Gravitational theory of time

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Abstract: **What is the source of the gravity? Why the zero point energy didn't lead the curvature of space-time to infinite? How to describe the gravity in a very short length? Why the proton almost can't decay? Who is the first cause? To answer those questions, I wrote this paper and I hope my ideas can give us a right answer.**

Introduction: The general relativity is a great theory to describe the gravity, but it has many questions which can't be answered by classical theory, like the black hole. So I want to express my idea about those questions. I discussed the source of the gravity and the gravitational theory in a very short length, I also discuss the structure of the protons and the origin of the universe.

Keywords: gravity; general relativity; proton

Calculations, results and conclusion

1. A view about the black hole

If there is a black hole and there is a person A in the gravitational field of the black hole. The person A is doing the Davisson-Thomson experiment to observe the interference of the electrons. If there is another person B in a place where is far from any gravitational field. A will find that the wavelength of electrons is λ0but B will think that the wavelength of the electrons is λ' and

$$\lambda' = \lambda 0 \sqrt{1 - \frac{2GM}{rc^2}}$$

M is the mass of the black hole. But if A is on the event horizon of the black hole (r=2GM/c^2), B will think that the wavelength of the electrons λ'=0. And from the view of de Broglie, B will think the electrons have infinite momentum ($p = \frac{h}{\lambda}$). Because B and the electrons aren't motionless, B will find the frequency of the electrons $\nu = \infty$ ($T = \frac{\lambda}{v}$, $\nu = \frac{1}{T}$, v is the relative speed of the

electron and B). And B will think the energy of the electrons $E = \infty$ ($E = h\nu$), B will find that the mass of the black hole became infinite because the electron, but in fact, B doesn't think the mass of the black hole will be infinite. Now, there is a new view about that.

If there is an electron which has energy E1=h ν 1=M1c^2, and there is a black hole which has energy E2=h ν 2=M2c^2. Now, if the electron fall into the black hole's gravitational field, we will find the electron's energy became bigger and bigger. How much energy does the electron will increase finally? Because the law of conservation of energy, we know that the biggest energy which the black hole can give the electron is the energy of the black hole: E2. So the biggest energy the electron could have is E1+ E2. But if the energy of the electron has increased to E1+E2, the energy of the black hole also has increased because the gravity of the electron, so now the energy of the electron and the black hole both are E1+E2.So we can get:

$$E_1 + E_2 = \frac{E_1}{\sqrt{1 - \frac{2GE_2}{r_1 c^2}}}$$

$$r_1 = \frac{2GE_2(E_1 + E_2)^2}{(E_1^2 + 2E_1E_2)c^2}$$

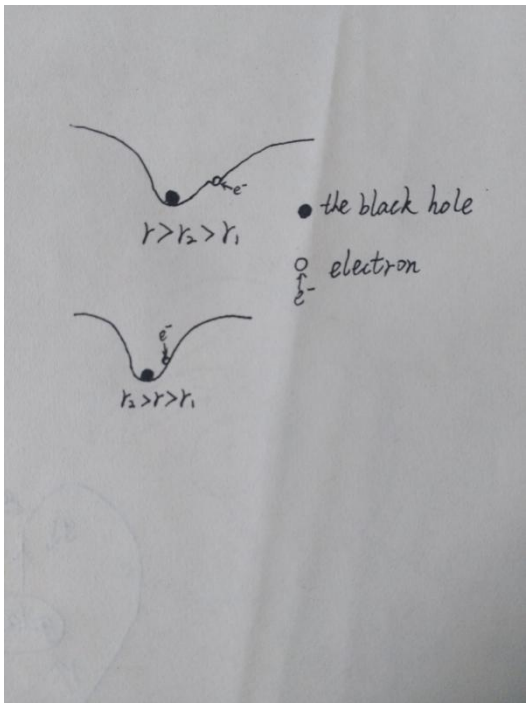
$$r_2 = \frac{2GE_1(E_1 + E_2)^2}{(E_2^2 + 2E_1E_2)c^2}$$

