Nature of the Universe
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Abstract Free space has constant negative energy density. Universe is finite . Energy is created at constant rate and it comes from free space according to the law of creation of energy. The matter or energy which is created contains equal amount of positive energy and negative energy.Therefore total energy of the body is zero. This law gives information about the origin evolution and end of the universe, and this cycle continues.
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I
INTRODUCTION

An energy is equivalent to mass and vice versa. Where this energy comes from. Is space time and energy exist together. This is all related to the origin of the universe.

Space time means space is either expanding or contracting which is assosciated with time. Theory is formulated based on three assumptions.i)Energy is created at constant rate ii) Universe has center. iii)Free space has constant negative energy density. The third assumption is essential for the explaination of the existence force field in space. The existence of force field in space depends on the nature of energy density of space.The energy comes from free space. ie energy is created from free space according to the law of creation of energy

$$E = \pm \frac{C^2}{8\pi G} \cdot \frac{d\phi}{dt}$$

This law states that the amount of energy created in space is directly proportional to the rate of change of velocity flux and the body(matter or energy) which is created contains equal amount of positive energy and negative energy.
But this law doesnot violate the law of conservation of energy. Because an exactly equal amount of negative enegy is created. But it doesnot mean that it has an existence in the form of mass. By the law of creation of energy we can show that the body

(matter or energy) contains negative energy $-mc^2$ which has no existence in the form of mass. So that total energy of the body is zero. This law does not inform us how energy can be created out of nothing.But it only gives amount of energy created by the rate of change of velocity flux.The creation of energy may be matter or energy or both.The body which is created generates two equal and opposite force. The net effect of force on the rate of change of velocity flux is zero.Therefore the expansion rate of space is constant.
We can derive Gauss law in gravitation. Whch indicates that the force of attraction between two bodies is due to their negative energy.

This negative energy opposes the expansion of the universe.Since by the proof that universe is expanding at constant rate. ie concentric spheres with origin as the centre of the universe have different expansion rate according to the law v=r/t
Where r is the radius of sphere or distance of the body from the centre of the universe and t is the time assosciated with the universe.

This shows that the body is moving with the constant velocity. But the force is acting on the body due to negative energy and its direction is towards the centre of the universe. ie force is radially inwards. This force opposes the motion of the body. Since the body is moving with constant velocity which means that an equal force is acting in the dirction opposite to the force due to negative energy (ie gravitational force). This radially outward force is called repulsive force and is due to positive energy.

By this law with the above mentioned assumptions we get the following results.
1 Universe is expanding at constant rate ie concentric spheres with origin as the centre of the universe expand with uniform velocity according to the law v=r/t

2The density of the universe is homogeneous.

3 The space time donot break. ie universe is not started with zero radius. But it starts with smallest value r_s .

4 Time has beginning. ie time starts to flow with smallest value t_s .

5 All observers measure the age of the universe same. ie universe is associated with its own cosmic clock.
6 Existence of repulsive force.

7 The creation of energy started with smallest time t_s . Ie in the interval $0 \le t \le t_s$ there is no energy in the universe.

8 when time run forwards space time and energy exist together.
9 Universe has maximum age T
10 When the age of the universe becomes equal to T the energy disappears. Ie at time t=T the flow of time stops so that energy disappears.
11 When time run backwards no energy is created..
12 We can derive the Gauss law in gravitation.
13 Repulsive force has short range and attractive force has infinite range or the body cannot contract to infinite density.
14When the body is displaced under the action of attractive (or repulsive) force field of another body then the force changes instantaneously. Ie gravitational waves are absent. Or when the energy is created force field pervades space instantaneously.
II

Theory and Proofs:

Theory is formulated based on three assumptions.i)Energy is created at constant rate ii) Universe has center. iii)Free space has constant negative energy density.

