TOROIDAL PROPERTIES OF ELECTROMAGNETIC WAVE PACKETS IN ATOMIC AND NUCLEON ORBITALS

Ruzumboy Eshchanov
Professor, Chirchik State Pedagogical University, Chirchik, Uzbekistan
ruzimboy@gmail.com

ABSTRACT

Current article demonstrates that quantum physics explains the atom by distributing the electron in the atomic orbital as a cloud of electromagnetic waves, while the laws of electron motion in the atom are completely absent. The paradox lies in the very primary hydrogen atom in the electrical interaction of charges. The electron should fall into the nucleus and discharge, but this does not happen, why? In accordance with the laws of electrostatics, the absence of attraction between negative and positive charges is possible only if one of the particles lacks a charge or changes it to the opposite one. Such problems, physics not knowing what a charge is, will not allow the charges to change and therefore solve the problem.

The axis of rotation can intersect with a circle, in which case the torus is called closed. The toroidal shape can be changed into a spherical, hemispherical and sectorial-spherical shape, so the toroidal shape of the electron orbital in atoms is in good agreement with the laws of physics, and it can explain all the exceptions in atom formation. Information about the nucleon orbital is provided.

Keywords: quantum physics, electron, atom, orbital, paradox, toroid, positron, gamma, waves, torus, electromagnetic wave packet (EMWP), cut, magnetic field, electrically neutral, stable, stationary, neutron, orbit, gamma wave, right thread, closed, uninterrupted, uniformly, stationary, stable, nucleon orbital, high frequency, very, small, length, wave, charging, properties, insensitive, spin, summation, external, internal, surface, exhibits, neutron.

Quantum physics explains the atom by distributing the electron in the atomic orbital as a cloud of electromagnetic waves, but the laws of electron motion in the atom are completely absent. The paradox lies in the very primary hydrogen atom in the electrical interaction of charges. The electron should fall into the nucleus and discharge, but this does not happen, why? In accordance with the laws of electrostatics, the absence of attraction between negative and positive charges is possible only if one of the particles lacks a charge or changes it to the opposite one. Physics, which does not know what a charge is, cannot allow a change in charges and therefore hushes up the problem. This corresponds to the toroidal property of photon, electron, positron and gamma electromagnetic waves.

The toroid is what controls many aspects of science, technology, technology, and in life the toroid exists in all atoms and cosmic bodies such as planets, stars, and galaxies, that is, it is the main form of existence of matter and electromagnetic waves.

The axis of rotation can intersect a circle, in which case the torus is called closed. The toroidal shape can transform into spherical, hemispherical and sector-spherical shapes, thereby the toroidal shape of the electron orbital in atoms is in good agreement with the laws of physics and can be explained, all exceptions in the case of the formation of atomic nucleon orbitals.

A torus is a surface rotation that is obtained by helical rotation; it is formed in the form of a circle around the axis of the electromagnetic package of a photon, electron, positron, gamma waves, around atoms, and also in nucleons.

In tori, the movement of the electromagnetic wave packet is helical and, depending on the direction, forms an electron, positron and gamma waves; the atom consists of an electron shell and a nucleus. The nucleus consists of protons and neutrons.

Electromagnetic wave packets of photon, electron, positron and gamma study in atomic and nucleon orbitals are a toroid. Using the properties of waves, we constructed an electromagnetic wave packet of EMWP: closed, uninterrupted, uniform, stable, stable, the existence of energy in free and atomic, nucleon orbitals in a transformed state [1]. (Figure 1).

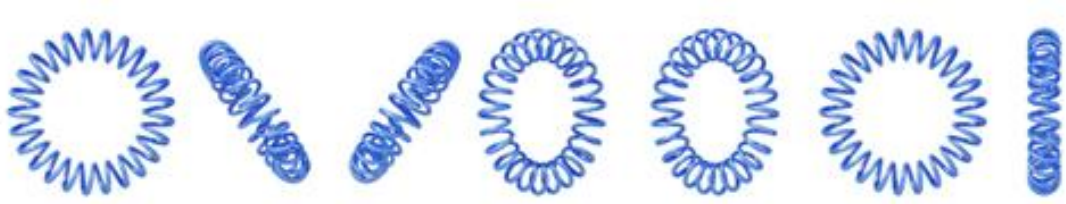

Figure 1. EMWP of photon, electron, positron and gamma waves

A wave that has a threaded movement along the axis of the spiral determines the charge in the electromagnetic wave packet (EMWP), which has a closed, spiral-shaped, uninterrupted, uniform and stable EMWP [2]. Let us consider the toroidal properties of the EMWP of a photon, electron, positron and gamma wave.

