

## **THEORY OF ATOM FORMATION**

### **ABSTRACT**

The theory's aim is to explain the ideal science of atom formation.

In the process of building atom by subatomic particles, at initial stage, both the positive and negative charged particles must make contact with neutrally charged particles in separate each and form posneu and negneu contacts respectively. With the aid of aiding factor(s), each contact will undergo massive leading movement of particles to form protal zone and electral zone for posneu and negneu contacts respectively. The neutral zone forms between the above mention zones. The interaction among all the three zones will bring about the formation of neutralia which further affected by electromagnetic force to participate in nuclear formation. When nucleus formed, changes and transformations of neutral zone will continue happening in sequential order of orbitalia, orba thread, orba and shell. After the arrangement of electrons, the resultant structural material is called atom.

Key words: Positive particles, negative particles, neutral particles, posneu contact, negneu contact, protal zone, electral zone, neutral zone, neutralia, nucleus, nucleosynthesis, orbatalia, orba thread, orba, shell and atom.

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## INTRODUCTION

Quarks are never found in isolation, they can be found only within hadrons; which include baryons (such as protons and neutrons) and mesons or in quark–gluon plasmas [1]. The most stable of which are protons and neutrons, the components of atomic nuclei [2]. Electrons belong to the first generation of the lepton particles family [3]. The idea of atom was originated since from the period of atomism family. The chemist Robert Boyle (1627 – 1691) and the Physicist Isaac Newton (1642 -1727) both defended atomism and, by the end of the 17<sup>th</sup> century, it has become accepted by portions of the scientific community [4]. Dalton atomic theory by John Dalton (1766 – 1844) became one of the important scientific ideas that help scientists in many discoveries of subatomic particles. As we know, atoms were thought to be the smallest possible division of matter until 1897 when Thomson discovered the electron through his work of cathode rays [5]. Soon after his discovery of electrons, he proposed the plum pudding model of the atom in 1904 [6]. Thomson's plum pudding model was disproved in 1909 by one of his former students Ernest Rutherford (30<sup>th</sup> August 1871 – 19 October 1937). Rutherford's new model [7] for the atom, based on the experimental results, contained new features of a relatively high central charge concentrated into a very small volume in comparison to the rest of the atom and with this central volume also

containing the bulk of the atomic mass of the atom. This region would be known as the “nucleus” of the atom. Our physicists really paid their attentions in understanding the real existence of atom. Their contribution on atoms is what usually gives piece to our minds. After less than three decades, another British physicist called James Chadwick, discovered neutron in 1932 [8]. Though, it has been theorized by Ernest Rutherford in the year 1920.

The Bohr model shows the atoms as a small, positively charged nucleus surrounded by orbiting electrons was presented in 1913. Another work that expanded our knowledge of atomic model is Schrödinger’s equation, published in 1926, [9] describes an electron as a wave function instead of as a point particle. This work by Erwin Schrödinger disproved Niels Bohr model by scientists in that successful year. Though, the behavior of an electron, or of any other subatomic entity, has both wave-like and particle-like aspect, and whether one aspect or the other is more apparent depends upon the situation [10]. As we know, it is mathematically impossible to simultaneously derive the position and momentum of an electron (Uncertainty principle), after the theoretical physicist Werner Heisenberg, who first published a version of it in 1927 [11].