But energy is equivalent to mass so the rate of creation of mass is also constant and is denoted by m_α Here subscript is
Greek letter alpha. Its unit is kg/s
1)   Law of creation of energy:
The law states that the amount of energy created is directly proportional to the rate of change of velocity flux and the body which is created contains equal amount of positive energy and negative energy.

$$E = \pm \frac{C^2}{8\pi G} \cdot \frac{d\phi}{dt}$$

Where ϕ is the velocity flux. Ie $\phi = \oint_S v \bullet ds$

Its unit is m^3 / s
At any instant of time the amount of energy (or mass) created is

$$E = m_\alpha t C^2$$
Or
$$E = mC^2$$

2) Concept of velocity flux:

The velocity flux is given by $\phi = \oint_S v \cdot ds$

Where v is the velocity field and ds is the infinitesimal surface element

i) Meaning of velocity field:
Let O be the fixed point (ie centre of the universe) Suppose, when the body is created at point A at a distance r from the fixed point the velocity of the body depends on the distance r
Ie v=f(r)
The velocity field at a distance r from the fixed point O has the same value in all directions. Space may be either expanding or contracting. It is not possible to reduce the value of the momentum of the body to zero with respect to the centre of the universe.

ii) Meaning of velocity flux:
Let O be the centre of the universe.
 Since v=f(r)
 v.ds is calculated for all small surface elements gives the velocity flux over the closed surface.

Now we see that the amount of velocity flux over the closed surface is equal to the total energy present in the volume of the closed surface at that instant of time.
Its proof is given below.
By the law of creation of energy
For positive energy

$$E = \frac{C^2}{8\pi G} \cdot \frac{d\phi}{dt} \qquad 1)$$

Total energy present in the closed surface at any instant of time is
$$E = mC^2$$

Or
$$E = m_\alpha t C^2 \qquad 2)$$

From eqns 1) and 2)
$$d\phi = 8\pi G m_\alpha t dt$$

Integrating
$$\phi = 4\pi G m_\alpha t^2 + K \qquad 3)$$

at time t=0
From eqn 2) implies, E=0
Then from eqn 1) $d\phi / dt$ =0

Implies, either ϕ =0 or ϕ =const

We take ϕ =0 at time t=0

Because if we consider ϕ =const

As velocity field is radial and same

Then value of ϕ is v.s=const

For a spherical surface $s = 4\pi r^2$

$v.4\pi r^2$ =const
since v=f(r)

then f(r). $4\pi r^2$ =const
this eqn gives some value of r and corresponding time t

So that energy is non zero
But energy is zero at time t=0

Thus ϕ =const is not considered

Implies, at time t=0 then ϕ =0
From eqn 3)
 We get
$$\phi = 4\pi G m_\alpha t^2$$
$$\phi = 4\pi G m t$$

which shows that the amount of velocity flux over the closed surface is equal to the total energy present in the volume enclosed by the surface at that instant of time.

3) Existence of negative energy and attractive force:

We can show that the body contains negative energy $-mC^2$
By the law of conservation of energy equal amounts of positive energy and negative energy is created.
For a given closed surface
For negative energy

$$E = -\frac{C^2}{8\pi G} \cdot \frac{d\phi}{dt}$$

But $E = mC^2$ where $m = m_\alpha t$

Here m<0 for negative energy

So that

$$m_\alpha t C^2 = -\frac{C^2}{8\pi G} \cdot \frac{d\phi}{dt}$$

Integrating

For negative energy $\phi = -4\pi Gmt$ Here m<0

Similarly for positive energy $\phi = 4\pi Gmt$ Here m>0

Which indicates that the body contains negative energy $-mC^2$ So total energy of the body is zero.

Force due to negative energy:

For negative energy

$$E = -\frac{C^2}{8\pi G} \cdot \frac{d\phi}{dt}$$

Negative sign indicates that the negative energy opposes the rate of change of velocity flux. Ie it opposes the expansion of the universe which means that a force is generated due to negative energy which opposes the expansion of the universe and is directed towards the centre of the universe. in other words force is radially inwards.

Later we see that law of this force is a Newtons law of gravitation and also the force of attraction between two bodies not depends on their positive energy but it depends on their negative energy.

