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The Unifying Constant U

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Abstract

The interaction between the electron and another particle bearing opposite or same charge creates a permanent or momentarily system, the permanent one takes place inside nuclear range, it is the neutron when the electron interacts with a proton , or it is gamma ray when the electron interacts with a positron . The momentarily one occurs on atomic level when the electron interacts with another electron bearing the same charge. In these two states on nuclear or atomic levels, we have constant U, where the energy of the electron is determined according to its distance from the other particle. When the distance is the basic nuclear diameter $2.8 \times 10^{-15}m$. the electron moves with the speed of light in the two states, but this speed can be exceeded only when the distance between the electron and the other particle with opposite charge on nuclear level is less than $2.8 \times 10^{-15}m$.This explains the greater energies of gamma and beta. On the other hand replacing the velocity v^2 in constant U by an astronomical value gives the ratio between the atomic radius and astronomical radius

Introduction:

I reached to constant U some few years ago . It showed me that nuclear and atomic energies differ in degree and not in kind and the astronomical radius is related to atomic and nuclear radii. The electron plays the fundamental role in the universal energy. In fact constant U contradicts basic concepts in Special Relativity and Quantum theory, the electron moves with the speed of light and exceeds this speed against Special Relativity. While Quantum theory prevents the existence of the electron inside nuclear range, constant U shows us that the nuclear binding energy is that of the electron in the neutron as a system

Constant U :

This constant is based on the inverse proportionality between the energy of the electron and its distance r from another charged particle as follows

$$m_e v^2 r = \frac{e^2}{4\pi\varepsilon_0} = 2.30 \times 10^{-28} J - m \qquad [1]$$

When the value of r is the basic nuclear diameter, then $v^2 = c^2$ and we have the analytical form of Maxwell's celebrated equation

$$c^2 = \frac{e^2}{4\pi m_e r \varepsilon_0} = \frac{1}{\mu_0 \varepsilon_0} \qquad [2]$$

Therefore we can say that Maxwell's equation is a special case in constant U.

Planck's constant describes the angular momentum of the electron ($m_e v \lambda = h$ where $\lambda = 2\pi r$) , and we need to multiply h by frequency f to get the electron's energy while constant U describes directly the energy of the electron, but h itself still describing the motion of the electron as a momentum. In addition to that we are going to see that constant U can be applied on both mini and max world, while h still confined to the mini world, and in mini world h led to erroneous results on nuclear level like preventing the existence of the speedy electron or beta ray inside nuclear range where quantum theory accustomed to explain this by stating that beta is only created in the moment of departing the nucleus according to de Broglie equation $\lambda = \frac{h}{mc}$ coming from equating $h\frac{c}{\lambda}$ with mc^2 , or quantum theory with S. relativity.

1- Let us now begin by the astronomical form of constant U:

If we suppose a body revolving the Sun at its hydrogen surface, this body will move with the velocity of an electron in hydrogen atom at five level of energy before the electron being free from the attraction of the proton both on atomic level and in the solar corona because the layer above hydrogen surface is the corona which is a plasma state where the electrons are free from the attraction of protons. If M_s is the mass of the Sun in Kilogram and R in meters is its radius, the velocity of this body will be as follows

$$v^2 = \frac{GM_S}{R} = 1.90 \times 10^{11} \quad (1) \qquad [3]$$

Fantastically ,this is the same velocity of an electron at five level of energy $m_e v^2$ in hydrogen atom as

$$\frac{1.74\times10^{-19}J}{9.11\times10^{-31}Kg} = 1.90 \times 10^{11}$$

Now from 1&3 we have

$$\frac{r}{R} = 1.91 \times 10^{-18} \qquad [4]$$

Here, formula 4 relates radius r of hydrogen atom to the solar radius R explaining why at the core of the Sun there is a neutron star[(1)] where the distance r between the electrons and protons is at its minimum value ($2.8 \times 10^{-15}m$.) or less, and here it is obvious that the difference between hydrogen atom and neutron is only in the distance between the electron and proton on gravitational level.

It is clear that the orbital velocities of solar planets are less than that in eq 2 according to the inverse proportionality between the distance of the planet and its orbital velocity where $V^2R = constant$ or $\frac{4\pi^2R^3}{T^2}$ (Kepler's third law)[(3)]

In another paper we proved that the Sun is nothing but a large hydrogen atom ![(4)]

2- Nuclear form of constant U:

From the above analytical form of Maxwell's equation (eq 2), we have the minimum value of gamma ray as follows

$$2m_e c^2 = \frac{e^2}{2\pi r \varepsilon_0} = 1.645 \times 10^{-13}J = 1.026\ MeV$$

The two electrons with their opposite charges created one entity moving with the speed of light where there is no annihilation. The greater values of gamma ray come from the shortest distance r between the two electrons where the speed of light is exceeded. Beta ray is an electron at the same distance $2.8 \times 10^{-15}m$ from a proton where the electron moves with the speed of light c and therefore according to constant U the electron has its minimum energy of .511 Mev , like gamma with the decrease in the distance between the electron and proton, beta ray's energy increases from its minimum value without considering this minimum energy is the rest mass of the electron according to S. Relativity!

Atomic and nuclear energies differ in degree not in kind :

If we divide constant U by atomic energy or nuclear energy then we have the exact radius of any of them proving that they differ only in degree , for example , once we divide this constant by the energy of the electron at ground state of hydrogen atom ($m_e v^2 = 4.30 \times 10^{-18}J$) we have the radius of the electron at this state, as follows

$$\frac{2.30\times10^{-28}J-m}{4.30\times10^{-18}J} = 5.3 \times 10^{-11}m.$$

If we divide constant U by the energy of gamma ray that fused the proton to the neutron (2.2Mev = $2.52 \times 10^{-13} J$) forming deuteron, then we have the basic nuclear radius, keeping in mind that the electron divides its energy between its proton in the neutron and the other proton as follows

$$\frac{2.30\times10^{-28}}{\frac{3.52\times10^{-13}J}{2}} = 1.30 \times 10^{-15} m$$

From what passed, It is clear that nuclear energy is the strong form of electromagnetic one , and for this reason, considering the electromagnetic nature of gravity, the surface of the Sun is made from hydrogen, while its core is made from neutrons where gravity is at its highest strength, and at the center of galaxy for the same reason neutron stars take place. In fact neutrons are the "condensed" form of hydrogen atoms where the distance between the electron and proton is the only distinction between them.

Conclusion:

Now, we have The simple constant U proving that the difference between electromagnetic and nuclear energies is in degree and not in kind and this degree is the distance between the electron and proton, it also relates this distance or the radius of hydrogen atom or a neutron to the radius of the Sun, where gravity does not differ from electromagnetism with its different degrees, up to nuclear state.

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