Let the paper pay its attention on existed literature reviews of atom formation. Primordial nucleosynthesis is the production of nuclei other than those of the lightest isotope of hydrogen (hydrogen – 1,  $^1\text{H}$ , having a single proton as a nucleus) during the early phases of the universe [12]. Primordial nucleosynthesis is believed by most cosmologists to have taken place in the interval from roughly 10 seconds to 20 minutes after the big bang, [13] and is calculated to be responsible for the formation of most of the universe's helium as the isotope helium – 4 ( $^4\text{He}$ ), along with small amounts of the hydrogen isotope deuterium ( $^2\text{H}$  or D), the helium isotope helium -3 ( $^3\text{He}$ ), and a very small amount of the lithium isotope lithium 7 ( $^7\text{Li}$ ). Carbon is also the main element that causes the release of free neutrons within stars, giving rise to the S-process, in which the slow absorption of neutrons converts iron into elements heavier than iron and nickel [14]. Meanwhile, supernova nucleosynthesis occurs in the energetic environment in supernovae, in which the element between silicon and nickel are synthesized in quasiequilibrium [15]. Also, the merger of binary neutron stars (BNSs) is now believed to be the main source of r-process elements [16]. It is also know that, the first detection of the merger of neutron star and black hole (NSBHs) came in July 2021 and more after but analysis seem to favour BNSs over NSBHs as the main contributors to heavy metal production [17]. Though, many elements can be produced through

nuclear fission. However, ideal science demands to know how the atom is formed in more scientific sound. This manuscript is aimed to explain how the atom is formed in ideal science and hence the paper named theory of atom formation.

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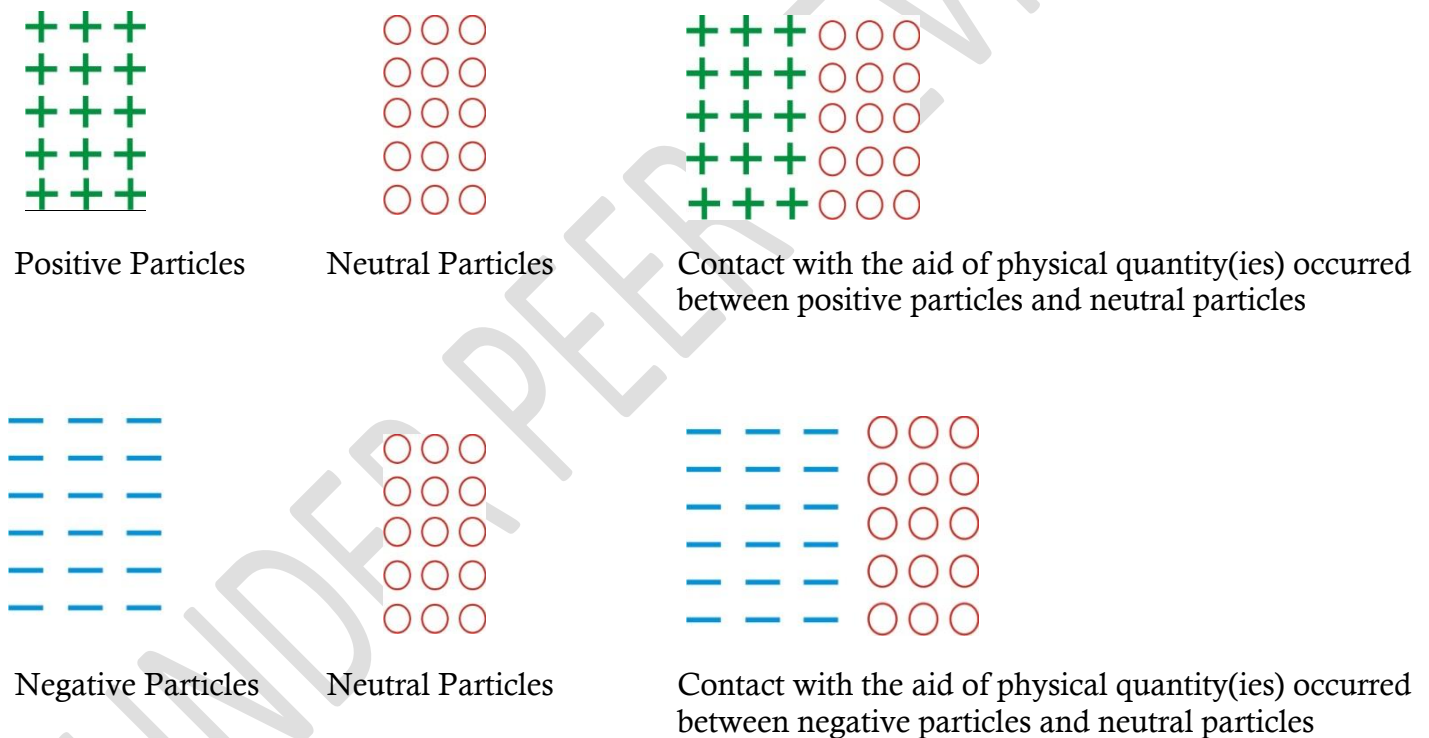
## **THEORY**

