

The Alternative to the Standard Model **Bohr Atom Orbital electrons do not emit energy**

We have seen in the Post entitled "The Standard Model is wrong", page 17, that there is an irrefutable proof that the Bohr Atom is the correct model for the atom and that it works as a planetary system since the emissions of the hydrogen atom obtained experimentally, the Lyman, Balmer and Paschen series, coincide with the emissions which result from a situation in which the atom consist in a planetary system.

This proof seems to have gone unnoticed by modern physicists who have condemned from the beginning the idea that the atom behaves just like a planetary system in which negatively charged electrons are rotating around a positively charged nucleus. The problem is that orbital electrons, supposed to be point negative charges, should radiate energy and therefore end up rushing to the core. If the electrons were simple point charges the Bohr atom would collapse since they would be constantly emitting energy.

But, according to Yukawa, electrons are not point charges; they are small blobs of sub nuclear matter or "goo", rotating together with a certain electrical charge, forming genuine magnetic dipoles. According to Yukawa, the neutron has positive and negative electric charge in the same amounts.

Based on these ideas and following experimental facts, such as that the spin of all elementary particles is $h/4\pi$ regardless of their mass and energy and that the electron's gyromagnetic ratio is e/m instead of $e/2m$, the only possible solution is that all the electric charge of the electron is concentrated in its equator, thus forming an electric ring, and each point of that ring and equator is always running at the speed of light.

These are basic facts of this Theory: the electric charge is formed by rings and every point of the equator of material particles always runs at the speed of light. They may seem strange facts, but are precisely those that allow particles to be what they are and behave so that there is total agreement with the experimental reality. Nothing is invented in the definition of material particles given by this Theory, are all consequences of experimental facts. (See Post "Starting point of this Theory")

And from this definition of material particles some facts have been deduced, facts as

hard to get as Einstein's formula of mass increase with speed (completely outside Relativity), the emission of a photon or electromagnetic wave when an orbital jump occurs in the atom, the confirmation that the spin of all elementary particles is $h/4\pi$, the strange behaviour of neutrinos, which seem to disappear on their journey from the Sun to the Earth, the annihilation of matter and antimatter, the Nuclear Potential Barrier of ${}^7_3\text{Li}$, the nuclear framework incorporating the necessary neutrons, without which there would be no complex nuclei, the behaviour of beams of electrically charged elementary particles, which are magnetic dipoles subject to a rigid orientation and position within the beam, and finally, the nuclear forces.

Although not the subject of this post I will insist on the issue of nuclear forces, considering it is the most striking point among the proofs that this Theory is correct. Then I will continue with the proof the orbital electrons do not emit energy.

A proton and a neutron, as described in this Theory (much in agreement with the initial ideas of Yukawa) form the nucleus of the deuteron (only nucleus with two nucleons). And they have no choice but to locate their magnetic dipole axes in parallel position. Once this is admitted, there are a series of electric and magnetic forces of attraction and repulsion between electric rings rotating in the same plane, at distances less than one fermi, which is the order of magnitude of the diameter of the nucleons. And a curious thing happens: at the distance of 1 fermi forces disappear. You can measure the forces for distances between 0 (tangent rings) and 1 fermi. These forces allow us to know the binding energy of deuteron which turns out to be 2.21 MeV. (Calculations performed several times with different methods, the latter with HP calculator with magnetic cards, always the same result). These data on nuclear forces should do modern physicists think they are wrong, that nuclear forces are not the product of any virtual particle intermediation. They are the product of purely electric and magnetic actions. It is necessary to perform all these checks in order that the Standard Model is finally removed from Physics.

I show here some of the figures and calculations concerning the nuclear forces, taken from the Book "A New Physics for a New Millennium". It consists of a 286-page book that describes the reasoned steps that have allowed establishing the essential elements that govern the material world. This Work has a Certificate of Registration issued under the Seal of the United States Copyright Office – The Library of Congress in accordance with title 17, United States Code. The Book can be requested at this address idejuand@telefonica.net and will be sent free to the applicant by the same system.

I have used the electromagnetic system of units, in which the unit of charge "e" is the fundamental electric charge with value $1,6019 \times 10^{-20}$ cr, where 1 cr is equal to 10 coulomb. In this system of units

$$K_e = \frac{1}{4 \pi c^2} \quad ; \quad K_m = \frac{1}{4 \pi}$$

I have also used the CGS system of units throughout the whole Work, except for nuclear energy, where I have used eV and its multiples, MeV and GeV.

Radii are 0,3514 fermi for the ring of the proton and 0,3586 fermi and 0,21 fermi for the rings of the neutron. These are partial values of the nuclear forces:

$$F = 2,07 e c^2 d e_A 10^{26} \text{ dyne}$$

$F_T = 27,52 e^2 c^2 10^{26}$ dyne which is the attraction force between a proton and a neutron, when their centers are located at a distance $d = 0,7175$ fermi and they are turning in the same direction.

And this is the final result: Following the program of the computer we can see that the integral we are looking for, which will give us the binding energy of deuteron, is

$$\frac{3,0705}{2} \frac{e^2 c^2 10^{26}}{10^{13}} \text{ erg}$$

All the calculation is reduced to obtaining the figure $3,0705/2$, which is the result of operating with the partial results of forces at different distances as shown in the figure in page 4. The data of forces and distances along the curve leave little room for error. If there were errors, anomalies would exist in the curve.

