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Reverse nature of our sensation for gravity: New Insight

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ABSTRACT *Up to now no entirely satisfactory quantum mechanical theory has been constructed though many people are working on it, of course there is a classical theory of gravity by Newton and relativity by Einstein which describes the gravitational force in terms of curvature of space. Theory of dark energy and dark matter was introduced for recession of stars and gravitational attraction. In this paper we assume a fifth state of matter with which we can explain the unexplained material phenomena and the phenomena of universe. Mostly fundamental laws can be explained by reference to mechanisms. We need not change the fundamental laws but mainly this theory conflicts Newton's gravity. There is no clash between our theory and standard results.*

KEYWORDS : vacuum, gravity, universe, partons of protons, celestial bodies, gravitational constant.

1. Introduction:

Many physicists believe that gravity and space-time geometry are emergent also string theory and relative development have given several indications in this direction. Particularly important clues come from Ads/CFT or more generally, the open/closed string correspondence leads to a duality between theories that contain gravity and that does not [1]. It therefore provides evidence for the fact that gravity can emerge from a microscopic description that does not know about its existence. Newton was criticized by his contemporaries especially by Hooke that this law of gravity act at a distance and has no direct mechanical cause like elastic force, the classical notion of the vacuum as the absence of everything is methodological unsound. To find the real origin of gravity we must accept that the vacuum consist of something. There is no field of our speculation in the field of science.

2. Why need to assume a new matter:

The grand aim of all sciences is to cover the greatest number of empirical facts by logical deductions from the smallest number of hypothesis. To explain the experimental facts or observations about the properties of matter and about the exact nature of forces scientists made many and different type of hypothesis to explain different type of forces and phenomena. For example particle 'gravitons' responsible for gravitational interaction, 'magnetons', for magnetic forces, for electromagnetic interaction 'photons', for quark interaction 'gluons' and many other type like 'plasmons', 'polaritons', 'polarons', phonons, 'rotons' and 'vector bosons'. Each hypothetical particles can explain only single phenomena and then again a need for another hypothetical particle to explain other phenomena. When we look deep into the nature only then can understand better. I proposed the matter named as 'A' matter because 'A' is the starting letter of almost all the languages. 'A' matter is supposed to be almost elastic and originates from the sky during nuclear reactions. This 'A' matter theory explains the increase in the radius of earth, expending nature of the universe [2-6], anamoly in the value of gravitational constant [7-9], the stars are moving apart from each other, special theory of relativity and many more.

3. Explanation of nature of gravity:

We propose the 'A' matter as the fifth state of matter which is produced by the stars during the process of nuclear reactions and is absorbed by the planets, satellites and other non radiating bodies and occupied in the whole universe. This 'A' matter assumption is not like the ether hypothesis as 'ether was considered to be a constant frame of reference but 'A' matter is in motion. The absorption of 'A' matter is directly proportional to the mass of the absorbing body. According to our assumption we are being expelled toward the earth by 'A' matter. The velocity of 'A' matter particle is about 1650 Km/sec. and density is about $5\times10^{-13}kg/m^3$ (see the calculation about 'A' matter).

Due to release of 'A' matter by the stars, universe is expanding according to the law of conservation of momentum According to 'A' matter theory we are being expelled toward the earth by 'A' matter. 'A' matter is released by all the stars of the universe during the process of nuclear reactions taking place in the stars. The absorption of 'A' matter is taking place toward the centre of the earth. On the surface of the earth the velocity of 'A' matter particles is about 1650 *km/sec* (see calculations about 'A' matter). Absorption of 'A' matter particles will not take place at this high velocity, but while moving toward the centre of the earth velocity of 'A' matter particles will diminish and absorption will start in the patrons of protons. In the core of the earth, matter is in plasma state and by the absorption of 'A' matter particles protons will start to change into neutrons at high temperature and pressure, the nucleus of the elements inside the earth will become unstable, then neutron induced reactions, proton induced reactions, β particle induced reactions and rays induced reactions will take place. Some of these reactions are endoergic and some are exoergic.

