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The Weak Spinning Magnetic Force (F_W) (The Weak Interaction)

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Abstract: *The mechanism produced the Strong Spinning Magnetic Force (SMFs), or the strong force is re-visited, in which an opposite Spinning Magnetic Field (SMF) of an electron and proton interacted to produce the particle neutron, which is stabilized within the nucleus due to attachment to the proton's SMF; the reversed of this mechanism is developed when neutron is forced out of the nucleus, within a period of 15 minutes, the similar SMF of electron and proton within the neutron, opposed each others, creating a state of agitation leading to spiral movement, increased with time, finally resulted in both particle's opposite SMF created a repulsive force, ejecting the electron from the common status with neutron, in addition to the proton and a neutrino forming the beta decay (β-decay); this Weak Spinning Magnetic Force (F_W), in addition to the Magnetic Force (MF) and the Strong Spinning Magnetic Force (SMFs), unified the three forces of nature as an Electromagnetic force, with an aim to bring common sense to the physical world.*

Keywords: *Weak Force; Strong Force; Nuclear Force; Spinning Magnetic Field (SMF); Strong Spinning Magnetic Force (SMFs); beta decay; Weak Spinning Magnetic Force (F_W).*

I. Introduction

In particle physics, the weak interaction (the weak force or weak nuclear force) is one of the four known fundamental interactions of nature [1], this in addition to the other three, are the four known forces of nature that interacted between natural excited bodies, started from the weakest they are [2, 3]: (a) The Gravity Force, although the weakest, but interacted at longer distances; (b) The Electromagnetism, it can either attract or repel objects on which they are acting, it can act in directions other than along a straight line between objects; (c) The Weak Force, is the force which acted within radioactive materials and responsible for its decay and the release of α-particles, β-particles in nuclear fission, and X-rays; (d) The strong Force is the strongest, and responsible of binding nuclides, and forming nucleus, it works against electrostatic force that repel protons, thus it must be much greater in magnitude than the electrostatic force.

The weak interaction thought to formed in a theory, known as Quantum Flavour dynamics (QFD), in analogy with the Quantum Chromo dynamics (QCD) and Quantum Electrodynamics (QED), but the term is rarely used [1], and the weak force is best understood in terms of the electroweak theory formulated by Glashow, Weinberg, and Salam [4], where classically 'action at a distance' is interpret as 'mediated' by a field, currently its thought to be mediated by an exchange of particles (the quanta of the field) [4], and since the electromagnetic interaction is thought to be carried by the photon and the strong interaction is carried by hadrons, in the sense that the interactions are "caused by" exchange of such intermediary particles, that is the reason why the weak interaction is thought to be carried by the "intermediate vector boson" and its symbol is W, there is a positively charged W^+ , and a negatively charged W^- , and a neutral W^0 [5], the photon which is thought to have more in common with the W and Z, in some respects [4], have been viewed as a particle with zero rest mass [6], while in the electroweak theory, the two charges ($W^{\pm}$) have a masses of 80.403 ± 0.029 GeV/c2 and the neutral(Z) with mass of 91.188 ± 0.002 Ge V/c2 [4].

This odd connection between W^+, W^+, W^0 and photon, with a claim to represents carrier of force, although it started in 1934 when Yukawa assumed that the proton and neutron are attracted to one another by some sort of field [4], but could be traced back to 1900, when Planck in an effort to resolve the *black body radiation spectral intensity*, made the assumption that electromagnetic radiation is quantized and produced in little "packages" of energy with a formula $E = h\nu$ [7], Einstein developed this in 1905, linking electrons "oscillators" with electromagnetic waves [8], then in 1909 he introduced the wave-particle duality, stating that, energy and momentum split into a wave dominated in the Rayleigh-Jeans low-frequency region of the spectrum and a particle term dominated in the Wien's law (high-frequency) region of the spectrum [9], in that lecture Einstein introduced the duality concept of wave and photon, in which he associated electromagnetic fields of light with singular points, similar to electrostatic fields, and surrounded by fields of force that superposed to give the electromagnetic wave of Maxwell's classical theory [10], that suggestion resolved the removal of photoelectron from atom in the photoelectric effect [11], the mass-less photon became a controversial concept, thought to couple electric charges and electric or magnetic multi-poles by discrete irreducible process of photon emission and absorption connected by continuous processes of propagation [3], although Planck rejected