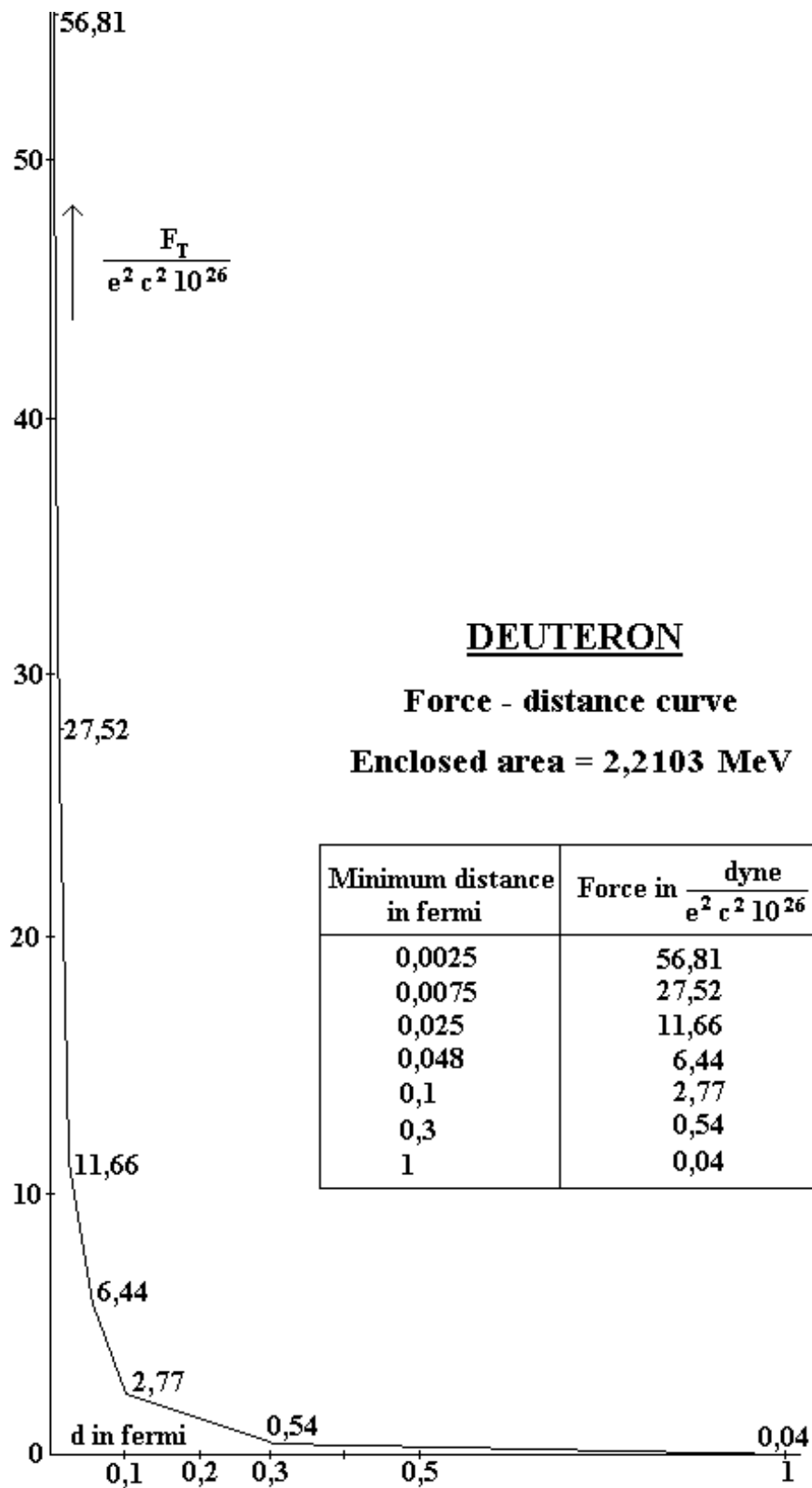
Factor 10^{13} in the denominator comes from introducing distance, which must be measured in centimetres. The factor for changing from erg into MeV is $10^6 / 1,6019$. So the above expression given in erg must be multiplied by this factor in order to have it in MeV. The result is:

$$\frac{3,0705 \times 1,6019^2 \times 8,9874 \times 10^{20} \times 10^{26} \times 10^6}{2 \times 10^{40} \times 10^{13} \times 1,6019} = 2,2103 \text{ MeV}$$

Bearing these factors in mind, and confirming that my calculations are coincident with experimental reality, one is presented with the following alternative:

- 1 - That I have stumbled upon a coincidence of a strange or inexplicable nature or
- 2 - That this Theory is on the right path towards discerning the true nature of matter, electricity and nuclear forces.

The reader is in a dilemma: I may be wrong in my calculations. To this I must add that I am not stupid enough to embark myself on this adventure if I were not certain that the calculations are correct. If the reader thinks that I have been wrong without realizing it, I think it's worth checking. It is a fundamental issue in human knowledge and the stakes are high. The search for more and more unstable particles living an infinitesimal fraction of a second can cost dearly to humanity and, worse, can waste an enormous amount of intellectual effort that could be used in more productive matters. And if the reader thinks I have no reason at all without even trying to find checks or read what I have written, then he can continue praising those who have taken Physics to the current situation.