If $E_1 \neq E_2$, $r_1 \neq r_2$, so we can know in r1, the electron doesn't have acceleration from the black hole and in r2 the black hole doesn't have acceleration from the electron. If the mass of the black hole is bigger than the electron, we can see:

$$E_1 < E_2$$

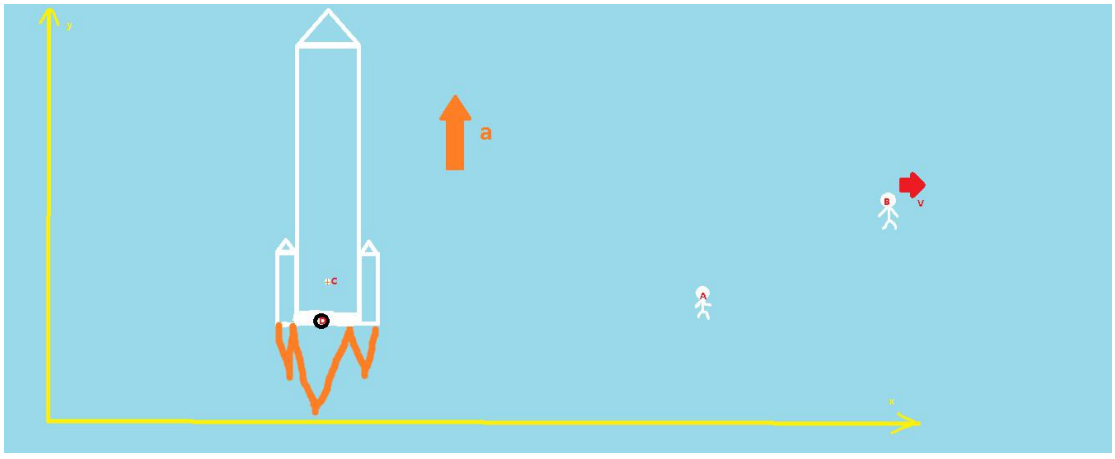
$$r_1 < r_2$$

If $r_1 < r < r_2$, we will find that the electron has the acceleration but the black hole doesn't have the acceleration.



So we can get that, when r<r0, the gravitational effect will be 0.

2. Who is right?



There are two balls which could be looked upon as mass point C and D in a rocket which has an acceleration a, they all have some positive charges Q. There are two persons A and B, for C, A is static and B has speed v. Now we can see that A and B will be worried because their views. A and B both find that the distance between C and D is L, so he will know the electrostatic force between C and D is $F_c = \frac{kQ^2}{L^2}$, but for A, the mass of C is mc, but for B, the mass of C is $m_c' = \frac{m_c}{\sqrt{1-(\frac{v}{c})^2}}$, for A, the acceleration is a because he can find that the static rocket moved x

in t and $x=\frac{1}{2}at^2$, but for B, the acceleration is a' because B will find the static (in y direction) rocket moved x in t' and $t'=t\sqrt{1-(\frac{v}{c})^2}$, $x=\frac{1}{2}a't'^2$, so $a'=\frac{a}{1-(\frac{v}{c})^2}$. A will think the force of rocket is $F_1=m_c a$, but B will think the force of rocket is $F_2=m_c'a'=\frac{m_c a}{[\sqrt{1-(\frac{v}{c})^2}]^3}$. We can assume that $F_2>F_C>F_1$, now A will think the distance between C and D will increase(C will move away from D) but B will think the distance between C and D will decrease, now, who is right? We know that C can know its really acceleration, so we can know the distance between C and D will increase, A is right, and we can say: Only the observer who is static for the object in the gravitational field can get the really state of this object. (It's state in the direction which is not the direction of the gravity).