4) Universe is expanding at constant rate ie concentric spheres with origin as the centre of the universe have different constant expansion rate ie v=r/t
Proof:
We have already proved that
For positive energy
$$\phi = 4\pi Gmt \qquad 1)$$

But $\phi = \oint_S v \bullet ds$

    and $m = \int_V \rho.dV$

eqn 1) becomes

$$\oint_S v \bullet ds = \int_V 4\pi Gt\rho.dV$$

By Gauss divergence theorem

$$\oint_S v \bullet ds = \int_V \nabla \bullet v.dV$$

implies $\nabla \bullet v = 4\pi Gt\rho$

since $\nabla \bullet v$ is positive which shows that universe is expanding and also the divergence of velocity flux gives the total energy present in infinitesimal volume at that instant of time.

Now we shall find the relation between v and r

Let O be the centre of the universe, consider an imaginary sphere with radius r. Since the velocity field at a distance r from the origin has the same value in all directions. So the imaginary sphere is expanding

Let P be any point on the sphere.
The position vector of P is
R=xi+yj+zk

Mod(R)=r

Any point on the line OP is
  x=l.r   y=m.r   z=n.r

The component of velocity of point P is
  vx=l.v   vy=m.v   vz=n.v

We know that
$$\nabla \bullet v = 4\pi Gt\rho$$

putting the component of velocity and coordinates
we get
3.dv/dr= $4\pi Gt\rho$
since v is a function of one variable r
so replace (partial derivative) $\partial v / \partial r$ by dv/dr
then substituting the density of sphere and $m = m_\alpha t$

dv/dr$= (Gm_\alpha t^2) / r^3$ 4)

but

$$Gm_\alpha t^2 = \phi / 4\pi$$

Putting this in eqn 4)

dv/dr$= \phi / (4\pi r^3)$

as velocity field is radial and is same

dv/dr=v/r

integrating

v=r/k   5)
where k is a constant of integration and is of dimension of time.
This eqn shows that the velocity of the point P (or body) is directly proportional to the distance from the centre of the universe.

The constant of integration is dimension of time. Since time flows because the eqn $m = m_\alpha t$ indicates that the universe is

assosciated with time ie it has its own cosmic clock. We can determine time (ie age of the universe) by measuring the total energy of the universe.
We can show that by another way the constant k is changing. The relation v=r/k indicates that the ratio v/r=1/k is always constant.
Consider a body at a distance r from the centre of the universe. Its velocity should be according to the law v=r/k As v is proportional to r the body is moving with uniform velocity. When the body covers a distance 2r the constant k must change to 2k.Because the body is moving with uniform velocity. So that v is same. Which means that the constant k or time is flowing uniformly.
Thus in eqn 5) k is replaced by t
Therefore   v=r/t

5) The relation between v and m_α

By the law of creation of energy
For positive energy

$$E = \frac{C^2}{8\pi G} \cdot \frac{d\phi}{dt}$$

Consider a sphere which is expanding with velocity v

For a sphere velocity field is radial and is same
Value of the velocity flux is ϕ =v.s
Putting this value of fi in the above eqn

$$E = (C^2 v^3 t) / G$$ 1)

At any instant of time the total energy present in the sphere is given by
$$E = m_\alpha t C^2$$ 2)

From eqns 1) and 2)

$$m_\alpha = v^3 / G$$

which shows that the rate of creation of energy is different in the concentric spheres which are expanding with velocity v

Since velocity of light is maximum and it corresponds to the radius of the universe r=C.t

The rate of creation of energy in the universe is $m_\alpha = C^3 / G$

m_α is a universal constant.
6) The density of the universe is homogeneous.
Proof:
Consider a sphere with origin as the centre of the universe expanding with velocity v and its density is

$$\rho = 3m / 4\pi r^3$$

putting r=v.t $m = m_\alpha t$ and $m_\alpha = v^3 / G$

we get

$$\rho = \frac{3}{4\pi G t^2}$$

This eqn shows that the density of the universe is independent of mass and shape of the closed surface thus density of the universe is homogeneous and it also indicates that the density is decreasing with time. This value is two times large as predicted by Big bang theory.