I include here a comment from Keith Foote about the subject: "There are better models out there than the Standard Model, but the prestigious members of the physics community have tied their reputations to this model. They don't want to lose their grants, the respect of their peers, or to go down in history as misinformed idiots. Some of them have looked over the wall they've built and are beginning to sweat. Real changes will not come from the academics. They will come from technologists and inventors".

Coming back to the subject that orbital electrons do not emit energy, the real fact is that any electron moving on a plane, so that its coincident equator and electric ring remain on that plane, do not emit energy. For a distant point in space there is no movement of electric charge, that is, the electron moving in this way goes unnoticed.

But let us first see how the equator of the electron particle coincides with the electric ring: This is the experimental value of the magnetic moment of the electron $M_{me} = eh/4\pi m_e$. Where e is the fundamental electric charge and m_e is the mass of the electron at rest. We know that the magnetic moment of a charge which turns around an axis is the area swept by the charge multiplied by the current intensity. Thus the magnetic moment of the electron with its charge-ring radius R_{c_r} is: $\pi R_{c_r}^2 v e$. Where v is the frequency. Then $e h/4 \pi m_e = \pi R_{c_r}^2 v e$; $h = 4 \pi^2 m_e R_{c_r}^2 v$. Multiplying both terms by v , we have: $h v = 4 \pi^2 m_e R_{c_r}^2 v^2$. But $h v = m_e c^2$. Then $c = 2 \pi R_{c_r} v$.

If we call R_e the radius of the electron and remember that $2 \pi R_e v = c$, due to the fact that every point of the equator of the blob of "goo" always travel at the speed of light, we see that both radii are equal and that every point of the charge ring is moving at the speed of light. And this is precisely the reason why the electron moving on a plane does not emit energy.

I want to mention now an experiment carried out by Jean de Climont and shown in General Science Journal on July 2, 2014, entitled "Electron beams magnetic field is not a result of electron motion but of their intrinsic magnetic moment". The experiment shows that when a beam of electrons is moving so that the magnetic moments are parallel to their direction it originates a magnetic field but if the beam is deflected 90° so that now the magnetic moments of electrons are no longer parallel to their direction the magnetic field disappear. This is a confirmation of what I say in this Theory. First of all we must consider the electric rings are responsible for the magnetic moments. And the remarkable and inexplicable fact that the electron is the only particle in which there is coincidence between the electric ring and the equator particle occurs. Another conclusion is that each differential element of the particles equator always goes at the speed of light. This implies that when an electron moves in a plane containing its own equator, as it happens with the electrons of the experiment after being deflected 90° , the axis of rotation of the particle undergoes a slight displacement. Otherwise, a point of the equator would go at speed $c+v$ and another $c-v$, where v is the velocity of the particle. This can be seen in Chapter 10: "Orbital electrons do not emit energy" of the Book "A New Physics for a New Millennium".

That little movement of the axis of rotation causes that the electron moving in a plane containing the particle equator and its electrical ring does not involve any movement of electric charge. In other words, the movement cannot be noted by a distant observer and therefore does not cause any magnetic field.

The reality is that magnetic fields are created by moving electric charge (charge-speed vector), not necessarily moving electrons, and if there is no movement of electric charge there will be no magnetic field. On the contrary, before the deviation of 90° , the electrons themselves carry charge movement and thus create magnetic field.

We are now going to consider an important fact: **All electromagnetic radiation has as a primary cause moving electric charges.** It is clear that electric charges at rest do not emit radiation. This does not mean that any moving charge should emit electromagnetic radiation. For electromagnetic radiation to be emitted certain conditions are required as we shall see later on. It must be made clear that if there is no movement of charges there will be no radiation.

Coming back to the case of the charge-ring at rest, it is easy to understand that there will be no electromagnetic radiation. As the ring is circular, each differential element of charge moving in a certain direction at a certain speed as a result of the internal spin of the particle corresponds to another differential element of charge so that they are diametrically opposite to each other. Each pair of corresponding differential elements of charge having the same charge and opposite directions, the result of adding the charge multiplied by the speed of each pair will be zero, as the resultant of adding the two vectors is cancelled out. This happens all along the charge-ring. We can consider the dimensions of the ring negligible compared with the hypothetical radiation wavelength. The result is that any point P in space cannot "feel" any movement of charge. Consequently a static charge will originate no radiation.

On the other hand, a charge-ring is a rigid girdle. Each of its differential elements of charge can never be considered as an independent charge circling around an axis subject to Maxwell's laws. Let us remember that "Maxwell's equations determine the forces which moving point charges exert on each other". And these moving point charges should be free, not linked together forming a rigid ring that cannot be deformed. It is then clear that a charge-ring at rest exerts no influence on the surrounding space apart from its normal electric field and the fact that it is a dipole subject to the effect of a magnetic field with regard to its orientation. I certainly believe that there is no problem in admitting that, from the point of view of a given point in space, a charge-ring at rest implies no movement of charge. And, if this is admitted, the fact that orbital electrons emit no radiation is also admitted, as we shall see.

