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WHY THE ELECTRON IS NEGATIVELY CHARGED AND THE PROTON POSITIVELY?!

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Abstract

Electron, proton and neutron are the most important Subatomic particles which made atoms. Between them neutron does not have any electric charge but electron is negative and against that proton is positive. We know the electron as an elementary particle and proton consists of two different kinds of elementary particles (up and down quarks). But we do not know structure of electron and proton. Saleh Theory defines a structure for electron as hollow sphere and for proton as continues texture. Here we proved that the electron and proton properties are due to its structure. So electrons moves easily and protons are like black hole because of their structure. This indicates that there is a possibility of obtaining best shape for electron and proton

from Saleh Theory and it is possible to determine a structure for neutrons too which could help us to have better understand about particle physics examination.

Keywords

Electric Charge, Electron; Proton, Neutron, Subatomic Particle, Elementary Particle, Saleh Theory, Negative Charge, Positive Charge

1. Introduction

Although the subatomic particles such as electrons, protons and neutrons were discovered more than one century age (Krumeich; pal Singh & Raj, 2013) but today there are many unanswered questions about the reason of their behavior. One of them is how these subatomic particles have electric charges. How these subatomic particles show the different behavior. But the most important question:” why electrons have different charge from protons?” This is one of the most important questions in particle physics for which the physicist don't have any answer.

As soon as Electron was discovered in 1897 by J.J Thomson (Krumeich; pal Singh & Raj, 2013), Rutherford suggested that there must be another particle in atoms which have the same quantity charge to electron but in different sign; to balance the atoms charge. He names that positive charge “The Proton”. Although neutron was discovered after proton but as it does zero net charge we do not speak about in this paper. Electrons are the same and with $m_e = 9.109 \times 10^{-31}kg$ rest mass are the lightest particles which form the Atoms (Gh, Faraji, Alizadeh, & Dalili, 2018; Mohr, Newell, & Taylor, 2016; Mohr, Taylor, & Newell, 2008; Pohl et al., 2010). It has the possibility to move from one matter to another; to move from one end of wire to another end very soon, etc. but proton have $m_p = 1.6726217 \times 10^{-27}kg$ rest mass, $\rho_p = 0.78 \times 10^{18} kg/m^3$ density and it is fixed inside the atom (Gh et al., 2018; Mohr et al., 2016; Weise & Green, 1984).

On the other hand Saleh Theory is a new theory which defines the different structure for electron and proton so the different type of behavior of electron and proton are its logical result. So in this paper we are going to present a new definition base on Saleh Theory to explain “why the Electron is Negatively Charged and the Proton Positively” regarding their different structure, which is describe without any reason up to now.

2. Materials and Methods

The current research involved analyzing the behavior of proton and electron and with respect to the suggestion of Saleh Theory about proton and electron structure we compare the result of this structure with the experimental findings about the characteristics of proton and electron.

2.1. Proton Characteristics

"First" is the meaning of the word "proton" is Greek and at first Rutherford in 1920 thought that the hydrogen nucleus is equal to proton ("Proton | Definition, Mass, Charge, & Facts,") at that time Protons were named as a fundamental particle alone but After a while neutron discovered and proton and neutron together was the building block of all atomic nuclei. Researches and experiments by Scientists achieved the physical properties of proton. They found that the mass of a proton is equal to $m_p = 1.6726217 \times 10^{-27} kg$ (Mohr et al., 2016; Weise & Green, 1984), its electrical charge $q_p = 1.6021765 \times 10^{-19} c$ (Mohr et al., 2016) and its radius $r_p = 0.8 \times 10^{-15} m$ (Mohr et al., 2016; Mohr et al., 2008; Pohl et al., 2010)

$$q_p = 1.6021765 \times 10^{-19} c \quad (1)$$

$$m_p = 1.6726217 \times 10^{-27} kg \quad (2)$$

$$r_p = 0.8 \times 10^{-15} m \quad (3)$$

So its density is:

$$\rho = m/V \quad (4)$$

$$\rho_p = \frac{m_p}{\frac{4}{3}\pi r_p^3} = 0.78 \times 10^{18} kg/m^3 \cong 10^{18} kg/m^3 \quad (5)$$

Where ρ_p is density of single proton.

2.2. Electron Characteristics

The electron is a particle with negative charge. The electricity investigations was started in ancient Greece but the electron was discovered in 1897 while studying cathode rays (electron Beams) by J. J. Thompson (Nobel Prize 1906) (Krumeich) After a while it was found out that electrons are over1000 times smaller than a hydrogen atom and its rest mass is approximately 1/1836 of that of a proton. So the electron charge and rest mass are:

$$q_e = -1.6021765 \times 10^{-19} c \quad (6)$$

$$m_e = 9.109 \times 10^{-31} \text{kg} \quad (7)$$

$$r_{e_c} = 2.8179 \times 10^{-15} \text{m} \quad (8)$$

$$\rho_{e_c} = \frac{m_e}{\frac{4}{3}\pi r_{e_c}^3} = 9.723 \times 10^{12} \cong 10^{13} \text{kg}/\text{m}^3 \quad (9)$$

Where m_e is an electron rest mass, r_{e_c} is its classical radius and ρ_{e_c} is classical density of a single electron.