A torus consisting of an electromagnetic wave packet (EMWP) can be mathematically described in coordinates (Figure 2), where R is the axial radius of the torus, and r is the radius of the EMWP around the torus axis.

Let's compose a parametric equation of the torus. To do this, we rotate a circle around an axis, defined on the plane by the parametric equation

$$x = R + r\cos v,$$
$$z = r\sin v,$$
$0 \le v \le 2\pi$, where $R > r$ given numbers.

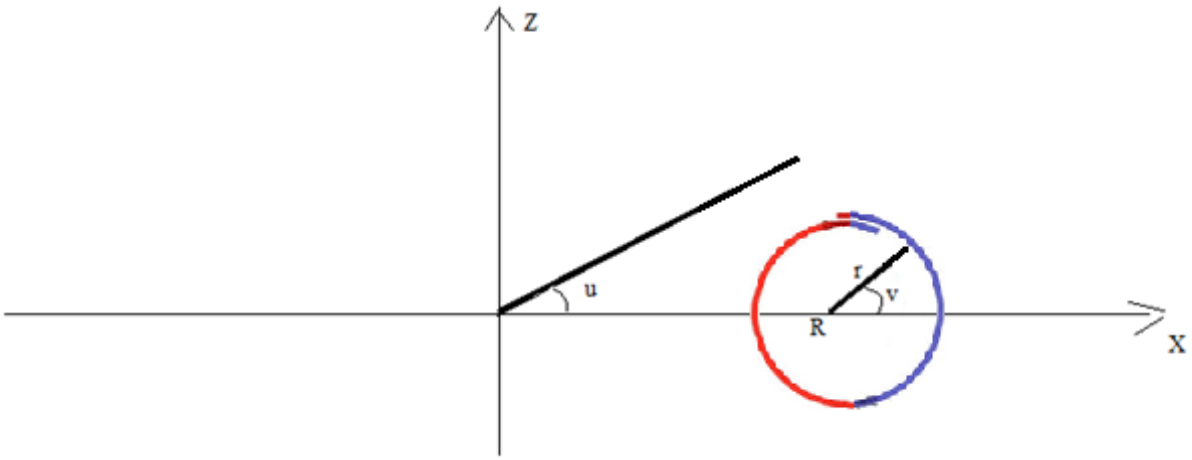

Figure 2. Mathematical function of toroid formation

When rotating through an angle u, counterclockwise around the axis Oz, the point of a given circle $M_0(R+r\cos v, 0, r\sin v)$ passes into a point of the torus $M(x,y,z)$. It is easy to see that during this rotation the third coordinate does not change, i.e. $z = r\sin v$, besides this, the points M_0 and M, are equally distant from the Oz axis, and this distance is equal to $R_1 = R + r\cos v$. Then $x = R_1\cos u$, $y = R_1\sin u$, i.e. $x = (R+r\cos v)\cos u$, $y = (R+r\cos v)\sin u$. Thus, we have derived the parametric equation of the torus

$$x = (R+r\cos v)\cos u,$$
$$y = (R+r\cos v)\sin u,$$
$$z = r\sin v,$$
$$0 \le u \le 2\pi,\ 0 \le v \le 2\pi.$$

To derive the equation of a helical spiral on a torus, we define the internal equation of a helical spiral of a toroid $u = t, v = kt$, where $0 \le t \le 2\pi$. Then the equation of the helical spiral of the toroid is as follows

$$x = (R+r\cos kt)\cos t,$$
$$y = (R+r\cos kt)\sin t,$$
$$z = r\sin kt,$$
$$0 \le t \le 2\pi.$$

To make the helical spiral of the toroid denser, you should choose a number k large enough.

Let us consider the toroidal shape of the electromagnetic wave packet of the electron with the left-threaded EMWP of the electron in a magnetic field.

Let's virtually place one screw of a spiral-shaped electron electromagnetic force in an NS magnetic field with a left-hand threaded electromagnetic force (Figure 3).