What I am going to demonstrate is that an orbital electron acts exactly in the same way as an electron at rest does. Any point P in space, capable of "feeling" the orbital

electron, will only feel the corresponding electric field as well as the presence of a dipole. Point P will never feel the presence of "a moving point charge" necessary for Maxwell's equations to be applied.

Let us now imagine that the electron with its charge-ring is moving at a certain speed v in a certain direction. It is easy to demonstrate, by considering the resultant or composition of two partial movements for each differential element of charge, that the effect on point P is exactly the same as the effect a punctual charge moving at speed v would originate on point P. If the movement in question is accelerated, including here a centripetal acceleration, the electron would emit radiation. We know that orbital electrons are charges moving along their orbits with an acceleration and that they do not emit radiation. Let us see what happens and why orbital electrons, the orbit being either circular or elliptical and whatever the orbit eccentricity may be, are travelling along their orbits without giving off energy. What happens is something so extraordinary that it may be difficult to believe, but it will be demonstrated: **An orbital electron moving along its orbit behaves as a static charge.** Note that I do not say that it is a static charge.

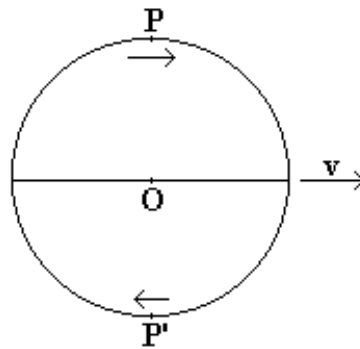
We have already seen the surprising conclusion that the equator-ring and the charge-ring are coincident in the case of the electron. Let us point out that this circumstance takes place **only for the electron.** This makes one think that this circumstance must be of great importance from the point of view of this Theory and it will be our starting point. It allows orbital electrons to move along their orbits at a speed of 2.200 Km/sec acting as static charges from the electromagnetic point of view. And that, as we shall see, is valid for any speed of the electron, so that it remains true when the orbit is elliptical, as then the speed is changing all the time. Otherwise, the Theory would encounter serious difficulties when it comes to deal with elliptical orbits. As a matter of fact this is valid even when the electron motion is in a straight line .

We have seen that the differential elements of the equator-ring of **all particles always move at the speed of light.** As both rings of the electron coincide, the differential elements of charge of the electron **always** travel at the speed of light.

The electron being a dipole it is easy to see that its position in the atom, under normal circumstances, will be such that the plane of its equator and charge rings will coincide with the plane of the atomic orbit. Let us concentrate on the charge-ring, which is the ultimate cause of electromagnetic phenomena, moving at a certain speed v on the orbital plane. I am going to tell in advance what happens to the charge-ring of the orbital electron so that it may behave as a static charge. Let us imagine, as shown in the figure on the next page, a charge-ring moving at speed v on the horizontal plane along the electron's orbit.

As every differential element of the equator-ring, as well as every differential element

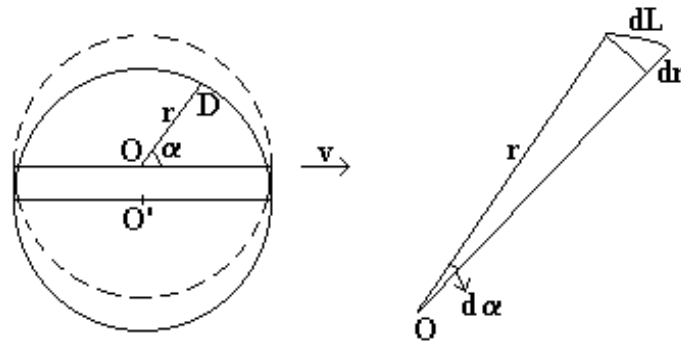
of the charge-ring, must always travel at the speed of light, the electron has no other possibility than to adjust itself to comply with the rule. If the electron doesn't adjust itself, the speed of points P and P', both belonging to the charge-ring, will be respectively higher and lower than the speed of light: $c+v$ for point P and $c-v$ for point P'. It must be understood that the adjustment of the electron is due to the fact that every differential element of the equator-ring must always travel at the speed of light. The fact that the orbital electron doesn't give off energy as long as the charge-ring doesn't change is a consequence of the constant absolute speed of every differential element of the charge-ring.



I'm going to demonstrate how the electron, through a simple adjustment, manages to keep a constant absolute speed of every differential element of charge-ring and, as a consequence of this, it doesn't emit energy.

But first of all I must say that we are not talking about a piece of wood or iron. Fundamental particles are not newtonian. We are dealing with the ultimate constituent of Matter, the "goo" or, if you want, the "Yukawa's urmaterie", some kind of subnuclear matter or fluid, the existence of which can only be explained when we realize that the Universe exists. The electron adjustment could not be possible for a piece of wood or iron. But it could be possible for a fluid or gas moving like a hurricane.

The adjustment made by the electron simply consists in a vertical displacement along a distance OO' such that $OO'/R = v/c$, as shown in the next figure, where O' is the new geometrical centre and R is the radius of the charge-ring. The turning axis of the electron continues to be the line perpendicular to the plane of the figure passing through O .