### **Formation of Posneu and Negneu Contacts, Massive Leading Movement of Particles, Protal Zone, Electral Zone, Neutral Zone and Forming Zones**

Both positive and neutral charged particles are formed when quarks combined together with the aid of gluons to form hadrons [1]. Meanwhile, the negative charged particle is obtained from the charged lepton [2]. Both the particles (Positive and negative charged particles) are aiming to attract each other, but are not originated from the same source. Therefore, they must search for each other. In separate, each above charged particle can only contribute in building atom when it comes in contact with neutral particle first, rather than with its opposite charged particle. As a result of that aiming of attraction, positively charged particles will become so contact to neutrally charged particles of sister baryon of the same parent (quarks). In other site, the negatively charged particles failed to make this contact with their neutrally charged particles siblings (electron neutrons) of parent lepton due to their instability. As a result, negatively charged particles make this contact separately with neutral charged particles of baryons of the parent quarks with the aid of physical quantity(ies) such as energy or even pressure. Also, positively charged particles need aiding factor for this contact as in the case of

negative charged particles. This contact with neutrally charged particles helps each opposite sign charged particles from being repelling from their sister particles of each member. And any charged particle fails to make this contact will not contribute in building the atom in that occurrence.

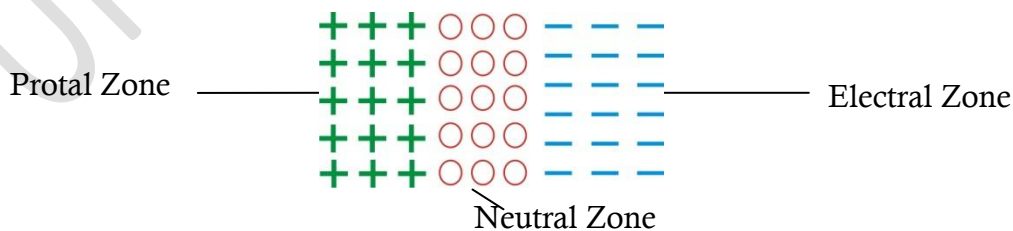
Fig 1: Charged particles model



If the contact is between positive particles and neutral particles, the contact can be called “Posneu Contact”, meaning, Contact between positive and neutral particles. And if is between negative particles and neutral particles can be called “Negneu Contact”, meaning, contact between negative and neutral

particles. Both positive and negative particles each is aiming to that attraction (positive-negative attraction). A successful contact, e.g., posneu contact may further make contact with its opposite contact (negneu contract) with the aid of aiding factor(s). During the journey of this contact, the neutral particles are facing forward (leading the journey) in the case of posneu and negneu contacts all. And this is because; the neutral particle is more massive than any of positive and negative particles. This is one of the most scientific reasons for why neutral particle is more massive than any of positive and negative particles. This movement where neutral particles are leading the journey is best called “Massive leading movement of particles”. As a result, the neutral particles of each of posneu and negneu contacts will join themselves at middle point leaving the positive and negative particles at opposite side each. Now this is the first time for each of positive and negative particles to come closer to each other for the aiming of attraction.

