Quantum Mechanics and General Relativity: Creation Creativity

[1]Youssef Al-Youssef, [2]Rama Khoulandi

University of Aleppo, Aleppo, Syria

Abstract

This article is concerned with a new concept of quantum mechanics theory depending upon the two components: matter and anti-matter. The article also links quantum mechanics and general relativity. Linking the two theories has been a long-pursed attempt by many scientists. The article gives the reader the chance to understand the microscopic and macroscopic worlds by the two theories linked by one equation.

Quantum mechanics and general relativity are the eye of science by which we look at the universe. Quantum mechanics is concerned with microscopic level and general relativity is concerned with macroscopic level. Many scientists have attempted to link the two theories but in vain. The following papers describe the way in which one can have a scientific explanation of the universe with one theory called the Creation Theory.

Keywords: Quantum Mechanics, General Relativity, Creation Creativity.

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Quantum mechanics theory:

In the current theory of quantum mechanics – known as standard model - atom consists of 12 components. But it has been discovered that atom consists of two components: matter and anti-matter; atoms contain electrons, protons and neutrons. To clarify the point, radioactivity should be mentioned. Atoms emit four types of radiation: Alpha, beta minus, beta plus and gamma. In alpha radiation the atom releases two protons and two neutrons. In beta minus the atom releases an electron. In beta plus the atom releases a positron and gamma rays are high energy photons. We are interested in beta minus and beta plus radiation. In beta minus, a neutron emits an electron and turns into a proton. In beta plus a proton releases a positron and turns into a neutron. However, if we look at the two equations that describe these radiations, we find that the interest is in charge and not in mass. Since a proton emits a positron and turns into a neutron, this means that charge is what important here. For a proton to release a positron and turn into a neutron – which is heavier – is not possible if the interest is in mass. This leads us to the conclusion that the proton consists of electrons and positrons but has one extra positron and neutrons are composed of equal number of electrons and positrons. i.e., matter and anti-matter. For clarification, this is a table of atom components:

proton	neutron
Mass:1.76219 $*10^{-27}$ kg	Mass: 1.6749 $*10^{-27}$ kg
Charge before emission: 1.60217662 $*10^{-19}$ Coulomb	Charge before emission: neutral
Type of emission: positron	Type of emission: electron
Charge after emission: neutral	Charge after emission: 1.60217662 $*10^{-19}$ Coulomb

Thus, the electron emits an electron and turns into a proton and the proton emits a positron and turns into a neutron. This means that protons and neutron are composed of electron and positrons; of matter and anti-matter. This needs another table to show the properties of similarities and differences between the two:

Matter / electron	Anti-matter / positron
Mass: 9.1093835 $* 10^{-31}$ kg	Mass: 9.1093835 $* 10^{-31}$ kg
Charge: 1.60217662 $* 10^{-19}$ Coulomb	Charge: 1.60217662$* 10^{-19}$ Coulomb
Charge type: negative	Charge type: positive

If atom is bombarded with a photon with energy equal to two electrons according to Einstein equation, an electron and a positron are ejected out of the atom. This is called double production. But quickly they collide and turn into two photons with one electron energy each. This leads us to question what prevents matter and anti-matter from destroying each other inside the atom. To answer this question, one has to figure out how the atom is balanced.

Heisenberg stated that what distinguishes the electron is the uncertainty principle. But Bohr showed that electron moves in circular paths around the atom. Bohr drew the atom in two dimensions and this led to misunderstanding him that the atom in itself is two-dimensional. Bohr did not mean this; what he meant is that electrons move in circles around the nuclei. When examining the electron frequency, one can find out that frequency is connected to a circle circumference and this is an enough proof that the electron movement is circular and that Einstein was correct when he objected to Heisenberg's notion of uncertainty in declaring that " God does not play dice.'' Frequency has been found to be equal to speed divided by circumference in general terms: f $=\frac{c}{2\pi r\ con}$ where c is the speed of light, 2**π**r is the circle circumference and con is a constant equal to 136.606. By applying this equation, one can calculate the electron frequency and confirm that its movement is circular and its speed is equal to the speed of light. On the first orbit the equation becomes: $\frac{v\ n}{2\pi r\ con}$ where v is velocity of electron and n is the orbit number. On the other orbits the equation becomes: $\frac{v}{2\pi r\ n\ con^2}$

In the final equation the orbit number is multiplied by the squared constant. The constant has proved many properties in the atom according to energy radius of electron and mass:

1- $h\ con^3 = m_{neutron}$ and equals to 1.6749286 x 10^{-27} kg. where h is Planck constant and is equal to 6.62607004 x10^{-34} m^2 kg /s.

