

Dark energy and CPH Theory;

Schema;

If the universe is flat and expanding ever faster, some invisible, unidentified energy must be offsetting gravity. In the beginning, when matter was close together and the universe was dense, gravitational attraction was much stronger. Now that matter is far apart and the density of the universe is low, this mysterious energy is pushing space itself outward at an accelerating rate. Its nature is unknown.

In Quantum mechanics and Relativity have been accepted that field and mass-energy are two separable items. But Force, Energy and Mass are equivalent in Theory of CPH.

So, Dark Energy is result able of the above equivalence deduction.

Also in formal physics the attractive and repulsive gravitational force are independence and there is not any relationship between repulsive gravitational force and the limitation of speed in universe. But in Theory of CPH repulsive gravitational force and limitation of speed are depending to each other.

Also universe expanding and accelerating universe are result able of limitation of speed in Theory of CPH.

Dark Energy and the Accelerating Universe *

Deep as Einstein's general theory of relativity may be, it remains silent on a profound question: Is empty space really empty? Inflation models predict that it was not so in the past, and it may not be so today either. Einstein introduced a "cosmological constant" into his equations, to represent the possibility that even empty space has energy and couples to gravity. The unknown magnitude of the cosmological constant is set by parts of physics beyond Einstein's understanding---and, at present, our own.

The new discovery that the expansion of the Universe appears to be accelerating suggests the presence of something dubbed "dark energy" that drives space apart. It seems likely that we have roughly measured the value of a cosmological constant or something like it. This new discovery already widely accepted because it explains many observations. The first indication was that the rate of expansion of the Universe has been increasing, revealed by Type Ia supernovae. Supporting evidence comes from studies of global geometry, structure formation, cosmic age, and galaxy clustering. They leave little doubt that in some sense Einstein's "cosmological constant" is a reality. The energy of the Universe is dominated by empty space whose gravitational effect is to pull the Universe apart.

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.

Also, we know energy is quantized. So, force is quantized too. By according relativity mass-energy it is result able that force and energy and mass are equivalent. Seems any unified theory must contain a new relationship between force and energy and mass. How we can definite a new relationship between force and energy and mass? By consider the relation $E = mc^2$ mass is omissible of presently discussion.

The Limit of speed in Universe

Newton's laws show that there is not any limit for velocity in universe. In Special Relativity the speed of light c in a vacuum is the same in all reference frames. Einstein shows that the limit of speed in universe is light's speed and by considered the relation $m=m_0/(1-v^2/c^2)^{1/2}$ never speed of objects reaches to speed of light. Also those particles are able travel with velocity c that they have zero rest mass.

But in General Relativity the speed of light does change and light's speed in gravitational field gives by following relation;

$$C=C_0(1+U/c^2), U=GM/R, M \text{ is mass of body and } R \text{ is its radius.}$$

For example in a black hole with mass equal 1.4 times of sun's mass and radius equal $R=4.15$ km the speed of light is equal;

$$c=c_0(1+U/c^2)=1.5 c_0$$

It shows the speed of light depends to external force. The limitation of speed in a frame (inertial or no inertial) depends to forces in frame. So any inertial frame has an especially limitation of speed for light. So, the limit of speed in universe is not c .

The limit of speed in universe is V_c , and $V_c > c$ in any frame and human never can measure it. I will explain later.

Gravity and energy

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

$E=mc^2=hv$ 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 looks 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 2×2 .

$$\begin{matrix} \text{Matrix R} \\ \begin{bmatrix} R & 0 \\ 0 & -R \end{bmatrix} \end{matrix}$$

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

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

Matrix R cross Matrix CPH give Matrix A ;

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

Torque1 is equal $R \times CPH$. 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

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

(2)

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 ρ 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

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

(3)

Integral on work of CPH of zero to ρ_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).

Kinetic Energy and Potential Energy

By consider the relations;

$$E^2=c^2p^2+ (m_0c^2)^2 \text{ and } m=m_0/(1-v^2/c^2)^{1/2},$$

There is no idea about zero rest mass and potential energy in relativity.

In the other word when an object takes kinetic energy its mass increases. But when an object takes potential energy, its mass is stable. Also there is not any explain about why the rest mass of photon is zero.

Example; I take a shot and shooting it upward the earth, its mass increases. At high h its velocity reaches zero, shot has potential energy equal mgh. In during that shot is moving upward the earth, its relativity mass decreases. If I take shot on my hand and bring it with constant velocity to high h, mass of shot does not change.

It is a questionable deduction. Classical mechanics did not explain gravity force. And relativity did not define energy. Also in relativity gravity is not a fundamental force. The above example shows there is a relationship between gravity force and energy. When I shoot shot my hand's force that applied on shot is greater than gravity force. Difference between my hand's force and gravity force gives kinetic energy to shot. In the other word, force changes to kinetic energy. But when I bring shot with constant velocity upward, two forces are equal. When shot is falling toward earth, the gravity force converts to kinetic energy and shot's relativity mass increases. Let take a new look at when shot is moving up and falling down.