extending "quantum" into EM-R, stating that "*instead of quantized electromagnetic fields, the problem of the quantum theory should be transfer to the area of interaction between matter and radiation energy*," [10], and the massless concept of photon, disturbed Einstein for fifty years [12], Einstein failure to comprehend photon and the controversial it generated in early twentieth century [13], is simply because it doesn't exist as showed by Eq. (24) in "The Photoelectric Effects-Radiation Based With Atomic Model," where the Radiation Magnetic Force (F_{mR}) is embedded in the EM-Wave (EM-W) [14], the existence of frequency control force in EM-R, help in the re-interpretation of the Radiation Magnetic Energy ($\boldsymbol{E_{mR}}$) given by Planck formula [7] as also embedded in the EM-W [14], and since the non-existence of photon is proven by Eq. (24), therefore the introduction of both W and Z based on common similarities with photon [4], nullified such justification, and represents wrong approach in theoretical formulation; and since every force directly experience, from the contraction of a muscle to the explosion of dynamite, is electromagnetic in origin [4], and the magnetic force was suggested to bond atom [15] and joint crystals structures [16], and since the strong force was suggested to represents the *Strong* Spinning Magnetic Force (SMFs), produced by nucleons Spinning Magnetic Field (SMF) [17], where the ***SMF*** has explained several phenomenon, and different aspects of radiations [18, 19], including the production of secondary electromagnetic radiation in the Compton Effect [20], therefore, the Weak Spinning Magnetic Force (F_W) is suggested to represents the disintegration of radioactive materials by the repulsive process of magnetic force, formed during nucleus formation [17]. The neutron disintegration is suggested to represents the spiral agitation between opposite Spinning Magnetic Fields (SMF) within it, created a spiral movement, ended when the *SMF* of both like poles finally repel each others, disintegrating and formed radioactive decay, with the ejection of electron, proton and neutrino hence, the weak force is the disintegration of what has been incorporated by the strong force [17], and these phases of magnetic forces, are unified by the Magnetic Interaction [15].

Since several experiments were misinterpreted to suit specific theories, such misleading interpretation, was presented by Arthur Compton [20], and represents a historical example of a false theory being confirmed by spurious experimental data [9], unfortunately, many of such examples dominated the physical science; and this paper with the previous two [15, 17], unified the natural three forces of the Weak Spinning Magnetic Force (F_W), the Magnetic Force (MF) and the *Strong* Spinning Magnetic Force (SMFs), into the Electromagnetic force, with an aim to bring common sense to the physical world.

II. The Internal Structure of Charged Particles

Electron was discovered in 1896 by Thomson, as the smallest particle orbiting the nucleus and had a unit of charge, that followed by Rutherford measurement of the nuclei positive charge leading to the discovery of proton with his college [2], then neutron was discovered in 1935 by Chadwick, and subatomic particles were discovered through the bombardment of accelerated particles, questioning the built up of these particles, which resulted in a suggestion by Murray Gell-Mann and George Zweig in 1963, that hadrons are composed of quarks, each has a charge of $\pm\frac{1}{3}$ or $\pm\frac{2}{3}$ [2], and baryons composed of three quarks, and every antibaryon is composed of three antiquarks, and mesons composed of a quark and an antiquark [4], although the quark model was presented for several decades, and regardless of strong accelerators, but experiments failed to produce isolated quarks, while its backers justified this failure by introducing the quark confinement, and although the explanation of ψ meson gave quark model some credibility [4], but the re-interpretation of three important experiments, showed how mistaken those who lay the fundamental of current physics, without seeking different interpretations, the experiments are:

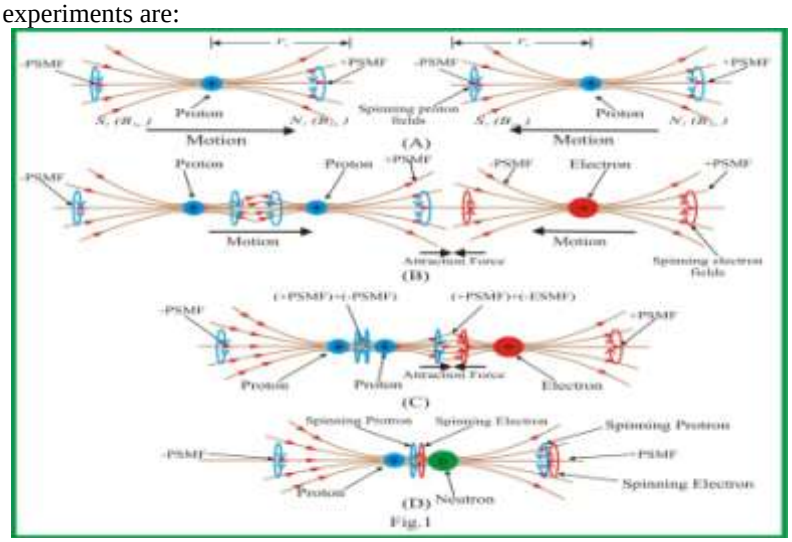

Fig. 1

Fig.1. Two protons in (A) coming nearer creating strong electric field, attracting an electron, the opposite Spinning Magnetic Field (*SMF*) attracted each other, created *Strong* Spinning Magnetic Force (*SMFs*), and one proton's in (C&D) initiated *SMF* attraction with the electron resulted in *SMFs* and the creation of neutron in (D).

A. The Scattered Alpha Particles:

The scattering of alpha particles by metal foils (platinum, silver, and gold) in 1909, by Rutherford, assisted by Geiger and Marsden, showed that, [21]:

- Most particles passed straight through the foils.
- The deflected number fell off quickly as the angle of deflection increased.
- A very small frictions, about 1/800 (for platinum), were deflected by angles greater than 90°.

The conclusion by Rutherford's, which formed the bases for his atomic model, is:

1) The nucleus has a positive charge; hence alpha particles are deflected by similar charge.
2) The repulsion obeys the inverse square low of the force between two charge objects.
3) The charge on atom's nucleus depends on its relative atomic mass.
4) By using much energetic protons, approaching closer to nucleus surface the characteristics show that a *new powerful force start disturbs proton's trajectories at 2-3x10^{-15} from nucleus*.

B. Scattering of High Energy Electrons from Protons

A similar experiment of Rutherford was carried in the late 1960s to explore the interior of a proton, using high-energy electrons at the Stanford Linear Accelerator Center (SLAC), then repeated at CERN in 1970s using neutrino beams; most of the incident particles passed through, while small number bounce back sharply, this was interpreted as a concentration of proton's charge in small lumps, similar to Rutherford's results of positive charge concentration in the nucleus, the suggests three lumps in proton was interpreted as a mode of quarks, although not conclusive [4], i*t appears that protons also contain hard point like particles responsible for the Stanford scattering* [22].

C. Wave Particle Duality

The electron diffraction was discovered as a consequence of a deliberate attempt to prove the wave nature of the electron [23], that trend occurred after de Broglie extended duality to particles in 1924 [24], then Davisson and Germer, interpreted the diffraction peak wave, generated by "electron wave," as the wavelength of Bragg formula, due to diffraction pattern [25], it was also confirmed differently by G. P. Thomson [26]; the concentric rings in Thomson experiment was interpreted as electron waves, and the foil's crystal was thought to behaves as a diffraction grating, just as rock-salt behaves as a diffraction grating for x-rays [27], the experiment was also performed using protons [22], but as explained, both the x-rays and electrons waves are related to the Circular Magnetic Field (*CMF*) as a common factor producing the concentric rings [28], and electron diffraction is interpreted as an interaction between two intense magnetic fields [16].