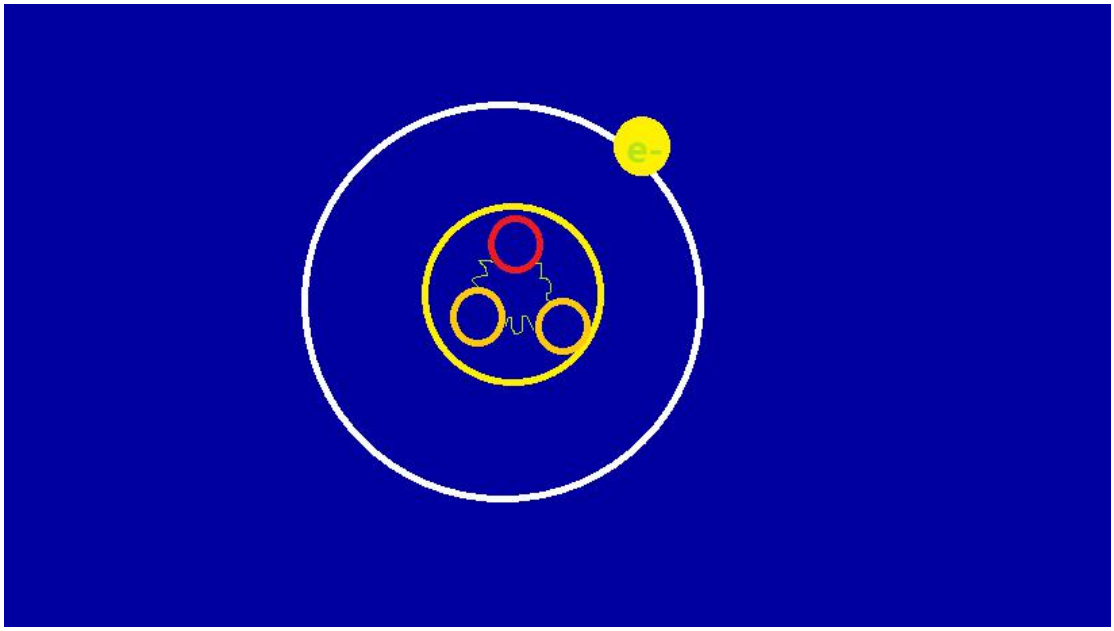
3. The source of the gravity

If there are two clocks A and B, we are the observers and we have the clock C to measure our time. When our clock C elapse 1s, we find that clock A elapse 2s and clock B elapse 10s, we define the speed of time increase of clock A is $\Theta_A=\frac{2s}{1s}=2$ and the speed of time increase of clock B is $\Theta_B=\frac{10s}{1s}=10$, the speed of time's number value is base on the observer, but the value $\frac{\Theta_A}{\Theta_B}$ is definite.

If there are two static points A and B(or two points which have a same speed), we find that $\Theta_A\neq\Theta_B$,we can know that energy in the object which is in A and energy in the same object which is in B is different and we can know that the curvature of space-time is not 0, so we can know that objects between A and B must all have an acceleration, or they are in a gravitational field, so we can know the source of the gravity is the difference of the speed of time increase between static points.

We can get the relation between time and entropy: $\Delta T\propto\Delta S$, [1] so the speed of time increase also can be looked upon as the speed of entropy increase. So if we do something to make a static object's speed of entropy increase slower than before, we will find the gravitational field of this object become stronger. And because a static object's speed of time increase is faster than any other points when it is in a vacuum point, so we can get that the vacuum energy (zero point energy) doesn't have any gravitational effect.