7) i)Space time donot break
  ii) Time has a beginning.

iii)The creation of energy started with smallest time t_s

iv)The universe starts to expand with smallest value of radius r_s

Proof:
By the law of creation of energy

$$E = \pm \frac{C^2}{8\pi G} \cdot \frac{d\phi}{dt}$$ 1)

When there is no energy in the universe
Then E=0

Eqn 1) becomes $d\phi / dt = 0$

Implies , either ϕ=0 or ϕ=const=a(say)
As velocity field is radial and same
The value of fi is
  v.s=a   2)

Since universe is a sphere with its radius r=C.t   and $s = 4\pi r^2$
Eqn 2) becomes

$$t = \sqrt{a / 4\pi C^3} = t_s \text{ (say)}$$

This shows that energy is zero at ϕ=0 or ϕ=a Therefore in the interval $0 \le t \le t_s$ there is no energy in the universe.

ϕ=0 is not considered because v=0 It means that concentric spheres have zero velocity so time is not associated. Therefore

space time breaks. Thus we consider ϕ=a

For value $t = t_s$

From the equation $E = m_\alpha t C^2$

Implies $E \ne 0$ because $t = t_s$

But energy is zero at ϕ=a This means that the value ϕ=a corresponds to the time $t = t_s$ is a minimum value of velocity

flux.
Therefore $d\phi / dt = 0$
Hence by the law of creation of energy E=0
In otherwords the creation of energy is started with minimum value of velocity flux. So by the law of creation of energy for
minimum value of velocity flux we get E=0

Now, during forward flow of time t>0
Let us consider for positive energy
$$\nabla \bullet v = 4\pi G t \rho$$

Putting $\rho = \dfrac{3}{4\pi G t^2}$

Implies $\nabla \bullet v = 3 / t$ where t>0

($\nabla \bullet v$)>0 indicates that during forward flow of time velocity flux is increasing with time. It means that universe is expanding

and positive energy is created at constant rate m_α By the law of conservation of energy exactly equal amount of negative

energy is created.

Therefore the universe starts to expand from minimum value of velocity flux and this corresponds to the smallest time t_s .

Thus space time exists from smallest time t_s Therefore time flows from smallest value t_s ie time has beginning. We conclude

that the creation of energy and expansion of the universe started with smallest time t_s and this corresponds to the minimum

radius of the universe r_s =C. t_s
8)   i) Universe has maximum age T
ii) When the age of the universe becomes equal to T energy disappears.
iii)Time can run backwards during that no energy is created.
Proof:
i)
We know that
$$\nabla \bullet v = 4\pi G t \rho \quad 1)$$

Putting $\rho = \dfrac{3}{4\pi G t^2}$

Implies, $\nabla \bullet v$ =3/t   2)

If the age of the universe is infinite
Then putting t=∞ in eqn 2)

So $\nabla \bullet v$ =0
Or
   dv=0
implies, either v=0 or v=const

This shows that concentric spheres with origin as the centre of the universe are expanding with either zero velocity or with
constant velocity. During forward flow of time energy is created at constant rate. This is absurd that for a body moving with

velocity v or for a sphere under consideration which is expanding with velocity v now becomes zero velocity or expanding with constant velocity at t= ∞ In other words concentric spheres are expanding with same velocity at time t= ∞

It means that the bodies located at different radii move with same velocity at time t= ∞ . So we get absurd result.Therefore time cannot flows from t= t_s to t= ∞ This means that time flows from the smallest value t= t_s to some maximum value t=T

In another way since time flows independently from from smallest value t_s Then how can it reach the value infinity. Thus universe has maximum age T

ii) When the age of the universe becomes equal to T energy disappears.
At time t=T the velocity flux is maximum

$$\phi = 4\pi Gm_\alpha T^2$$

So $d\phi / dt = 0$

Implies, E=0

This means that at time t=T the energy disappears

iii) Time can run backwards during that no energy is created.
Proof:
At time t=T then E=0 ie energy disappears at time T

We have

$$\nabla \bullet v = 4\pi Gt\rho \qquad 1)$$

At time t=T then $\rho = 0$ because E=0

Eqn 1) becomes

$$\nabla \bullet v = 0$$
dv=0

Implies, either v=0 or v=constant

v=0 is excluded because space time breaks ie concentric spheres have zero velocity so that time is not assosciated

If we consider v=const then space time donot break. Here v=const must be negative because if v=const is positive then the radius of the universe is greater than r=C.T(maximum radius of the universe at time T) Thus time flow exceeds T So that v=const must be negative.