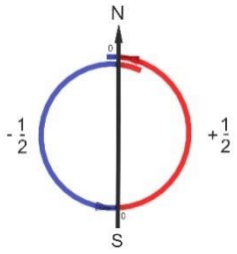

Figure 3. Cut of one turn of the toroid EMWP of an electron in a magnetic field

As can be seen from the figure, the cut of one turn of the electromagnetic wave of an electron with a left-hand thread in a magnetic field is charged $-\frac{1}{2}$ and $+\frac{1}{2}$, this is explained by the fact that the EMWP that began at the N point of the magnetic field has a charge $-\frac{1}{2}$ and when moving to the point S in a magnetic field, the charge is zeroed and changes the direction of the vector in the opposite direction, thereby charging $+\frac{1}{2}$, which makes the electron neutral in relation to itself.

Now let us consider the toroidal cut of the electromagnetic field of an electron in a magnetic field. We make a virtual slice of the EMWP into half of the toroid (Figure 4). As can be seen from the figure, the EMWP is a closed, uninterrupted, uniform, stable electromagnetic wave. When the movement is closed, the EMWP changes the direction of the vector in relation to the field in strict accordance with the left part of the toroid slice discussed above, and the right part of the toroid slice changes its vector in the magnetic field, thereby the charge of the toroid appears opposite and becomes a mirror to the left part of the slice.

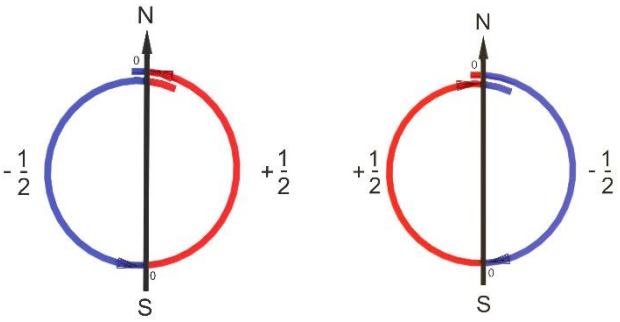

Figure 4. Toroidal cut of EMWP of electrons in a magnetic field

As can be seen from the figure, the toroidal EMWP is charged negatively on the outside, and positively on the inside of the toroid (Figure 5).

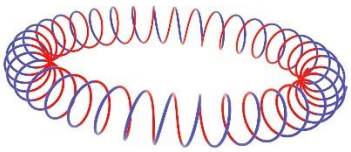

Figure 5. Charging properties of the toroid EMWP electron

This property of the toroidal EMWP answers the question of why the electron does not fall into the nucleus over time and is stable

in the Bohr orbit of the atom; the figure shows the spin and charging properties of the electron in the toroid.

As can be seen from the figure, the toroidal EMWP of electrons on the outer surface of the toroid in a magnetic field is negatively charged and, accordingly, on the inner surface of the toroid it is positively charged, thereby the electron in the atomic orbital manifests itself as electrically neutral, which gives the property of stationarity of the transformed EMWP of the electron in the atomic orbital.

Now let's discuss the cut of one turn of an EMWP positron with a right-handed thread in a magnetic field (Figure 6).

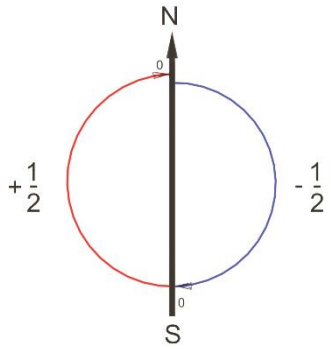

Figure 6. Section of one turn of the toroid of an EMWP positron in a magnetic field

As can be seen from the figure, the cut of one turn of the electromagnetic wave of a positron with a right-handed thread in a magnetic field is charged $-\frac{1}{2}$ and $+\frac{1}{2}$, this is explained by the fact that the EMWP that began at the N point of the magnetic field has a charge $-\frac{1}{2}$ and when moving to the point ***S*** in a magnetic field, the charge is reset to zero and changes the direction of the vector in the opposite direction, thereby charging $+\frac{1}{2}$, which makes the positron neutral in relation to itself.

Now let us consider a slice of the toroidal shape of the EMWP of a positron in a magnetic field (Figure 7).