Fig 2: Different Gonation Charged Particles



Neutral particles formed middle between positive and negative particles and serving as barrier of their attraction

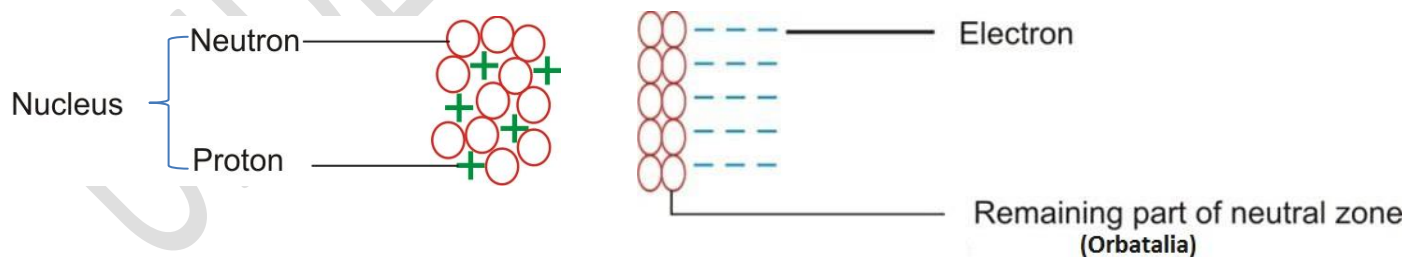
But because of neutral particles are in between them, is serving as barrier by hindering this attraction. As a result of this, neutral particles at this time can be called "Neutral Zone". And when positive particles started experiencing the negative particles can be called "protonal zone" and that of negative particles "Electral zone" and all the three zones can be called "forming zones". As a result, each particle of neutral zone is called neutron and that of protonal zone and electral zone is called proton and electron respectively.

### **Formation of Neutrons and Nucleus**

Neutral zone has two face parts, one part is facing protonal zone and the other one is facing the electral zone. The aiming and attempt for electrons-protons attraction is extremely high at protonal zone than electral zone due to high mass of protonal zone than electral zone. And also because, the direction of aim and attempt for electrons and protons attraction is from electral zone to protonal zone due to very light mass of electral zone. This is another one of the most important reasons for why neutron is more massive than any of proton and electron. As a result of this, the protonal zone face part of neutral zone will be more pressurized in trying to hindering this attraction than electral zone face part of neutral zone. This high pressurized attack at protonal zone face part of neutral zone will cause the collapsing of neutral zone at protonal face part. The

part of neutral zone that shows this collapsing can be called “Neutralia”. Neutralia contains almost same number of particles as protal zone. Due to this collapsing, the neutralia will attach to protal zone to become neutron particles and protal zone to become proton particles all at the same extreme point. This extreme point is called “Nucleus”. And the synthesis of this nucleus is said to be “nucleosynthesis”. This attachment will avoid the protons from repelling (nuclear force). But that aiming and attempt for electrons-protons attraction (electromagnetic force) will continuous. As a result of this function by neutron, the neutron at position of proton will leave the nucleus immediately because the nucleus is balanced by nuclear force leaving the proton only, if the targeted atom has only single proton.

Fig 3: Formation of Orbatalia, Orba thread, Orba, shell and atom



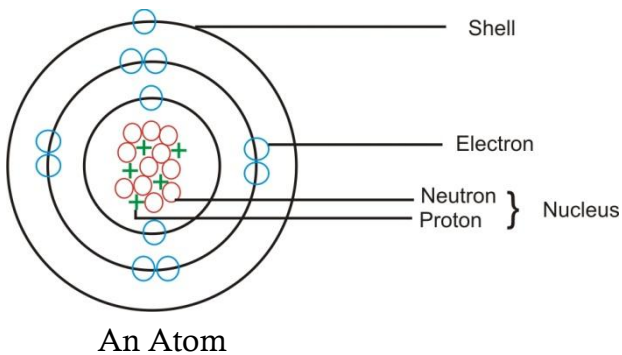
**Formation of Orbatalia, Orba thread, Orba, shell and atom**