The main feature of this disposition is that the differential element of charge-ring located on any point D has a relative turning speed around the turning centre O, which I call v_r , proportional to r , where r is the variable distance OD. We have: $v_r = c r/R$. This type of movement seems impossible at first sight. But we shall see that, when combined with the linear movement at speed v , it is amazingly possible. We are going to see that this is what happens, if the absolute speed of every differential element of the charge-ring must keep constant, and that the final consequence of the above adjustment is that the orbital electron, as long as its charge-ring is not altered, doesn't emit energy.

The following demonstration and the necessary calculation are rather complicated but it is the normal way to tackle the problem. This is shown in the book "A New Physics for a New Millennium", Chapter 10: "Orbital electrons do not emit energy". Nevertheless, once we know the result, that is to say that point D describes a circumference with the same original radius and with its centre displaced a distance $R v/c$, the demonstration can be reached in a much more simple way: through comparison of two triangles.

Let us bear in mind that the deformity is negligible. For $\alpha = \pi/2$ the difference between r and c is $c/137$. This value corresponds to the inmost electron of the hydrogen atom. But it is precisely that negligible deformity which makes **the orbital electron behave like a static charge** from the electromagnetic point of view.

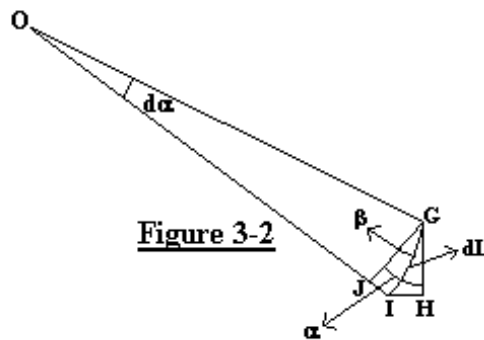
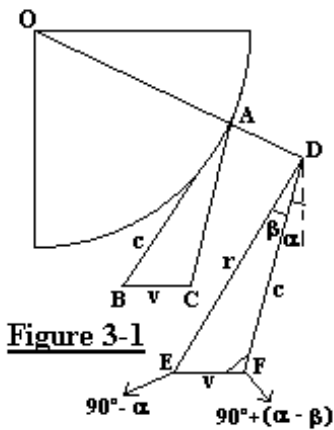
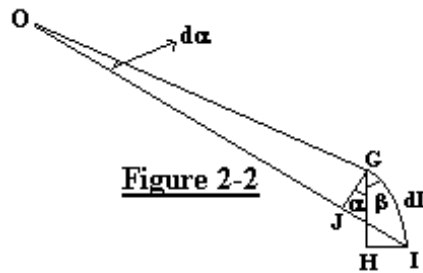
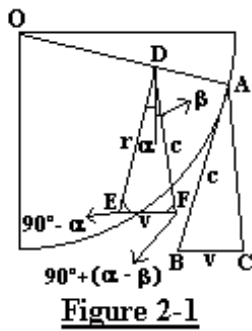
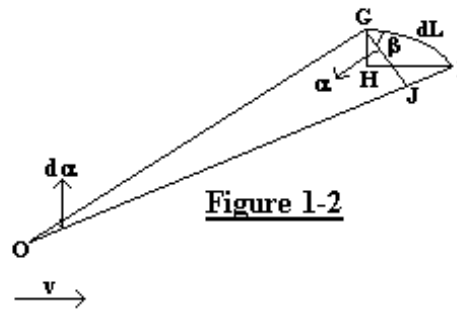
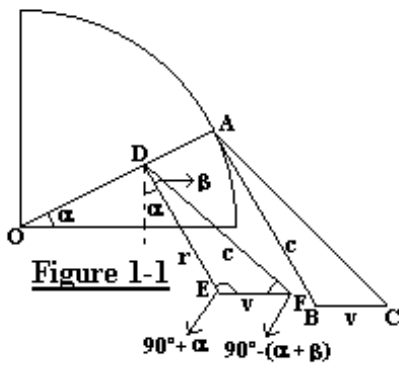
Let us see the first representation in the Book "A New Physics for a New Millennium", figures 1-1 and 1-2 shown in the next page. I have taken the scale in which the radius of the particle is equal to c .

If the differential element of charge followed the circumference with radius c , in other words, if the differential element of charge were located at point A at a certain moment corresponding to a certain angle α , that differential element of charge should be subject to a speed AC, which is the result of adding the speed $AB = c$ created by the internal spin and the speed v . That speed AC is different from the speed of light. This makes the electron modify the speed of the differential element of charge due to the internal spin. Distance OA must be altered so that the new position D can allow the new resultant speed to be the speed of light c , the frequency remaining the same. The new speed c will

be the result of adding $DE = r$ and the speed v .

The electron has no other possibility than to adjust itself to the new conditions. This adjustment consists in a deformity of the charge-ring so that the absolute speed of every differential element of charge can always remain equal to the speed of light. The adjustment is negligible bearing in mind the size of the charge-ring, but it is enough to allow the electron to behave as a static charge.