In 1924 when L. de Broglie (Nobel Prize 1929) presented the wave-particle dualism electron found wave properties too. But there are different theory to calculate the density of electron and also its radius. Nowadays there are two methods to calculate the electron radius. In classical method the radius calculate base on Newtonian physics laws and the amount is $r_e=2.8179 \times 10^{-15}$ m (Haken, Brewer, & Wolf, 2012). But quantum mechanics also tried to present a radius for electron base on a single electron in a Penning trap. The quantum radius for electron is equal to 10–22 m (Dehmelt, 1988).

2.3. Electron and proton structure base on Saleh Theory

Saleh Theory base on *Superstring Theory*, consider that the whole world is made up of small energy packages with at least 11 dimensions of motion. So the building block of universe must make of this small energy package (Gh et al., 2018).

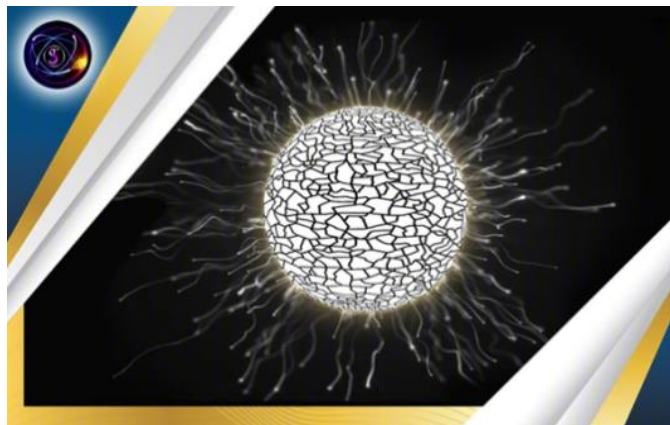


Figure 1: Proton Structure which is a Continuous Texture

Saleh Theory defined a new particle with name” Angel Particle” and believes that this particle is the smallest massive unit which is made up of one or a few packages of energy. They reconstructed the protons and electrons based on these particles and found that a proton is a continuous texture (Figure 1) (Gh et al., 2018) and an electron is a hollow spherical shell (Figure 2) (Gh et al., 2018).

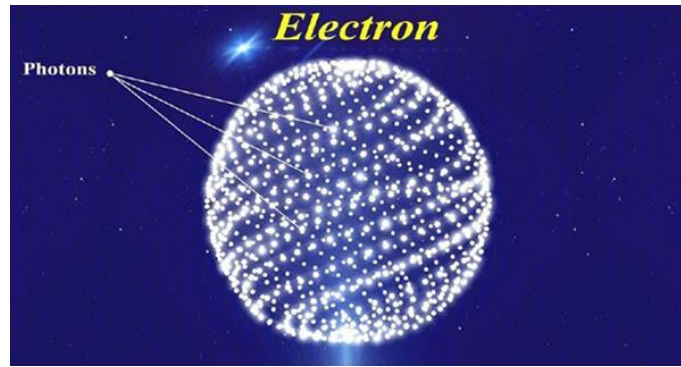


Figure 2: *Electron Structure which is a Hollow Spherical Shell*

2.4. Description

Saleh theory defines a continuous texture for proton's structure which has the density about 10^{18} kg/m^3 (5). But electron structure is not monolithic. It is a hollow sphere without center part and angel particles which made electron are moving in its surface. So the electron is light due to its mass and big due to its structure. On the other hand the electron is made of moving angel particles. So this kind of movement is like a gyroscope and causes the inertia. So this kind of movement of angel particles which made an electron helps the electron to move more easily. But continuous texture and high density of proton made it stable enough (like black hole) (Orlov, 2017) to remain fixe in the center of an atom.

3. Result

Data obtained in previous studies indicated that proton is made of three quarks but we do not know how they are connected together. Saleh Theory define continues texture for proton and as it has high density it is like a black hole and it is stable in the center of an atom. In Saleh Theory electrons is made of moving Angel particles and make a hollow sphere and in our study, emission and easy translating of electron is connected to this structure.

4. Discussion

Prior work shows that it is very difficult to move one proton from one atom to other but electron could move easily. For example, all electronic devices use electricity (the circulation of electrons not protons) However, these studies have not focused on the basic reason of that. In this study we compared the different ability of electron and proton in respect of different structure of them.

Motion and the positioning of constructive photons of the electron give it a certain lightness and keep it in a state of emission and the compaction of proton's photons make of it an attractive particle; the discovery that could rewrite the story of electric charges. For more details about the experiment follow the link provided (Editorial, 2012).

In this article we focused on basic reason of mobility of electron and stability of proton with regard of Saleh Theory. But it is very important to focus on neutron too. So for next research we suggested to check the neutron structure regarding the Saleh Theory to evaluate whether this theory could explain neutron behaviors or not?! (such as beta decay).

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