The mass of 'A' matter particles is about and density of 'A' matter on the surface of the earth is calculated about. 4.89×10^{-10} kg/m^3 Due to this release of 'A' matter by all stars universe is expanding according to law of conservation of momentum. Toward the centre of our galaxy the stars are 200 times nearer than the outer part of our galaxy where we reside. Now we will try to understand this process by a simple example. Suppose a dotted balloon is being expanded by air, take every dot as a star, as the balloon is expanded, dots on the surface of the balloon will go away farther from each other. So in the same way 'A' matter is constantly being released by the stars in all the directions. But due to the more pressure of 'A' matter towards the centre of galaxy, stars are going apart from each other. 'A' matter is released from the stars in spiral form due to the spin of the stars and rotation of the stars around the centre of the galaxy. The direction of 'A' matter released is anti spin of rotation of the stars around galaxy. 'A' matter can pass through all the substances because of huge intra atomic space and space between nucleus and electrons. Suppose a planet is made of the particles having no space in between the particles or suppose a neutron star, then on the surface of such a planet there will be only a minute gravitational force although the mass is very large as compare to the earth. This will happen because absorption of 'A' matter will not take place on such a planet but the reflection and scattering of 'A' matter will take place in the opposite direction due to collision on the perfectly solid surface. There may be some more gravitational force as we will go above the surface up to some height. The same thing should happen to some extent up to a minute degree on the surface of the earth. So when will move above from the surface of the earth, our weight should increase up to a height of some hundred meters above the surface of the earth and above from that height it

will start decreasing gradually. This will happen because of scattering and reflection of some of the 'A' matter particles from the surface of the earth. Experiments should be made in this field according to 'A' matter theory.

This theory explains the result of the experiment about the decrease in the value of gravitational constant (G)[3]. This was being taken as an indication of the existence of a fifth interaction besides gravitational, electromagnetic, nuclear and weak.

The deviation from the simple law $F = \frac{G_a m_1 m_2}{r^2}[1 + (1 + \frac{r}{\lambda}) \propto e^{-\frac{r}{\lambda}}]$ with $\propto = (-7.2 \pm 3.6) \times 10^{-3}$) and $\lambda = (200 \pm 50)m$, as $\propto$ is negative, the second term in the square bracket represents a repulsive force.

For $r \gg 200$ m,

$F = \frac{G_a m_1 m_2}{r^2}$

This is the force operating between the earth and other objects.

For $r \ll 200$ m,

$$F = \frac{G_a m_1 m_2 (1+\propto)}{r^2} = \frac{G' m_1 m_2}{r^2}$$

Where $G' = G_a(1+\propto)$.

This is the force we measure in Cavendish experiment. The value of G for small distances is about less than the value of G for large distances [7].

4. Velocity and density of 'A' matter:

Now we will try to find out the density, mass and velocity of 'A' matter particles on the basis of some events. We know that during the solar activity or solar flare, large distortion in the earth's magnetic field is produced by the solar activity which reaches on the earth after 24 to 25 hours after the solar storm. Magnetic field intensity increases about 0.1% and then it decreases to the normal level. On this base we can calculate the velocity of 'A' matter.

Distance of earth from sun= 1.5×10^{8} *km*

Time taken to reach the earth= 25 hours =25×3600 sec.

Velocity of 'A' matter= $\frac{15\times10^{8}}{25\times3600} = 1666.67\,km$

This velocity of 'A' matter during the solar storm and it should be less by 1% during the normal activity of sun. So we can assume it to be 1650 km/sec.

Now the potential radius of the nucleon is found to be 1.4×10^{-15} *m*

Effective surface area of one nucleon πr^2

$$= \pi \times 1.4 \times 1.4 \times 10^{-30}$$

$$= 6.15752 \times 10^{-30} m^2$$

Mass of the nucleon, $1a.m.u = 1.667 \times 10^{-27} kg$

'A' matter falling on the surface area of one nucleon causing an acceleration = 9.8m/sec

Now we will derive the mass and density as 'A' matter striking with one nucleon and causing acceleration equal to acceleration due to gravity.

Suppose two particles of mass having andand having velocities u_a and u_n respectively, where

Where is the mass of 'A' matter colliding per second per nucleon e v_a v_n and is the velocity of 'A' matter before collision.