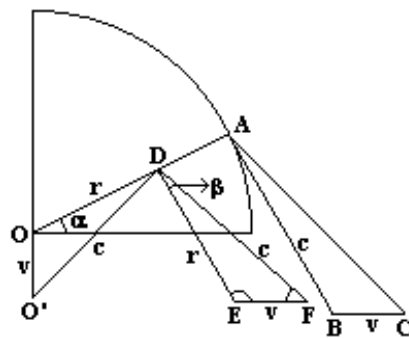
Finally the adjustment is limited to a displacement of the rotational axis of the particle affecting the material "goo" as well as the electric ring.



Once we know the results, here is the geometrical demonstration: We use the figure 1-1, adding point O' so that $OO' = v$, placed on the vertical line below point O . See next

page.

If we compare triangles DEF and DOO', we see that they are equal. Their corresponding sides are perpendicular to each other. Then O'D = c, which means that point D describes a circumference with the characteristics mentioned above. Point D always travels at the speed of light and describes a circumference exactly the same as the original one but with its centre slightly displaced a distance that depends on the speed v. If we imagine the electron at a given instant, as if we had taken a photograph, we should see that its equator-ring is a circumference with each of its points travelling at the same absolute speed, the speed of light. This implies that its behaviour as a cause of electromagnetic radiation is the same as that of the particle at rest and that neither its energy nor its magnetic moment have changed just as the length of the equator-ring and the area of the circle have not changed either.



In order to avoid misunderstandings I am going to outline certain considerations. The electron makes that adjustment not to avoid emitting energy. The reason of the adjustment is that the electron must obey a law which states that all the differential elements of its equator-ring must have an absolute speed equal to the speed of light. In order to obey this law the electron has no other possibility than to adjust itself. The fact that it does not emit energy is a consequence of that adjustment. The sequence of events is:

- 1- Law which states that all the differential elements of the equator-ring must have an absolute speed equal to the speed of light.
- 2- Electron's adjustment.
- 3- No emission of energy.

There is a point I have mentioned before subject to discussion: the displacement of the turning axis makes the movement of any point on the equator-ring hard to understand. How can a given point of the ring go round an axis when the distance to this axis is changing all the time? If the frequency remains constant, the point in question, when

turning around the axis, will travel different distances during equal periods of time. The movement can only be understood when the two centres O and O' coincide. But this is the case when $v = 0$, when the electron is at rest. What happens is that this impossible movement does not take place. If we take a photograph of the electron, as I have said before, we see in the picture a charge-ring exactly just as it was, without deformity, and with every differential element travelling at the speed of light. This explains why it does not give off energy. If we use a movie camera instead of taking a photograph and we focus on a certain point on the equator-ring, we see that this point, always travelling at the speed of light, describes a given curve. It is easy to check that this curve is not a circumference but a curve **very close** to a circumference. If we consider the innermost electron of the hydrogen atom, $v = c/137$. The length d covered by the electron along its orbit during the time it completes a turn is $d = v t$ and as $t = 1/v$ and $2 \pi R v = c$, we have $d = 2 \pi R/137$. This means that when a point in the charge-ring turns 360° its progress along its orbit is very small. Every point of the charge-ring is advancing very slowly in comparison with the quick turning of the electron.

I would like to note here that the radius "R" I have been mentioning is not exactly the radius of the electron at rest that we could call R_0 . As the electron is moving at speed v , having in mind the formula of this Theory $E 2 \pi R = h c$, we have:

$$E_v 2 \pi R = E_0 2 \pi R_0 = h c ; E_v = \frac{E_0}{\sqrt{1 - \frac{v^2}{c^2}}} \quad \text{and then } R = R_0 \sqrt{1 - \frac{v^2}{c^2}}$$

On the other hand the frequency also changes:
$$\nu = \frac{\nu_0}{\sqrt{1 - \frac{v^2}{c^2}}}$$

So that in the end $R v = R_0 \nu_0$ and $2 \pi R v = c$

The fact that radius R is not exactly the radius of the electron at rest doesn't change the argument. On the other hand the difference between R and R_0 is not only caused by speed but also by some potential energy.

The only problem which needs to be solved is to demonstrate that every point on the charge-ring follows an absolute path in complete agreement with reality. As I have said this path is almost a circumference, but is not a circumference. Otherwise the point in question would repeat its position after completing a turn of 360° , which would mean that the electron had not moved. What we have to demonstrate is that any point D of the equator-ring, when it follows the deformed curve that is almost a circumference, travels at an absolute speed equal to the speed of light covering the same distance in a given period of time. I do not include this demonstration here that can be seen in the book "A New Physics for a New Millennium".

And this is the real secret of the movement. The movement, if we imagine the particle at rest, is impossible. It doesn't work. When angle α is varying, the distance covered by any point of the charge-ring during a given period of time is different depending on the instant we are considering.

But the movement is possible because the absolute movement is caused by the addition of two partial movements, one is a turning movement around an axis located in a complete asymmetric place depending on speed v , and the other is the linear movement of the electron along its orbit. It is only when we combine the rotary movement around the displaced turning axis O' and the linear movement at speed v , that the absolute movement becomes possible.