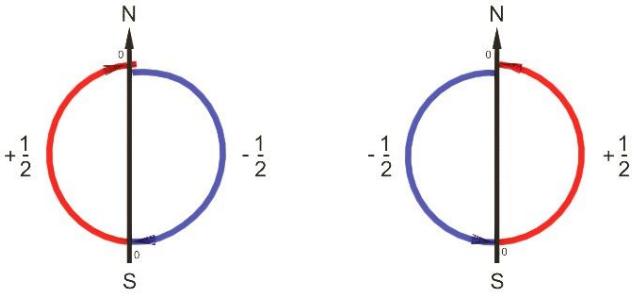

Figure 7. Toroidal section of the EMWP of a positron in a magnetic field

As can be seen from the figure in the toroidal EMWP of a positron, the outer surface of the toroid in a magnetic field is charged positively and, accordingly, on the inner surfaces the toroid is charged negatively, thereby the transformed positron in the nucleon orbital of the proton is electrically neutral, which gives the property of stability and stationarity in nucleon nucleons (Figure 8).

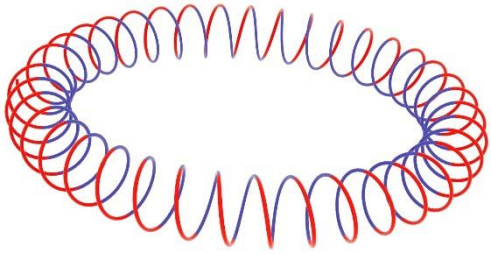

Figure 8. Charging properties of the EMWP positron toroid

Now let's discuss right-handed gamma waves in a magnetic field, they are the same as positron, but the charge of the gamma wave due to the high frequency and short wave is not sensitive, but there is a spin charge of gamma electromagnetic waves in the toroid (Figure 9).

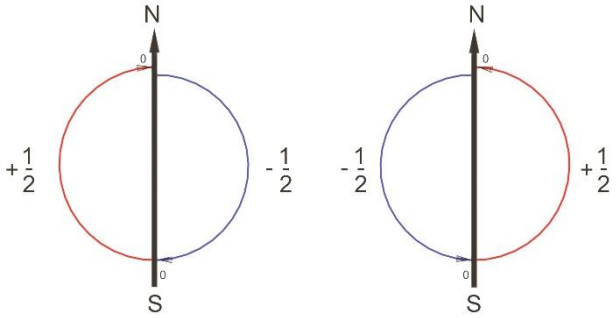

Figure 9. Toroidal cut of electromagnetic waves of gamma waves in a magnetic field

Also, the cut of the toroidal EMWP of gamma waves manifests itself as electrically neutral due to the spin nature of the EMWP of the gamma wave. The toroid of the gamma EMWP is also electrically neutral and stable, stationary in the neutron orbit, the gamma wave with the right threaded EMWP is closed, uninterrupted, uniformly stationary and stable in the nucleon orbitals (Figure 10).

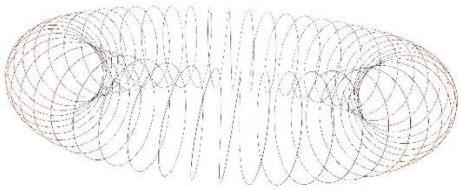

Figure 10. Charging properties of the toroid EMWP gamma waves

As can be seen from the figure, the charging properties of the gamma wave are insensitive due to the high frequency and very short wavelength, but the spin of the gamma wave is summed over the outer and inner surface of the toroid and exhibits the spin properties of the neutron.

There is a report in the literature about the positron, positronium (Ps) is a system consisting of an electron and its antiparticle, the positron, bound together into an exotic atom, in particular, a bow [3]. Unlike hydrogen, there are no protons in the system. The system is unstable: the two particles

annihilate each other, producing predominantly two or three gamma rays, depending on their relative spin states. The energy levels of the two particles are similar to the energy levels of a hydrogen atom (which is the bound state of a proton and an electron). However, due to the decrease in mass, the frequencies of the spectral lines are less than half the frequencies of the corresponding hydrogen lines (Figure 11).

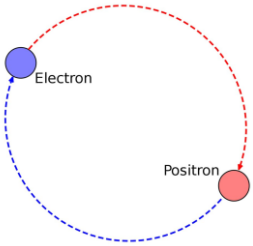

Figure 11. Positronium (Ps)

Positronium created in such an excited state will quickly transition to the ground state, where annihilation will occur more quickly.

Based on the above, the following postulate can be made:

The toroidal properties of the photon, electron, positron and gamma waves make them electrically neutral, thereby keeping them stable and in a stationary state in atomic orbitals and nuclei.

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