If these particle colloids with each other and after collision velocities are and respectively, then according to the law of conservation of momentum

$$m_a u_a + m_n u_n = m_a v_a + m_n v_n \qquad (1)$$

And according to the law of conservation of energy

$$\frac{1}{2}m_a u_a^2 + \frac{1}{2}m_n u_n^2 = \frac{1}{2}m_a v_a^2 + \frac{1}{2}m_n v_n^2$$

$$m_a u_a^2 + m_n u_n^2 = m_a v_a^2 + m_n v_n^2 \qquad (2)$$

From equation (1)

$$m_a(u_a - v_a) = m_n(v_n - u_n) \qquad (3)$$

From equation (2)

$$m_a(u_a^2 - v_a^2) = m_n(v_n^2 - u_n^2) \qquad (4)$$

Dividing equation (4) by equation (3) we get,

$$\frac{u_a^2 - v_a^2}{u_a - v_a} = \frac{v_n^2 - u_n^2}{v_n - u_n}$$

Or $u_a + v_a = v_n + u_n$

$$u_a - u_n = v_n - v_a \qquad (5)$$

So the relative velocity before collision and after collision will remain the same $u_n = 0$ and $u_a = 1650 \times 10^3$ m/sec

$$v_n = 9.8 m/sec$$

$$1650 - 0 = 9.81 - v_a$$

$$-v_a = 1650 - 9.81$$

$$v_a = -1640.19 km/sec = 1640.19 \times 10^3 m/sec$$

Negative sign represents the opposite direction

From equation (3)

$$m_a = \frac{m_n(v_n - u_n)}{u_a - v_a}$$

$$m_a = \frac{1.667\times10^{-27}(9.81-0)}{(1650+1640.19)\times10^3}$$

$$= \frac{1.6352\times10^{-26}}{3290.19\times10^3}$$

$$m_a = 4.97 \times 10^{-32} kg$$

So the mass of 'A' matter colliding with one nucleon per second is

$$4.97 \times 10^{-32} kg$$

Effective surface area of nucleon= $6.15752 \times 10^{-30} m^2$

Now volume of 'A' matter colliding on $6.15752 \times 10^{-30} m^2$ up to the height of $1650 \times 10^3 m$

$$= 6.15752 \times 10^{-30} \times 1.650 \times 10^6 m^3$$

$$= 10.1599 \times 10^{-24} m^3$$

$$\text{Density} = \frac{mass}{volume}$$

$$= \frac{4.97\times10^{-32}}{10.1599\times10^{-24}} kg/m^3 = 4.89178 \times 10^{-10} kg/m^3$$

Approximation of mass of 'A' matter particle:

Now let us consider that 'A' matter is constituted from particles. We have calculated the density of 'A' matter which 4.892×10^{-10} kg/m^3 is. Suppose this matter behaves like a gas then;

$$\text{Mass per mole} = \frac{4.892\times10^{-10}\times22.4}{10^3} = 10.958\times10^{-12}\,kg/mol$$

$$\text{One mole contains } 6.023\times10^{23} \text{ number of particles}$$

$$\text{So mass of a single 'A' matter particle} = \frac{10.958\times10^{-12}}{6.023\times10^{23}} = 1.89\times10^{-35}\,kg$$

So the mass of 'A' matter particle is approximated according to Avogadro hypothesis $=1.89\times10^{-35}$

There may be deviation from this value. We can assume from 8.846×10^{7} the above approximation that a proton is constituted from number of 'A' matter particles.

$$\text{Rest mass of proton} = 1.67265\times10^{-27}\,kg$$

$$\text{Or } 938.280\,MeV = 938.280\times10^{6}\,eV$$

$$\text{Electron's rest mass} = 9.11\times10^{-31}\,kg$$

$$\text{Or } 0.511\,MeV = 5.11\times10^{5}\,eV$$

$$\text{Mass of 'A' matter particle } M_a = 1.89\times10^{-35}\,kg$$

$$\text{Or } M_a = 10.583\,eV$$

5. Conclusions:

So in general conditions Newton's law of gravitation will hold good and the force between two bodies can be calculated by the equation

$$F = G\frac{m_1 m_2}{r^2}$$

But in case of on the surface of a planet there should be a slight deviation from the Newton's law of gravitation and the value of G should decrease on the surface up to some extent and after some height above the surface the value of gravitational constant G will become normal because on the surface there will be scattering and reflection of 'A' matter particles which is responsible for the decrease in the value of gravitational constant 'G' up to some distance between two bodies. Assume the surface to be a perfectly solid means the space between the atoms is negligible then there will be a great deviation in the value of gravitational constant.

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