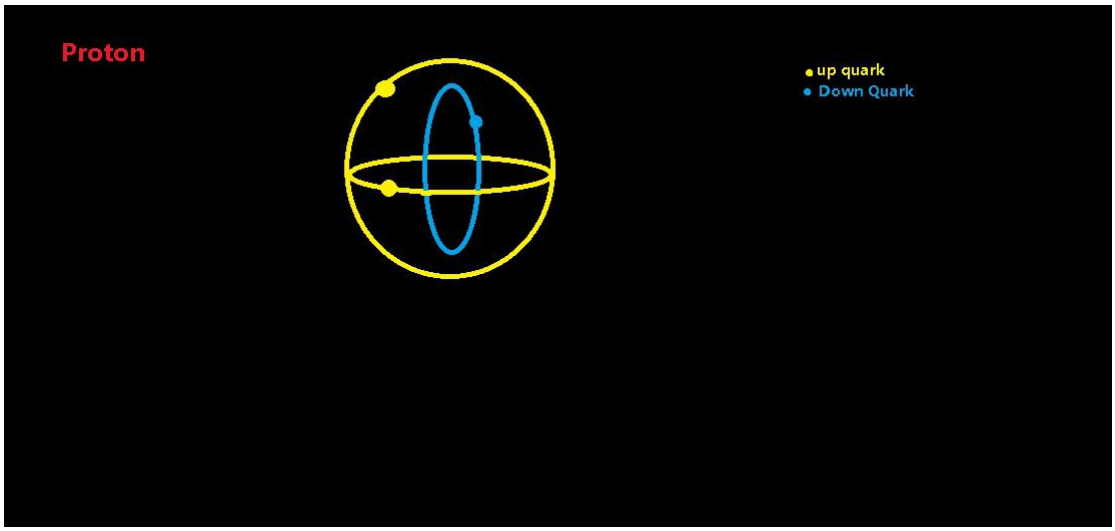
4. A new model of proton



This is an H atom, we can see three quarks in the proton. Now if the electron is moving around the proton, why the proton isn't moving around a point because the force from the electron? And why the quarks in the proton are static?

Because the uncertainty principle, we can see that the momentum of the quarks is very uncertain, so we can know the quarks in the proton must be moving, they aren't static like we thought before.

This is a new possible model of proton:



In this model, the quarks are moving around in their orbit, the radius of the up quarks' orbit is r_u, and $2\pi r_u = \lambda_u = \frac{h}{p_u}$, λ_u is the wavelength of the up quarks and p_u is the momentum of the up quarks, and also $2\pi r_d = \lambda_d = \frac{h}{p_d}$. Use this model, we will find that the color charge

of a quake is a redundant concept.
Because the relative speed between two quarks is much bigger than the relative speed between a quark and us, because the relativity theory, the mass of a quark which another quark observer observed is much bigger than the mass of a quark which we observed. But because the theory we discussed in the part 2, we will find the really gravitational effect between two quarks in a proton is much bigger than we think, so I think maybe the gravity is the really force which can maintain the stabilization of protons.
From this model, we also can know that the proton almost doesn't decay.

5. A little discussion of the origin of the universe

There is no matter in our world, our world is made of the information because we only can observe the information (physical quantity). We observed the information and put it into the equations to get the new information and prove it. So the matter is only a physical model to describe the information. So if a theory can't get the new information which could be proved by experiments, we can't think it is right. Only the physical quantities (information) which we have observed by the experiments have the really physical significance. [1]
If we let the time backward, we will find the gravity will make the universe's temperature higher and higher, like a star which is collapsing. So in the origin of the universe, the high- temperature must make all things are same, there is no different information in the universe. But the first difference is the difference between the observer and the things which is observed (the difference between we and the things we are observed). And then we differentiated the different information we have observed to "we like" and "we hate", and so the universe has the difference of light and dark (a place has energy and doesn't have energy) so we will think the information is different. When the universe has the difference between "have energy" and "don't have energy", the evolvement of the universe will begin because the increase of entropy. And then we make the different models to describe different information. And then we will think the matter is different. So this world is a model which is imagine by our sense. So the really first cause isn't the God, the really first cause is the observer, in other words, the really first cause is us.

Reference: [1]**Some Views Of Time Trials for Fundamental Constants and a new physical philosophy , LeiGuanji**