On the figure of page 15, the route followed by a point of the equator-ring within a time $t = 1/v$ has been shown (dotted line). The arbitrary scale is $R = 5$ cm. The figure corresponds to a speed $v = 0,1 c$. We see that the shape of this absolute curve clearly differs from a circumference. The reason why I have chosen $v = 0,1 c$ is simply to make the figure clear since the actual value of the speed of orbital electrons is in the range of $v = 0,007 c$. In this case the absolute curve followed by a point of the equator-ring should not be distinguishable from a circumference on the scale I have taken $R = 5$ cm. During the time $t = 1/v$ the turning angle around the turning axis through O' covers an angle equal to 2π . Within this time centres O and O' cover a distance d along the horizontal line so that $d = 0,1 c t = 0,1 c/v$. But $2 \pi R v = c$. Then $d = 0,1 \times 2 \pi R$. This distance d has been divided into 12 equal parts each one corresponding to the advance of the electron within time $t/12$. The horizontal line through O shows points 0, 1, ... 12, which are the successive positions of the geometrical centre O during time t . Points 0, 1, ... 12 along the absolute curve represent the positions of a point of the equator-ring during successive intervals. The composition of the absolute curve requires that successive distances 0-1, 1-2, ... 11-12 along this curve should be exactly 10 times distance 0-1 on the horizontal line since $v = 0,1 c$ and points of the equator-ring travel at the speed of light. Note that these points have lost any sense of angle increments. They do not care about angles. Their only concern is the distance they must cover during each interval (10 times the advance of the electron during the same interval) and the fact that each point must belong to a circumference with radius R and with its centre located at the corresponding position 1, 2, ... 12 on the horizontal line (broken line for instant 3).

We have managed to give an explanation of the series of coincidences which have taken place when studying the resultant curve and the absolute movement. **Why is the resultant curve a circumference with the same original radius, independent of the value of v ? Why the absolute movement is possible when one of the partial movements is impossible?** Let us remember what the initial problem was: we had to make the initial radius smaller so that the point in question could travel at the speed of light. This required us to imagine a type of movement which goes against all logic, and then we had to add the linear movement at speed v along the orbit. By adding these two

movements we obtained an absolute curve along which the point travelled at the speed of light. I couldn't imagine what this curve was going to be like. I can assure you that nobody who might dare to tackle this problem in this way could imagine the result.

In my opinion the explanation is simply: the resultant curve is a circumference with the same original radius, independent of the speed v , and the complex movement is possible **as otherwise the atom and the Universe would collapse.**

To round off this chapter I want to point out that the fact that orbiting electrons do not emit energy is **independent of the values of v and c .** This means that this property may be applied to any moving particle with the sole condition that its equator-ring and charge-ring must remain unaltered on a plane.

The decisive fact is that, whatever the speed v may be, **the absolute speed of every differential element of charge-ring remains constant and the charge-ring doesn't change but the turning axis is slightly displaced a distance depending on v .** If we could at any instant take a photograph of the electron, we should see that each point of the charge-ring is organized so that, for a distant observer, there is no electrical charge movement and there is no change in the circumference these points occupy, which, according to this Theory, means that the energy and the magnetic moment remain unaltered.

All this will explain some of the apparently strange phenomena in the experiments carried out by Professor Alan D. Krisch at the above mentioned Zero Gradient Synchrotron (ZGS) as we shall see in the corresponding chapter.

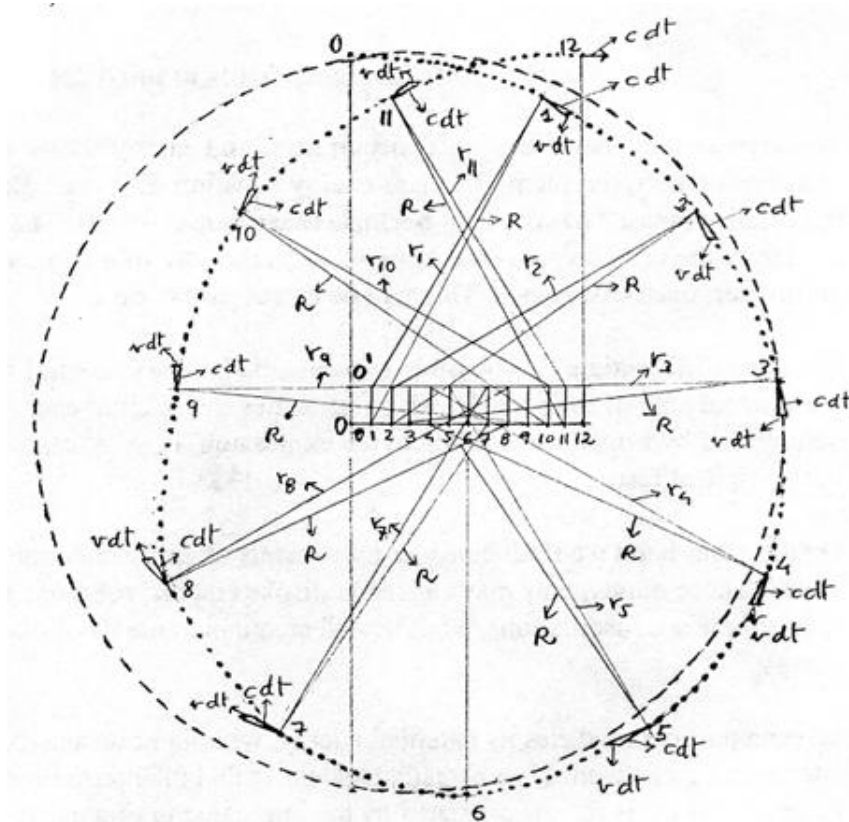
The previously discussed movement is shown in the next figure.