2- $\frac{con^3}{10} = \frac{mc^2}{1.6027662*10^{-19}}$

3- $con^2\ x\ 2.822\ x\ 10^{-15} = 5.29\ x 10^{-11}$ This number is Bohr radius of the first electron orbit.

If we think of the equation: $K\frac{QQB}{r4\pi n} = fh$ and the equation: $BK\pi n = f$ we find that $h = \frac{QQ}{r4\pi^2 con^2}$ and we have $h = \frac{Qr}{8n^2 con\sqrt{con}}$ by equating the second side of the first equation to the second side of the second equation we find: $r^2 = \frac{2Qn^4}{\pi^2\sqrt{con}}$ where r is orbit radius, Q is electron charge and con is a constant and equals to 136.606 and n is orbit number.

4- $\frac{mc^2}{2con^2\ x\ 1.60217662*10^{-19}} = 13.6$ and this the electron energy according to Bohr.

5- $c = v\ con\ n$ where v is electron velocity, c is speed of light and n is the orbit number.

6- $m_{electron} = h\ x\ con\ x 10$ Where m is electron mass h is Planck constant.

7- $\frac{f_{neutron}}{f_{electron}\ con} = 2\ x\ 13.6$ Where $f_{neutron}$ is neutron frequency and $f_{electron}$ is electron frequency.

8- $\frac{m_{electron}}{Q\ con} = \frac{1}{2}\ mc^2$ Where $m_{electron}$ is electron mass and Q is electron charge.

9- $I = \frac{Q\ C\ n\ con}{2r}$ Where I is current, Q is electron charge, n is orbit number and r is the orbit radius.

10- $I = \frac{2\pi^3}{n^2}$ This is current equation concerning the orbits. But the current equation inside the nucleus is:

11- $I = 2\pi^3 con^2$

12- $M_{neutron}E_{electron} = E_{neutron}\ M_{electron}$ where $M_{neutron}$ is mass of neutron, $E_{electron}$ is electron energy, $E_{neutron}$ is neutron energy and $M_{electron}$ is electron mass.

13- $\frac{B\varepsilon_0}{8\pi n} = \frac{mv^2}{r}$ where ε_0 is permittivity of free space and equals 8.85418782 x 10^{-12} m^3 kg^{-1} s^4 A^2, B is magnetic field, n is orbit number, m is electron mass, v is electron velocity and r is electron orbit radius.

14- $\frac{8\pi con^2 \mu_B}{n^2} = k\frac{QQ}{r}$ where μ_B is Bohr magneton and equals $9.27400968*10^{-24}$ joules/ tesla, con is a constant and equals to 136.606 n is orbit number, k is Coulomb constant and equals to 9×10^9, Q is electron charge and r is electron orbit radius.

15- $B = \frac{4\pi con^2}{n^3}$ Where B is magnetic field, con is a constant and equals to 136.606 and n is orbit number.

16- $BKn\pi = f$ Where B is magnetic field, K is Coulomb constant and equals to 9×10^9 n is orbit number and f is electron frequency.

17- $\frac{KQ_1Q_2}{r} = mv^2$ Where k is a constant and equals to 9×10^9 Q_1 and Q_2 are the same and equal to electron charge, r is electron orbit radius, M is electron mass and V is electron velocity.

18- If we take the equation: $\frac{KQ_1Q_2}{r} = mv^2$ and De Broglie's equation $hf = mv^2$ we find that potential energy ($\frac{KQ_1Q_2}{r}$) equals (hf) which can be rearranged in the following equation: $hf = \frac{KQ_1Q_2}{r}$. Thus, the electron is subjected to an attractive force by the positron which is balanced by the wave property of the electron. The wave property of the electron is caused by the charged electron being in movement. And according to Einstein, if charged particles move, electric field is turned into a magnetic field. This means that we have an electromagnetic wave being formed because of electric and magnetic fields. At the same time, the positron is static in its position because of the balance between wave property and potential energy; the positron has an electric field and is under the influence of the magnetic field formed by the electron movement. This means that for the positron, it is also true that $hf = \frac{KQ_1Q_2}{r}$.

