the limit increasing mass of a body. Now consider to time function $t=t(T, S)$, according CPH principle, this is the limit of work on a clock Also, time function and work energy theorem results all clocks stop in absolute black hole. According CPH principle, all CPHs have mass and they are spinning near each other, so, never volume of a body goes to zero.

However; volume of absolute black hole decreases so much and distance between CPHs decreases too. When CPHs contact, their spin cases they repel each other. Upon clashes of CPHs, the reaction domino effect causes absolute black hole explodes.

Before of exploding, time had stopped by increasing of CPHs spin, after exploding time stops by increasing v of CPHs, because they move with speed V_{CPH} that is greater than c .

A far inertial observer how is looking at this part of universe saw: A star collapses and disappears for long time. Because a black hole forms and no light comes of it. Black hole grows and changes to absolute black hole (observer is seeing nothing). Absolute black hole explodes and CPHs go every side, they combine with each other, then photons do form. After a long time photons reach to observer witness colliding bodies or galaxies.

Summary following tables are comparisons between CPH Theory and Relativity theory.

Quantities in special relativity and CPH theory

Theory	Reason	Clock runs	Volume	Density
Special	Increasing speed	Slows	Decreases to	Increases

relativity			zero	
CPH Theory	Increasing speed	Slows	Decreases until contact between CPHs	Increases

Quantities in general relativity and CPH theory

Theory	Reason	Clock runs	Volume	Density
General relativity	Increasing intensity of gravity	Slows	Decreases to zero	Increases to infinity
CPH Theory	Increasing intensity of gravity	Slows	Decreases until contact between CPHs	Increases until contact between CPHs

Infinity density and zero volume are not experimentally. Also, big bang happened of an absolute black hole explosion.

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