The remaining part of neutral zone is fewer in particle number than neutralia, As a result, this remaining neutral zone will face more challenges than before. Now, this remaining neutral zone can be called "Orbatalia". The orbatalia also has two facing parts, namely protons face part of orbatalia and electrons face part of orbatalia. Orbatalia will serve as only particles to unsupported the electron-proton attraction at this moment. The attempt for electrons-protons attraction will maximally pressurize the orbatalia. Being the force of attraction at protons face part of orbatalia is higher than that of electrons face part of orbatalia, the orbatalia will weakened, shrink and lost it very large amount of energy particularly at protons face part. Now, the electrons face part of orbatalia is more energetic than protons face part of orbatalia. This weakening, shrinking and loss of energy will cause the transformation of each particle of orbatalia to very thin like-thread material called "Orba thread". Some of orba threads at electrons face part will fuse to form one and acquires more energy. Orba thread has also two face parts, namely, protons face part of orba thread and electrons face part of orba thread. Since the power of orba threads to unsupported the electrons-protons attraction is minimized significantly especially at protons face part. And this will increase the intensity of attempt to electrons-protons attraction. The electrons in attempt to attract with protons (electromagnetic force) will push the orba

threads. This pushing on orba threads will cause the movement of orba threads towards the nucleus. The protons face part of orba threads will move first before electrons face part and the movement is thread by thread by increasing the energy level toward the electrons face part of orba threads. When this happens, each orba thread was aiming to be part of the nucleus portion. Because the nucleus is balanced by nuclear force, this aiming will fail and causing the first orba thread to form the ring shape very closed to the nucleus. This ring shape like material can be called "Orba". The second orba thread will follow the same pattern as first one. Since the second orba thread contains more energy than first one, this will cause second one to form ring shape very closed to the first orba. And the energy of second one will be enough to fulfill its aiming of being closed to the nucleus even the space was already occupied by the first one. The same pattern will be happen to the next orba threads. All the formed orbas will embedded the nucleus and make it at extreme center. Now, the electron that is the most closest to the nucleus will first attempt for electron-proton attraction (electromagnetic attraction). Since the nucleus is extremely more massive than this electron, as a result, it (electron) will move to the nucleus for attraction. Since nucleus is balanced with its contents, therefore, there is no vacant attachment with any other particle. As a result, this first electron will fill at orba that is closest to the nucleus in order to maintain that

mission of attraction. Since the orbit that is closest to the nucleus is the orbit with less energy content, as a result, there is maximum number of electron(s) that it can hold. Depending on the type of atom, the second electron will follow the same pattern as first electron. Depending on the type of atom and number of electron that a given orbit can hold, the electrons will follow this same pattern one-by-one till all the electrons has been arranged in their corresponded orbits. Now each orbit with arranged electron(s) is called "Shell". The manner, pattern of electrons movement to their corresponded shells is an indication of each shell is subshell(s) (orbital(s)) specific. As a result, each electron will contribute in building atom by filling in one orbital at first till all subshells of that particular shell are filled singly at first, before any pairing. And this is because, even if pairing occurred at first in any given orbital, the force of repulsion between the paired electrons will push one electron to another orbital. After all the deserved electrons have been arranged accordingly, the resultant structured material is called "atom". The Atom in general, will maintain this pattern of arrangement (without separation of its components) due to permanent nucleus intention for nuclear attraction.

Fig 4: An Atom



After any given desired atom formed, the charge of atom between protons and electrons is balanced, since this is one of the most important reasons why we found equal number of protons and electrons in a given atom. And finally the remaining number of electrons in electrical zone that are not part of the atom will repel to each other, and this is because they are not affected by electromagnetic force of the atom. After they repelled, each electron is called negative particle and each successful one will form another negative contact in future occurrence.

## **CONCLUSION**

In the formation of atom, three stages are specific in sequential order and these are: energy stage, force stage and structural stage.

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