In during shot is moving upward the earth, gravity force pushing it to downward. By consider the Theory of CPH, shot's kinetic energy changes to CPH and CPH abandons it. When shot is falling down CPH (gravity force) arrives to shot, CPH changes to kinetic energy and shot's relativity mass increases.

What happen in this interaction between CPH and shot? What happens between earth and gravity force? Shot and earth are same. Shot has mass and it is impressionable of gravity force. Also, earth has mass and it is impressionable of gravity force. So, in during shot is moving upward, earth's relativity mass changes to CPH and abandons it.

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

$$c=c_0(1+U/c^2)$$

$$v=v_0(1+U/c^2)$$

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

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

(4)

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

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

(5)

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.

Black hole:

As the nuclear fuel is exhausted, the outward forces of radiation diminish, allowing the gravitation to compress the star inward. The contraction of the core causes its temperature to rise and allows remaining nuclear material to be used as fuel. The star is saved from further collapse, but only for a while.

Eventually, all possible nuclear fuel is used up and the core collapses. The star's final mass and the remaining outward pressure that the burnt-up nuclear residue can muster determine how far it collapses, into what kind of object, and at what rate. If the star is sufficiently massive or compressible, it may collapse to a black hole.

Suppose the limit of speed in a gravity field is L, and escape velocity is V. Only an object can escape from of this gravity field that its speed is between V and L. Also nothing can take velocity greater than L. In following items c is the velocity of light. And suppose $L > c$, we know that the velocity of light increases in gravity field, so $L > c$ is acceptable.

- 1- $V < c$, light is able escape of the gravity field.
- 2- $V > c$, light is unable to escape of the gravity field.
- 3- $V = L$, any object and electromagnetic waves cannot escape of black hole.
- 4- $V > L$, it is absolute black hole and nothing escapes of it. Also gravity too.

When photon is leaving a black hole, all of photon's energy converts to force.

All of our ideas about the universe formed by our experiences on the earth or visible bodies and sky. There are mass, energy and force. We never can find an object without one or two of them. But it is not meaning that there is not any pure force or pure energy in universe. A black hole can be formed only by pure force. Every thing that falls in this black hole changes to force. So a black hole can forms by three kind of material or only by force.

Suppose there is a black hole that there is $V > L$. it is absolute black hole that nothing escapes of it. No object, no light and no other electromagnetic waves are able escape of it. Never receive any signal of it to us. We see an absolute dark part in sky. There the straight velocity of CPH is so near zero. Big Bang happened of a black hole stronger than it.

L and V are very important constants for any bodies, especially for explaining the kinds of black holes. When $V > L$, graviton is unable goes far of it. And outside of it any observers are unable to feel it.

A Black Hole Born by Red-Shift

Let take a new look at the star's compress.

When a photon is leaving star, frequency shifts to red. Suppose a photon does form on the surface of star. Photon shifts to red. In during photon is leaving the star it loses its energy. So, the energy of photon decreases.

The relation $dE/dx = f$ shows when energy of photon decreases, strongly of gravity field cannot be stable.

In during that nuclear fuel of star is used the strongly of gravity force is increasing. It means the outward forces of radiation diminish and inward pressure of gravitational forces multiples. Then star collapses and a black hole is born.

Repulsive gravitational force

In classical mechanics and relativity have been accepted that repulsive gravitational force and limitation of speed are two separable items. But I have been believed that this opinion is incorrect. Repulsive gravitational force and limitation of speed are depends to each other. I will try explaining that two above items is inseparable.

Suppose all transfers motion of CPH changes to rotation motion and CPH has spin only. What event would happen when CPH has spin only and it has not any transfer motion in an inertial frame?

When density of matter is increasing in a black hole, the limit of speed does growth. In during black hole is absorbing particles and objects. Its density increases, so gravity force does strongly so much. In its gravity field the limit of speed does growth, but on the surface of black hole moving is very hardly. But CPH obey of external force until all of its transfer motion changes to spin in or linear motion any inertial frame.

So, when CPH has spin only body takes critical conditions, CPH does not obey of external force and matter does explode. At first a part of black hole explodes and this explosion transfer to all sides of black hole with limitation of speed. So, in a percent of second black hole explode. And a part of universe does expanding.

Also compare it with when distance between CPH reaches to zero and they do flee of each other. So, repulsive force is other face of attractive force.

Repulsive gravitational force depends to SPIN of CPH

CPH has spin only → matter explodes

Attractive force → Repulsive force

distance between CPH=0

gravity force → antigravity force

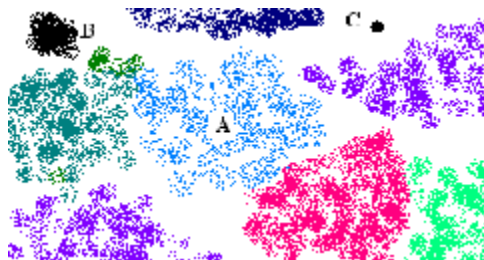
(6)

Our universe was born by a black hole's explosion. All bodies in our universe are interaction with bodies in other universes.