19- If we go back to the equation $\frac{KQ_1Q_2}{r} = mv^2$ and divide the two sides by the radius r we get: $K\frac{Q_1Q_2}{r^2} = \frac{mv^2}{r}$ Since $= K\frac{Q}{r^2}$, this equation can be rearranged to become: $QE = \frac{mv^2}{r}$. If we substitute E according to the equation $\frac{E}{B} = V$ we find that the equation $QVB = \frac{mv^2}{r}$ is correct for the electron movement. Where Q is electron charge, V is electron velocity and B is magnetic field. According to this equation, what causes the circular movement of the electron is the magnetic force.

20- $\mu_B B2n = K\frac{Q_1Q_2}{r}$ where μ_B is Bohr magneton and it is a constant which equals $9.27400968*10^{-24}$ joules/ tesla. B is magnetic field, n is orbit number, K is coulomb's constant and equals $9*10^9$, Q_1 and Q_2 are electron charges. This law shows how magnetic field is turned into an electric field. This electric field is attractive in order to counterpart the repulsive field caused by the electrons to each other.

21- $\frac{G6\pi}{Cn^2} = K\frac{Q_1Q_2}{r}$ where G is gravitational constant and equals 6.67408×10^{-11} $6.67408*10^{-11}$ $m^3\,kg^{-1}\,s^{-2}$, C is speed of light and n is orbit number.

22- $\frac{QC\mu_0}{4\pi n^2} = K\frac{Q_1Q_2}{r}$ where Q is electron charge, C is speed of light, μ_0 is permeability of free space and equals $4\pi \times 10^{-7}$ newton$/ampere^2$, n is orbit number, K is Coulomb constant and equals $9x10^9\ newton\frac{meter}{coulomb^2}$

23- $\frac{G\mu_0}{2n^2\pi^2} = k\frac{QQ}{r}$ where G is gravitational constant, μ_0 is permeability of free space and n is orbit number.

24- $\frac{\sqrt{\mu_B \varepsilon_0}}{2n^2} = k\frac{QQ}{r}$ where ε_0 is permittivity of free space and equals to $8.854178782 \times 10^{-12}$ $m^{-3}\,kg^{-1}\,s^4\,A^2$ μ_B is Bohr magneton and equals to $9.27400968*10^{-24}$ joules/ tesla and n is electron orbit.

25- $8\pi nK\mu_B B\varepsilon_0 = k\frac{QQ}{r}$. There is another equation which can be substituted here: $\frac{B\varepsilon_0}{8\pi n} = \frac{mv^2}{r}$ This equation is similar to another one: $QVB = \frac{mv^2}{r}$ By equation the two sides we get: $\varepsilon_0 = 8\pi nVB$. If we substitute this into equation: $8\pi nK\mu_B B\varepsilon_0 = k\frac{QQ}{r}$ We get: $64\pi^2 n^2 k\mu_B QVB = k\frac{QQ}{r}$. It was found that $64\pi^2 n^2 k\mu_B = r$. The final equation becomes: $QE = QVB$. Now since this is in quantum mechanics, this gives us an insight of how the electron is stable on its orbit: Creator created matter and antimatter. Due to the presence of an electric field, there existed a magnetic field. Both fields produced the electron wave which is equal to electric and magnetic field. Due to the balance between three forces – the electric, the magnetic and electromagnetic wave – the electron orbited the nucleus with no problem.

26- $GQ = 2m(\pi - 2)(\pi + 2)$

If we substitute Q from the previous equation into the equation $\frac{QC}{2} = \frac{G}{\pi}$, we get: $G^2 = mc\pi(\pi - 2)(\pi + 2)$ And calculations differences concerning the equation $\frac{QC}{2} = \frac{G}{\pi}$ reveal that these calculation differences approximately equal to $(\pi - 2)$ so the final equation becomes:

$\boldsymbol{G^2 = mc\pi(\pi + 2)}$

where m is electron mass and C is speed of light.