Thus v=const=-u(say)
This shows that concentric spheres starts to contract with rate v=-u So time run backwards. Time starts to decrease from maximum value T to the smallest value ts Because space time exist with this smallest time ts Since $\nabla \bullet v = 0$ means that when the universe is contracting there is no creation of positive energy.
We shall find the value of rate of contraction of concentric spheres.
Consider v=-u
Or
dr'/dt=-u
Integrating
r'=-u.t+K
At time t=0 r'=0
Therefore r'=-u.t 1)
During forward flow of time the instantaneous radius of the universe is r=C.t 2)

At time t=T energy disappears and universe starts to contract with rate v=-u At time t=T the radius of the universe obtained by equations 1) and 2) should be equal.
Therefore equating both equations.
At time t=T
r'=r
we get u=C
Therefore v=-C
The concentric spheres contract with rate equal to the velocity of light.

Now we shall prove that when the universe is contracting negative energy is decreasing at constant rate $m_\alpha = C^3 / G$

Consider a sphere of radius r=-C.t which is the radius of the universe during contraction at the instant of time t Since concentric spheres are contracting with rate equal to the velocity of light.
For a sphere velocity field is radial and is same but C and infinitesimal surface element ds are in opposite direction.

Therefore value of the velocity flux is ϕ =-C.S where $S = 4\pi r^2$

Or

$$\phi = -4\pi C^3 t^2$$

Therefore $d\phi / dt = -8\pi C^3 t$

The negative sign indicates that velocity flux is decreasing with time. This means that the universe is contracting.

putting $d\phi / dt$ in the law of creation of energy we get

$$E = \pm \frac{C^5 t}{G}$$

Or

$$E = \pm m_\alpha tC^2$$

Since $\nabla \bullet v = 0$ means that during contraction of the universe there is no creation of positive energy. Therefore we consider only negative energy.

Thus $E = -m_\alpha tC^2$

Or

$E = mC^2$ where $m = -m_\alpha t$

During the contraction of the universe time is running backward from maximum value T to the smallest value ts Therefore negative energy is decreasing at constant rate $m_\alpha = C^3 / G$ Thus during backward flow of time when the flow of time becomes equal to the smallest value t_s then again time runs forward because for value t=t_s the velocity flux is minimum. So universe starts to expand from minimum value of velocity flux with creation of equal amount of positive energy and negative energy.

Meaning of $(\nabla \bullet v)$<0 :
Let us consider for negative energy

$$\nabla \bullet v = 4\pi Gt\rho \qquad 1)$$

where $\rho < 0$ and t<0

Here t<0 means that time is running backward from maximum value T to the smallest value t_s

The negative energy density of the sphere is

$$\rho = \frac{3m}{4\pi r^3} \qquad 2)$$

where m<0
Since concentric spheres contract with same rate equal to the velocity of light. Therefore the radius r=C.t is the radius of the universe
We know that for the sphere of radius r=C.t during contraction of the universe the rate of decrease of negative energy is

$$m_\alpha = C^3 / G$$

putting r=C.t $m = -m_\alpha t$ and $m_\alpha = C^3 / G$ in equation 2)

Therefore $\rho = -\dfrac{3}{4\pi Gt^2}$

Putting for rho in equation 1) we get

$\nabla \bullet v$ =3/t   where t<0

Here t<0 means that time is running backward from maximum value T to the smallest value ts so replace t by –t

Therefore $\nabla \bullet v$ =-3/t

$(\nabla \bullet v)$<0 indicates that during backward flow of time velocity flux is decreasing with time. This means that universe is contracting and it is proved that during contraction of the universe negative energy is decreasing at constant rate

$$m_\alpha = C^3 / G$$

9) Law of force due to negative energy (or Gauss law in gravitation):
The law of creation for negative energy is

$$E = -\frac{C^2}{8\pi G} \cdot \frac{d\phi}{dt}$$

Negative sign indicates that negative energy opposes the rate of change of velocity flux.ie force is generated due to negative energy and is radially inwards,because it opposes the expansion of the universe.