$R = 5$ cm (Arbitrary scale); $v = 0,1$; $cd = 0,1 \times 2 \pi R = 3,14$ cm ; $d/12 = 0,26$ cm

Points 0, 1, ... 12 along the horizontal axis represent the geometrical centres and the corresponding points above them the turning centres. Distance between points 0 and 12 is the distance covered by the electron during time $t = 1/v$ (3.14 cm on our scale). It has been divided into 12 parts defining 12 successive instants.

Broken line - Circumference showing a photograph of the equator-ring taken at instant 3.

Dotted line - Route or absolute curve followed by a point of the equator-ring during the time the electron completes a turn of 2π .



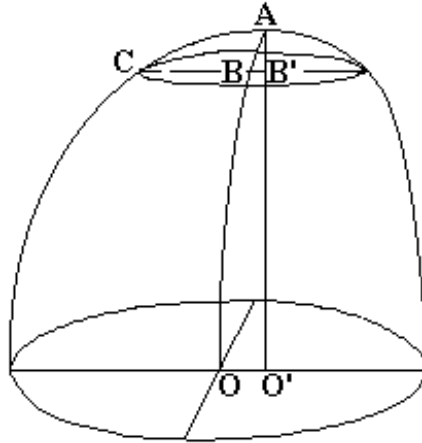
When the orbit is elliptical the radius and frequency of the electron do not change but the speed varies all the time. This implies that distance d and the absolute curve (dotted line) are modified. An increase or decrease of the electron's speed implies respectively that the absolute curve differs more or less from the shape of a circumference. In other words, when the orbit is elliptical, the shape of the absolute curve is changing all the time, but an **instantaneous photograph taken by an observer at any instant will always remain a circumference with radius R and with its centre exactly located on the electron geometrical centre at that instant.** The figure (broken line) shows the circumference at instant 3.

Each triangle with sides R , the corresponding r (which is changing all the time) and $R v/c$, is similar (perpendicular sides) to each corresponding differential triangle with sides $c dt$, $r d\alpha$ and $v dt$. (The scale of the differential triangles is arbitrary). Note that the relation between $c dt$ and $v dt$ is always 10 (supposing v is constant, $0,1 c$ in our example), the former always defining the direction of the absolute curve and the latter always being horizontal.

Particle parameters

Let us examine the case in which the particle is moving so that the equator-ring as well as the charge-ring remain on the same plane, as in the case of an electron orbiting around an atomic nucleus. We have seen that the energy does not change. The charge-ring, which coincides with the equator-ring, is not altered. But there is a displacement of

the turning axis. Let us see what may happen to the whirl. The fact that the equator-ring is not altered does not justify that the energy and the spin do not change either. Let us recall that energy and spin are exclusively caused by a turning "goo". The question is: what has the whirl to do in order to maintain the same energy and the same spin? No doubt the whirl adjusts itself to the new situation.



The only thing that cannot change is the equator-ring, the rigid girdle the size of which determines the energy of the particle. But as far as the other parameters which define the whirl are concerned, they are not fixed, they may take on any value. Those variable parameters have been defined with the help of the above figure, in which the upper half of the whirl has been depicted. O is the centre of the circumference corresponding to the equator-ring and O'A is the turning axis. It seems logical to consider that any horizontal cut will define a circle the centre of which will be a given point B and its radius will be BC. We shall have: $OO' = R \sqrt{v/c}$ and $BB' = BC \sqrt{v/c}$. The three parameters the whirl may play with so that its internal energy and its spin remain unchanged are:

O'A which represents the height of the whirl.

The positions of the centres of the horizontal circles corresponding to sections at different heights. The parameter consists of the different curves OBA along which points B are located.

The third parameter is the radius BC for each section at the corresponding height.

It is not possible to calculate the value of energy and spin created by the "goo" in the different cases for the different values and positions of the three parameters, nor is it possible to demonstrate that, for certain values and positions of those parameters, energy and spin remain unchanged. But it is not absurd to consider that the whirl is capable of adjusting itself by playing with the three parameters so that its energy and its spin are not altered.

We have discussed sufficiently the movement of the electron's charge-ring when it is travelling along its orbit. And we have seen that the conclusions concerning this movement are valid for any values of R and v .

All this might seem strange, but let us remember that we are not talking about a piece of wood or iron. Fundamental particles are not newtonian. We are dealing with the ultimate constituent of Matter, the "goo" or, if you want, the "Yukawa's urmaterie", some kind of subnuclear matter or fluid, the existence of which can only be explained when we realize that the Universe exists and that we are here not only to see it but to investigate it.

We could imagine that an orbital electron functions as a hurricane or a cyclone, in the form of a violent rotation of goo round a calm central area. I do not know the mechanics of a cyclone. But I should think that there must be great similarity between an orbital electron and a cyclone. The turning axis of the cyclone should be displaced according to the linear speed and the linear direction. And every volume of air inside the cyclone should remain constant as well as its absolute speed.

Mailto: jdejuand@telefonica.net

Ended: July 2014