27- $\boldsymbol{\frac{con}{r} = \frac{1}{2}v^2}$ where con is a constant and equals to 136.606, r is electron orbit radius and v is electron speed.

28- $\boldsymbol{fh = K\frac{QQBn^3}{4\pi r}}$ where f is frequency, h is Planck's constant, K is Coulomb's constant, Q is proton charge, B is magnetic field, n is orbit number and r is orbit radius. This equation explains nuclear energy inside the atom: it is formed because of electric and magnetic energy.

29- $\boldsymbol{h = \frac{Qr}{8n^2 con\sqrt{con}}}$ this is Planck's constant being calculated from the atom. H is Planck's constant, Q is electron charge, r is orbit radius, n is orbit number and con is a constant and equals to 13.6.606. inside the nucleus, the equation becomes: $\boldsymbol{h = \frac{Qr\sqrt{con}}{8}}$.

General Relativity:

This theory is concerned with macroscopic level. According to Einstein, gravity is caused by the curvature of space-time. And according to Wheeler: "space-time tells matter how to move and matter tells space-time how to curve.'' What makes celestial bodies move is the energy obtained from time. When time is present, times gives energy to celestial bodies so they move in space at certain speed. Einstein field equation that links space-time curvature to energy and mass distribution is: $\boldsymbol{G_{uv} = \frac{8\pi G}{c^4} T_{uv}}$

Where G_{uv} is space-time curvature, π is the mathematical constant equals to 3.14, c is speed of light and equals to 299792458 m. s^{-1} G is gravitational constant and equals to 6.67408 *10^{-11} m^3 kg^{-1} s^{-2} and T_{uv} is energy-momentum tensor.

$$T_{\mu\nu} = \begin{pmatrix} T_{00} & T_{01} & T_{02} & T_{03} \\ T_{10} & T_{11} & T_{12} & T_{13} \\ T_{20} & T_{21} & T_{22} & T_{23} \\ T_{30} & T_{31} & T_{32} & T_{33} \end{pmatrix}$$

Here the components have been color-coded to help clarify their physical interpretations.

T_{00} energy density, which is equivalent to mass-energy density; this component includes the mass contribution

T_{10}, T_{20}, T_{30} the components of momentum density

T_{01}, T_{02}, T_{03} the components of energy flux

The space-space components of the stress-energy tensor are simply the stress tensor from classic mechanics. Those components can be interpreted as:

T_{12}, T_{13}, T_{23}, T_{21}, T_{31}, T_{32} The components of *shear stress,* or stress applied tangential to the region T_{11}, T_{22}, T_{33}

The components of *normal stress,* or stress applied perpendicular to the region; normal stress is another term for *pressure*. (Quantitively)

Now since the moon or sun are objects that have mass and because particle properties are: density, mass and velocity, we will rearrange the above matrix to suit the particle or celestial bodies in general:

The equation that governs the replacement is: $\boldsymbol{T_{uv} = D\ M\ V^{u}\ V^{v}}$ where D is moon or sun density, M is moon or sun mass and V is velocity.

$$\boldsymbol{T_{uv}} = \begin{bmatrix} DMC^2 & DMCV^1 & DMCV^2 & DMCV^3 \\ DMV^1C & DMV^1V^1 & DMV^1V^2 & DMV^1V^3 \\ DMV^2C & DMV^2V^1 & DMV^2V^2 & DMV^2V^3 \\ DMV^3C & DMV^3V^1 & DMV^3V^2 & DMV^3V^3 \end{bmatrix}$$

Now in order to solve the matrix, one can find that whatever the solution of the matrix according to the law of matrix solutions, it will be equal to 0. And if - in certain cases – the matrix determinant is not 0, there is no way to find V^1, V^2 and V^3 except if they are in the form: $(V^1)^2 + (V^2)^2 + (V^3)^2$ where the equation equals V^2. Therefore, the above matrix –according to special relativity and the previous equation – has the following solution:

$(DMC^2) + (DMV^1V^1 + DMV^2V^2 + DMV^3V^3) + (DMCV^1 \text{ x } DMV^1C)$ + (DMCV² x DM V²C) + (DMV³C x DMCV³).