Now $E = mC^2 = -\dfrac{C^2}{8\pi G} \cdot \dfrac{d\phi}{dt}$

Here m<0 for negative energy, because universe is expanding so that $\dfrac{d\phi}{dt}$ is positive

We know that for negative energy

$$\phi = -4\pi Gmt$$

By this eqn we obtain

$$\nabla \bullet v = -4\pi Gt\rho$$

Here ρ <0 because for negative energy m<0

We know the body which is at a distance r from the centre of the universe has a uniform velocity and is given by v=r/t
Since a force due to negative energy opposes the motion of the body. But the body is moving with constant velocity which means that equally opposite force is acting. So that its velocity is constant.
This force is radially outwards and is called as repulsive force. Later we discss about this force.

Since the body contains positive energy +m' C^2 and negative energy -m' C^2
Where m' is the mass of the body

Now the momentum of the negative energy (or mass) of the body is
      p=-m'.v
its momentum is directed towards the centre of the universe.
      p=-m'.r/k   because   v=r/k
Force acting on the body is
F=-m'.v/k
Since time is flowing k is replaced by t
This shows that force is directed in the opposite direction to the velocity of the body. This means that the force on this body is due to negative energy contained in the sphere expanding with velocity v of instantaneous radius r=v.t

Now F=-m'.v/t
     F/m'=-v/t
Since a body of mass m' moving with velocity v the ratio F/m'=E (say)   which gives force/ unit mass at any instant of time t
     E=-v/t

Operating divergence on both sides

$$\nabla \cdot E = -\frac{\nabla \cdot v}{t} \qquad 1)$$

Since negative energy opposes the motion of the body, so that for negative energy
We have

$$\nabla \cdot v = -4\pi G t \rho \qquad \text{here is } \rho < 0 \text{ because m<0}$$

putting this in eqn   1)

$$\nabla \cdot E = 4\pi G \rho$$

By Gauss divergence theorem

$$\oint_S E \cdot ds = -4\pi G m \qquad \text{here } m = m_\alpha t$$

Because for negative energy m<0 so $\rho < 0$

Which is a Gauss law in gravitation.
For a sphere E is same and is radial.

$$F = -\frac{Gmm'}{r^2} \cdot \hat{r}$$

Which is a Newtons law of gravitation.
Thus we conclude that the force of attraction between two bodies is due to their negative energy.
Since we have already taken the signs of m and m' negative . So we donot take negative sign again in the eqn

$$F = -\frac{Gmm'}{r^2} \cdot \hat{r}$$

10) Law of repulsive force:
The momentum of the positive energy (or mass) of the body is
    p=m'.v
for positive energy m'>0

similarly ,
the law of repulsive force is

$$F = \frac{Gmm'}{r^2} \cdot \hat{r}$$

Force is radially outwards and is due to positive energy.

11) Repulsive force has short range and attractive force has infinite range or the body cannot contract to infinite density.
Proof:
The Gauss law in gravitation for negative energy is

$$\oint_S E \cdot ds = -4\pi G m$$

where $E = -\frac{Gm}{r^2} \cdot \hat{r}$

Where r=v.t is the instantaneous radius of the sphere containing instantaneous mass $m = m_\alpha t$ This force is attractive and is due to negative energy. Now the question arises why the attractive force field exists in the space or why we only found the gravitational force. This is because the existence of force field in the space depends on the property of the space . The eqn

$E = -\frac{Gm}{r^2} \cdot \hat{r}$ reveals that the attractive force field exists in the space of radius r=v.t containing negative energy

$$m = m_\alpha t$$

 This means that attractive force field depends on negative energy. Therefore attractive force field exists in the space. Its range is infinite because free space has negative energy. Hence the attractive force field exists up to infinte distance.

