

# Origin of Circular Motion in the Universe

Salah Eid

Faculty of Arts- Suez Canal University-Ismailia- EGYPT

## Abstract

The two equal and opposite charges are the two equal and opposite halves of the circular motion of the electron with its negative charge around the proton with its positive charge. Here the lighter in mass, the electron, makes the circular motion around the proton in hydrogen atom. On the other hand, the Sun formed from a huge number of hydrogen atoms behaves as one hydrogen atom, where the two equal and opposite charges of every hydrogen atom in the Sun cause the planets to revolve it as any electron revolves a proton.

## Introduction

The stability of an atom where electrons revolve protons like planets revolve the Sun arose the question: why an atomic electron necessarily radiates energy due to its acceleration should not spiral rapidly into the nucleus? The same question also arose about solar planets. It is well known according to Bohr's theory that an electron in an atom can revolve in certain fixed orbits without the emission of radiant energy. An atom radiates out energy only when an electron jumps from one orbit to another of lower energy<sup>(1)</sup>. Here, Bohr avoid the above question about the stable circular motion of the electron by only stating the fact of this stability without giving any explanation. Here, we explain the circular motion of the electron in hydrogen atom considering its two equal and opposite halves are those of the two sorts of fundamental electric charge  $e^- + e^+ = 2e$

### The two sorts of charge are the two halves of a circle:

Geometrically and practically any circle or circular motion in the Universe is formed from two equal and opposite halves. The circular motion of the electron around the proton in the smallest planetary system, hydrogen atom, takes place by the equal and opposite charges  $e^- + e^+ = 2e$ , and for this reason multiplying the central mass, the proton, by the general constant of gravity G, gives the two equal and opposite charges of the two particles as follows

$$Gm_p = (2e)^2 \quad [1]$$

Therefore, the two equal and opposite charges create the circular motion in G in this equation.

Now, it is very interesting that multiplying the two sides of eq 1 by the number of hydrogen atoms forming the Sun  $N$  gives

$$\begin{aligned} N Gm_p &= N (2e)^2 \\ G M_s &= N (2e)^2 \end{aligned}$$

Where  $M_s$  is the mass of the Sun in kilograms, and as  $GM_s = V^2 R$ , where  $V$  is the orbital velocity of any solar planet,  $R$  is the mean radius of its orbital velocity, thus we have

$$V^2 R = N (2e)^2 \quad (2) \quad [2]$$

Therefore, according to this equation, every two equal and opposite charges of hydrogen atom forming the Sun and causes the electron to revolve the proton, causes in the same time the planet to revolve the Sun. In other words the equal and opposite charge of all hydrogen atoms forming the Sun cause every planet to revolve it.

### Comparison between Coulomb's law and eq 1

Let us make the following comparison between the two charges as they appear in Coulomb's law and in equation 1

$$e^2 = m_e v^2 r 4\pi\epsilon_0 \quad (3) \quad [3]$$

$$(2e)^2 = m_e v^2 r 16\pi\epsilon_0 \quad [4]$$

We find that in 3 (Coulomb's law) two charges are multiplied by each other being similar or opposite ones, where the repulsive or attraction takes place between them as it is well known, while the two charges are added one to another in 4 before being squared, this addition must be only between two equal and opposite charges creating the circular motion of the electron around the proton, therefore

$$Gm_p = (2e)^2$$

This equation is correct numerically in proving the circular motion of the electron around the proton, and this meaning is assured in it dimensionally, from 4, as follows

$$\frac{L^3}{T^2} = \frac{M L^3}{T^2} \cdot \frac{e^2 L^3}{M T^2}$$

$$e^2 = \frac{L^3}{T^2} \text{ or } v^2 r$$

Where

And  $r$  here is necessary on the small and large levels to show the distance between the electron from the proton or the planet from the Sun, also and more important the orbital velocity  $v$  is determined by  $r$  as it is the case in the third law of Kepler<sup>(4)</sup> !

**The fact about the charge :**

Let us ask, why the charge of the electron equals that of proton although the first is less than the second by 1835 times in mass ? It is clear that the electron moves around its axis faster than proton 1835 times. No doubt the charge of the particle comes from its spin, and the spin of the electron must be opposite in direction to that of the proton. The two halves of circular motion of the electron around the proton are not only  $v^2 r$  but its two halves of circular motion are the whole two charges of the electron and proton. In fact the mentioned multiplying mass of the proton by the general constant of gravity G proved this fact where

$$Gm_p = (2e)^2 = v^2 r (16\pi\epsilon_0 m_e)$$

Again, the circular motion of the electron around the proton has its two equal and opposite halves, and these two halves are the two fundamental negative and positive charges.

We must say here a word about the spin as it appears in quantum theory. Max Planck's constant describes the revolution of the electron around the proton on angular momentum basis where  $m_e v 2\pi r = h$ , also the electron's spin is built on the same angular basis where the SI unit of spin is  $kg m^2 s^{-1}$  <sup>(5)</sup>. In fact the basis of motion in the whole universe is the energy and not the momentum, as passed the motion of the electron in Coulomb's law and in our equation : eq 3 and eq 4, is shown as energy and not momentum, in Kepler's third law  $\frac{L^3}{T^2}$  or  $V^2 R$  is the description of the planet's motion around the Sun. It is clear that the general constant of gravity is Kepler's third law divided by the central mass of an astronomical system. Therefore the spin of the electron or proton is the origin of the energy forming their charges .

Conclusion:

The two equal and opposite halves of the circular motion of the electron around proton in hydrogen atom are nothing but the two equal and opposite fundamental charges of the electron and proton as it shown from multiplying the proton by the general constant of gravity G. On the other hand every hydrogen atom forming the Sun causes every planet with its two equal and opposite charges to move its circular motion around the Sun with its two equal and opposite halves, and the Sun itself behaves as one hydrogen atom!

**References**

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