This relation can be simplified to be: $DMC^2 + DM((V^1)^2 + (V^2)^2 + (V^3)^2) + DMC((V^1)^2 + (V^2)^2 + (V^3)^2)$ now by replacing V^2 instead of $(V^1)^2 + (V^2)^2 + (V^3)^2$ we get: $DMC^2 + DMV^2 + (DMC)^2V^2$. D stands for density which is mass divided by volume and volume of moon or sun is the same as the volume of sphere: $\frac{3\pi r^3}{4}$ We substitute D with Mass divided by volume and we get: $\frac{4MM}{3\pi r^3}C^2 + \frac{4MM}{3\pi r^3}V^2 + (\frac{4MM}{3\pi r^3})^2 C^2$ V2

In order to calculate $T_{V,}$ we will mention some values:

The radius of moon is 1737 km. the mass of moon is $7.34767309 \times 10^{22}$ kg.

The radius of moon orbit is 384400 km.

$$\frac{4\ x 7.34767309^2 x 10^{44}}{3\pi\ x\ 1737000^3} x\ 299792458^2 + \frac{4\ x\ 7.34767309^2\ x\ 10^{44}}{3\pi\ x\ 1737000^3} x\ 1023.05^2 + (\frac{4\ x\ 7.34767309^2\ x\ 10^{44}}{3\pi\ x\ 1737000^3})^2\ x\ 299792458^2 \quad x\ 1023.05^2 = 1.79809753\ x 10^{76}$$

If we manipulate numbers, we get the following formula:

$$\frac{\boldsymbol{T_{uv}\,x\,2\pi r}}{\boldsymbol{mv^2\,c^2}} = \boldsymbol{mc^2}$$

Where r is the radius of the moon orbit, v is velocity of the moon, m is the mass of the moon and c is the speed of light.

I- Linking the two theories:

If we apply the previous equation on microscopic level, we get another important equation:

$$\frac{\boldsymbol{T_{1uv}}}{\boldsymbol{T_{2uv}}} = \frac{\boldsymbol{(n_2)^4}}{\boldsymbol{(n_1)^4}}$$

Where T_{1uv} is energy of electron on the first orbit and T_{2uv} is energy of electron on the second orbit according to the previous equation. n_2 is the number of orbit and here it is the second orbit and n_1 is the number of the first orbit.

If we go back to the equation $\frac{T_{uv}\,x\,2\pi r}{mv^2\,c^2} = \boldsymbol{mc^2}$ and manipulate it a bit we get: $\boldsymbol{T_{uv}} = \frac{mc^4mv^2}{2\pi r}$ if substituted in Einstein's equation $\boldsymbol{G_{uv}} = \frac{8\pi G}{c^4}\,\boldsymbol{T_{uv}}$ we get: $\boldsymbol{G_{uv}} = \frac{mv^2}{r}\boldsymbol{4mG}$

In quantum mechanics, we have another equation: $\boldsymbol{64\pi^2 GQ} = \boldsymbol{m^2c^4}$ where G is gravitational constant and equals 6.67408*10^{-11} m^3 kg^{-1} s^{-2}, Q is electron charge and equals 1.60217662*10^{-19}coulomb, m is electron mass and equals 9.1093835*10^{-31} kg and c is speed of light and equals 299792458 m s^{-1}.

Another equation that links the two theories is $\boldsymbol{G\mu_B^2 n^2} = \boldsymbol{2hmc^2r}$ where G is gravitational constant

(6.67408*10^{-11} m^3 kg^{-1} s^{-2}), μ_B is Bohr magneton and squared. μ_B equals 9.27400698*10^{-24} joules tesla^{-1}, n is orbit number, h is Planck constant and it equals 6.207004*$10^{-34}$$m^2$ kg s^{-1}, m is electron mass (9.1093835*10^{-31} kg), c is speed of light squared and r is electron orbit radius. Another equation that links the two theories is:

$\boldsymbol{T_{uv}G4\pi n^4} = \boldsymbol{mc^2}$ Where T_{uv} is energy and mass distribution according to Einstein equation, G is gravitational constant, n is orbit number, m is electron mass and c is speed of light.