The center of explosion is like the center of great bodies. There external force is near zero in the center of explosion. So, there interaction between particles and atoms do without the effect of a considerable external force. Also the center of explosion is an especially point in observable universe. All bodies are interaction to center of explosion and receive any particles to them from it and go from bodies to center of explosion. In center of explosion interaction between particles produce new particles.

In CPH theory the geometry of universe is not that Newton said or Einstein propounded. Universe is infinite in all directions, but it is part by part. Every part is a sub universe that has itself geometry.

Infinity universe



(7)

A: our visible universe

Following are probability

B; a universe is collapsing

C: a universe had collapsed

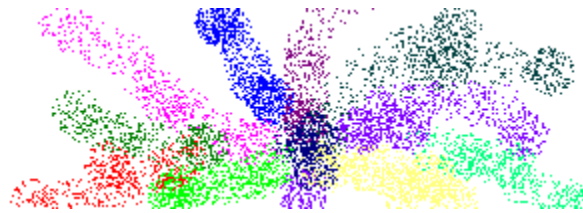
Our universe has interaction with invisible universe

Expanding Universe & Gravity Storm

A Look at Expanding Universe;

Bodies started their motion and did go far from center of explosion, after of Big Bang had happened. Bodies were going far each other and they were impressionable other bodies. So, when a body has been going far of other bodies, its kinetic energy has been changing to CPH and has been abandon it. CPH has been moving all sides of universe, especially toward the center of explosion. When CPHs reach to center of explosion from many bodies, they have different directions. It is like a pool that many tubes with different directions are feeding water to a pool. CPH create storm gravity. We can not see gravity force, so when we are looking at a point of space, there is no any visible things. But storm gravity produces any particle or photon or mass and feed to universe. And we saw many kinds beam of particle receive to earth. But we never can see the source of these particles.

Gravity Storm



CPH come of all sides

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

Forces work on each other

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

(8)

The Conservation Law of Mass-Energy

Classical mechanics had two conservation laws. One was the conservation law of mass, and the other was the conservation law of energy. We know these laws are incorrect because mass and energy are convertible to each other.

Relativity propounded the conservation law of mass-energy. Evidence shows it is correct. Mass and energy are two changeable quantities. We know the conservation law of mass-energy is correct in a closed system. Mass changes to energy and energy changes to mass. But it is a questionable deduction. Are there mass and energy in universe, only?

Suppose universe is a closed system. This supposition is acceptable.

Did form universe of mass and energy only?

There is not other thing in universe?

All evidence shows that objects take energy in fields.

When an electron accelerates in an electrical field, it takes energy.

In this case mass does not change to energy. Field produces energy.

When an object accelerates by force, it takes energy.

Also in this case mass does not change to energy. Field produces energy.

So the conservation law of mass-energy is not correct in universe.

We can find space between stars that there is force only and there is empty of mass and energy. We never can find any closed system that there were mass and energy, only.

But suppose there is a really closed system and it is isolate of others. No external force applied on this closed system. Suppose the summation of all energies is equal x , and summation of mass is equal y kg. There happens a nuclear explosion and z kg mass changes to energy. What happens for nuclear forces? They do go to nothing?

All evidence shows there is a relationship between force and energy.

Force and energy is convertible.

Field is weakly energy.

[Accelerating Universe](#)

Deep as Einstein's general theory of relativity may be, it remains silent on a profound question: Is empty space really empty? Inflation models predict that it was not so in the past, and it may not be so today either. Einstein introduced a "cosmological constant" into his equations, to represent the possibility that even empty space has energy and couples to gravity. The unknown magnitude of the cosmological constant is set by parts of physics beyond Einstein's understanding---and, at present, our own.

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The conservation law the amount of speed is able explain the accelerating expansion of the Universe. The conservation law the amount of speed is result able of Theory of CPH.

The Conservation Law of the Amount of Speed

Suppose atom₁ formed with n_1 CPH, atom₂ formed with n_2 CPH and so on. Suppose all of CPH that a system did form with of them is equal n CPH.. By according;

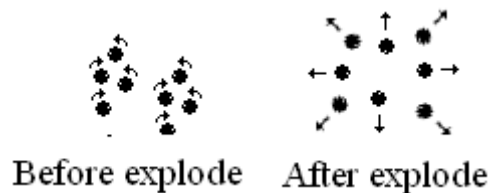
grad $V_c=0$ in all inertial frames and any space

When a system explodes, then the angular momentum of CPH changes to linear momentum.

Any CPH has a linear motion and other movement with objects or other particles.

Any explosion does change other motion of CPH to linear motion. When a star explodes the linear motion of universe does increase. Sun does emit 4×10^{12} kg per second. When sun's light or particles reach to earth, their linear momentums do transfer to earth. So earth takes acceleration. We know any star does burst and they do emit a lot of CPH to space. So the linear momentum of bodies increases and they accelerate. So universe has acceleration.

Universe accelerates by star's explode



(9)

If explosion of bodies was being equal of production of other bodies, universe has not any acceleration.

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http://groups.yahoo.com/group/cph_theory/

* Reference; Scientific Goals and Missions