Now for positive energy

$$\oint_S E \cdot ds = 4\pi G m$$

whrere $E = \frac{Gm}{r^2} \cdot \hat{r}$

This force is repulsive and is due to positive energy. The eqn $E = \frac{Gm}{r^2} \cdot \hat{r}$

 reveals that the repulsive force field exists in the space of radius r=v.t containing positive energy $m = m_\alpha t$ which means that repulsive force field exists in the space of positive energy. Since the body contains positive energy but free space has negative energy. Threrefore repulsive force field exists only within the space of the body.
A body of large mass contracts due to attractive force. Since the repulsive force field exists only within the space of the body and is due to positive energy.Therefore there is a minimum radius beyond which the body cannot contract. In otherwords when the radius of the body becomes equal to minimum radius then the repulsive force come into play. The forces due to positive energy and negative energy are equal and opposite. Hence the body cannot contract to infinite density and its density is uniform. We proved this by considering the expansion of the universe.
Now we prove generally by considering a body of mass m
Consider a body of mass m
Let us assume that repulsive force field exists in space.
Now, Gauss law in gravitation is

$$\oint_S E \cdot ds = 4\pi Gm \qquad \text{(1}$$

where E=Ea+Er

where Ea is attractive force field and is due to negative energy and Er is repulsive force field and is due to positive energy. Since the body contains equal amount of positive energy and negative energy. Therefore total energy of the body is zero. Ie m=0

Putting m=0 in eqn (1

$$\oint_S E \cdot ds = 0 \qquad \text{(2}$$

Therefore E=0
Implies Er=-Ea
Or

$$Er = \frac{Gm}{r^2} \cdot \hat{r}$$

This is the law of repulsive force.

Now, from eqn (2 we get

$$\int_V \nabla \cdot E . dV = 0$$

implies $\nabla \cdot E = 0$

Since Ea and Er is radial.
Therefore dE/dr=0
Implies E=const
Or
Ea+Er=const
But Ea=Er
Therefore Er=const=a(say)

Equation $Ea = -\frac{Gm}{r^2} . \hat{r}$ indicates that the attractive force field exists in the space of negative energy.Since free space

has constant negative energy density.Hence attractive force has infinite range. The equation $Er = \frac{Gm}{r^2} \cdot \hat{r}$

indicates that the repulsive force field exists in the space of positive energy but free space has negative energy.Therefore repulsive force field exists only within the space of the body The result Er=const=a is derived by the assumption that repulsive force field exists in space. This means that repulsive force comes into existence for particular value of radius called as minimum radius. At this radius, since the law of force due to positive energy and negative energy are equal and opposite.Therefore the body cannot contract further.In otherwords the body cannot contract to infinte density and the density of the body is uniform. Hence the range of repulsive force is $0 \le r \le r_{min}$

Now we shall find the expression for minimum radius of the body

Let us consider the universe which is expanding uniformally and energy is created at constant rate.
It is known that repulsive force field exists up to the radius r=C.t It means that this is the minimum radius.
We know that magnitude of the repulsive force field is

$$Er = \frac{Gm}{r^2} \qquad \text{(1}$$

At r= r_{min} =C.t then Er=a

Putting these in equation (1

$$a = Gm / r_{min}^2 \qquad \text{(2}$$

Now, putting r_{min} =C.t $m = m_\alpha t$ and $m_\alpha = C^3 / G$ in equation (2

Therefore a=C/t (3
Eliminating a from equations (2 and 3) we get

$$r_{min} = Gm / C^2$$

Body contracts due to gravitational force and when the radius of the body becomes equal to the minimum radius then repulsive force comes into existence. The law of repulsive force and attractive force are equal and opposite. Hence the body cannot contract to infinite density and the density of such body is uniform.

12) Gravitational waves are absent or when the energy is created force field pervades space instantaneously.
Proof:

The momentum of the negative energy of the body of mass m' is p=-m'.v
Putting v=r/k
   p=-m'r/k
Force generated by negative energy contained in the space of instantaneous radius r=v.t opposes the motion of the body.
F=-m'.v/k
Since k is flowing replace k by t
F= -m'.v/t
E=-v/t

$$dE = v.dt / t^2$$

where dr=v.dt
When the body covers an infinitesimal distance dr in the infintesimal time dt then force per unit mass changes in the infintesimal time dt This means that force per unit mass changes instantaneously. Therefore when the body is displaced under the action of attractive force field of another body then the force changes instantaneously. In otherwords action transmits instantaneously. Thus gravitational waves are absent Similarly for positive energy of the body force is repulsive and action transmits instantaneously.