Another equation that links quantum mechanics and general relativity is:

$\frac{16\,T_{uv}}{con^2} = \frac{mv^2}{r}$ I f we substitute T_{uv} from the previous equation and the equation: $\boldsymbol{T_{uv}G4\pi n^4} = \boldsymbol{mc^2}$ we get:

$\boldsymbol{r} = \frac{10^{-7}\pi^2 n^2}{con^2}$

Where T_{uv} is energy and mass distribution tensor, con is a constant and equals to 136.606, m is electron mass, v is electron velocity and r is electron orbit radius.

$\boldsymbol{I} = \frac{Q\,C\,n\,con}{2r}$ so $\boldsymbol{B} = \frac{Q\,C\,n\,con}{4\pi r^2}\,\boldsymbol{4\pi\,x\,10^{-7}}$ another equation for magnetic field is $\boldsymbol{B} = \frac{4\pi con^2}{n^3}$ when equating the second side of the first equation to the second side of the second equation we get: $\frac{Qc\,x10^{-7}}{r^2} = \frac{4\pi con}{n^3}$ now : $\boldsymbol{r^2} = \frac{2Qn^4}{\pi^2\sqrt{con}}$ thus, $\sqrt{\boldsymbol{con}} = \frac{c\mu_0}{32}$

$\frac{\mu_0\varepsilon_0 B}{32} = \boldsymbol{mc^2}$ Substituting the equation: $\boldsymbol{32} = \frac{c\mu_0}{\sqrt{con}}$ and substituting $\boldsymbol{B\varepsilon_0}$ according to the equation $\frac{B\varepsilon_0}{8\pi n} = \frac{mv^2}{r}$ we get: $\frac{8\pi n\sqrt{con}\,mv^2}{r} = \boldsymbol{mc^3}$ If we substitute $\frac{mv^2}{r}$ from equation $\frac{16\,T_{uv}}{con^2} = \frac{mv^2}{r}$ we get:$\frac{T_{uv}128\pi\sqrt{con}}{con^2}$

If we substitute $\boldsymbol{T_{uv}}$ according to equation $\frac{\boldsymbol{T_{uv}\,x\,2\pi r}}{\boldsymbol{mv^2\,c^2}} = \boldsymbol{mc^2}$ we get: $\frac{\boldsymbol{mv^2}}{\boldsymbol{r}} = \frac{\boldsymbol{con\sqrt{con}}}{\boldsymbol{64cn^4}}$ If we substitute $\boldsymbol{r}$ from equation $\boldsymbol{r} = \frac{\boldsymbol{10^{-7}\pi^2 n^2}}{\boldsymbol{con^2}}$ and $\boldsymbol{32}$ from equation $\boldsymbol{32} = \frac{\boldsymbol{c\mu_0}}{\sqrt{\boldsymbol{32}}}$ we get: $\boldsymbol{mv^2} = \frac{\boldsymbol{\pi}}{\boldsymbol{8c^2n^2}}$ $\boldsymbol{(1)}$, $\boldsymbol{mv^2} = \boldsymbol{K}\frac{\boldsymbol{QQ}}{\boldsymbol{r}}$ $\boldsymbol{(2)}$, $\mu_{\boldsymbol{B}}\boldsymbol{B2n} = \boldsymbol{K}\frac{Q_1Q_2}{r}$ (3)

From equation number (2) and equation number (3) we find: $\mu_B B2n = mv^2(4)$ and from equation number (1) and equation number (4) we have: $\mu_B = \frac{1}{64con^2c^2}$ (5).

If we substitute T_{uv} from equation $\frac{T_{uv}\,x\,2\pi r}{mv^2\,c^2} = mc^2$ into the equation $T_{uv}G4\pi n^4 = mc^2$ we get: $\frac{mv^2}{r} = \frac{1}{2Gc^2n^4}$ now by equating the first side of the equation to the second side of the equation: $\frac{mv^2}{r} = \frac{con\sqrt{con}}{64cn^4}$ we find that $32 = Gc\,x\,con\,\sqrt{con}$ by equating the first side of the last equation to the second side of the equation $32 = \frac{c\mu_0}{\sqrt{con}}$ we find: $G\,x\,con^2 = \mu_0$ where G is gravitational constant, con is a constant and equals to 136.606 and μ_0 is permeability of free space and equals to $4\pi\,x\,10^{-7}\,\mathrm{newton}/ampere^2$

It can be seen that quantum mechanics and general relativity are now linked together. This long- pursued attempt of linking the two theories has finally succeeded!

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