Now we prove that when the energy is created field pervades space instantaneously.
Attractive force field due to negative energy is
E=-v/t

$$dE = v.dt / t^2$$

$$dE = (G.dm) / v^2 t^2 \quad \text{because} \quad v^3 = m_\alpha G \quad \text{and} \quad dm = m_\alpha dt$$

When the energy is created in the infintesimal time dt then the atractive force field changes in the infinitesimal time. Therefore attractive force field changes instantaneously. But energy comes into existence in zero time ie for eg particles like neutron photon comes into existence when the interval of time becomes equal to their creation time. Thus when the energy is created field pervades space instantaneously.

III Discussion:

The creation of energy may be matter or energy or both. Energy is created at constant rate $m_\alpha = C^3 / G = 4.03 * 10^{35}$

kg/s By observations it is found that mass density of the universe including mass of neutrinos, photons and matter is

$2 * 10^{-26} kg / m^3$ By the predictions of the law of creation of energy, this value gives age of the universe

t=$1.36 * 10^{10}$ years energy m=$1.7 * 10^{53}$ kg and radius of the universe r=$1.36 * 10^{10}$ light years These values agree well with observations. Space is either expanding or contracting. During forward flow of time universe is expanding uniformly according to the law v=r/t This equation has the same form as Hubbles law. This law is applicable only for measurement of velocities of the galaxies should be made wrt centre of the universe.But observations shows that Hubbles relation fits well for all velocities. This means that position of our Milkyway might be nearest to the centre of the universe. Thus the law v=r/t is obeyed. Therefore this equation has the status of Hubbles law.
The creation of energy and uniform expansion of the universe is started with smallest radius at which velocity flux is minimum. The concentric spheres have different expansion rate. Therefore the rate of creation of energy is different, but the energy density of all concentric spheres is same and depends only on time. Thus density of the universe is homogeneous. But it contains local irregularities such as stars and galaxies. These are developed due to the nature of forces due to positive energy and negative energy. Since attractive force field exists inspace but repulsive force field exists only within the space of the body and it come into play at minimum radius. Therefore attractive force field responsible for agregation of particles into stars and galaxies. In the space where the density of energy is less than the average density the creation of energy is more to maintain uniform density.This leads to the homogeneity of density on large scale.
The law of creation of energy reveals that the energy which is created contains equal amount of positive energy and negative energy. The law of force due to positive energy and negative energy are equal and opposite. The law of force due to negative energy is Newtons law of gravitation which indicates that the force of attraction between two bodies is due to their negative energy.The existence of attractive force field in the space depends on the property of the space. Since attractive force field exists in the space of negative energy.This gives evidence that free space has negative energy density.
The law of creation of energy predicts that time can run both forward and backward. Time runs forward from smallest value ts

to maximum value T During forward flow of time creation of energy exists in the interval t_s <t<T At values t=t_s and t=T

energy in the universe is zero. At time t=T time starts to run backward . Here universe is contracting with no creation of energy. When the flow of time reaches the smallest time ts again time runs forward. This cycle continues.

IV
Conclusion:
 Energy comes from free space according to the law of creation of energy. A body contains equal amount positive energy and

negative energy. Ie positive energy +m C^2 and negative energy –m C^2 which has no existence in the form of mass
So that total energy of the body is zero. Thus the negative energy density of the free space is constant.

The universe starts creation of energy from smallest time t=t_s to the maximum age of the universe t=T At time t=T the

energy in the universe disappears. Then time starts to run backwards ie time decreases from maximum value T to the smallest value ts here universe is contracting with no energy.When the time becomes equal to the smallest time ts again the creation of energy starts and again universe starts to expand and this continues.

About forces:
The existence of repulsive and attractive force field depends on the property of the space. Attractive force field exists in the space of negative energy and repulsive force field exists in the space of positive energy. Since the free space has negative energy Hence the existence of attractive force(gravitational force) in the space. The repulsive force come into play when the body contracts to minimum radius. The forces due to positive energy and negative energy are equal and opposite. Hence the body cannot contract to infinite density.
When the energy is created force field pervadesspace instantaneously and also when the body is displaced under the action of the force field of another body force changes instantaneously. In otherwords action transmits instantaneously. Therefore gravitational waves are absent.

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