These experiments played crucial roles in shaping the current fundamental physics, and they are mainly attributed to the beams which are directed to the nucleus, the foil, or the protons; and these beams are highly-energetic alpha particles, electrons, or protons, but electrons and protons as charged particles produced magnetic field circular in nature along its path [29, 30, 31], the field is designated Circular Magnetic Field (CMF) [15], while the fast moving electric charges nuclei in the *Relativistic Heavy Ion Collider* (RHIC) and *Large Hadrons Collider* (LHC), created extreem strongest magnetic fields [32], thus alpha particles as a nuclei produced such intense *CMF*; and when these experiments were carried, the Circular Magnetic Field (*CMF*) [15], produced by electrons and protons was not well developed and analyzed; hence the detection of this train of waves associated with electron's movement which was not predicted by Maxwell's equations, was a proof stated by J. J. Thomson that the views of the electron had to be wrong [33], in addition to this, the interpretation of charged particles spinning as a dimensionless *spin quantum number* by dividing the spin angular momentum by the reduced Planck constant $\hbar$, to suit the requirements of quantum mechanics [34], that diverted attention from the really role of the produced Spinning Magnetic Field (*SMF*) [17], and the re-interpretation of both phenomena helped in many theoretical models; therefore based on these unexplored characteristics in the fundamentals physics, the following points are stated:

a. Each charged particle is encircled by the *CMF*, the strength of which is proportional to the accelerated energy [29, 31].
b. Each charged particle produced the Spinning Magnetic Field (SMF) at both poles [17].
c. The distribution of electric field around charged particle is radially symmetric [35].

Based on these characteristics, the following points are suggested:

A- The resulted electrostatic repulsive force, produced in Rutherford experiment, and based on point-3 above, should be uniform, and the resulted repulsive force mostly directed towards alpha particles direction of arrival.

B- The charged particles in the electron diffraction are encircled with the Circular Magnetic Field (*CMF*) [15], the *CMF* also exist in the x-rays and Polarized Wave (*PW*) by the *crystal* [28], and both the *CMF* and *PW* interacted with the *SMF* to produce rings patterns on the monitoring screen [16].

C- Each of the high-energy electrons at the Stanford Linear Accelerator Center (SLAC) experiment [4], produced the Spinning Magnetic Field (*SMF*) [17], and since the poles of *SMF* as a moving charged particles are in front and rear, therefore any of the two poles can interacts with the proton *SMF*.

From these results, the followings are stated:

a. The electron's *SMF* interacted with proton's *SMF*, (or nucleus's *SMF*), at radius (r^2), the force is repulsive if both SMF are of the same polarity, and attractive when polarities are different, it's the *new powerful force*, discovered by Rutherford.
b. The effect of intense magnetic field on objects and materials is not well studied and understood, although Faraday carried many experiments on this [36], and the effects of such fields will change atom characteristics as predicted by Kapitza [37].

Analyzing these, based on "The Magnetic Interactions" [15, 17], gives the following suggestions:

1. Two intense magnetic fields are produced by charged particles; the Spinning Magnetic Field (*SMF*) by spinning charge, and the Circular Magnetic Field (*CMF*), by accelerated charged.
2. Magnetic force is produced, when *SMF* interacted with another *SMF*, or with *CMF*.
3. Magnetic force ($\boldsymbol{F_m}$) resulted from interaction of an accelerated charged particles with a proton (or nucleus), is to repel the accelerated particles from nucleus surface.
4. Although nucleus may contain many particles, but it's not a hard core.
5. The magnetic force $\boldsymbol{F_m}$ is the force behind atom's excitation and ionization.
6. Since fundamental particles are defined as the Various forms which energy must take to become matter, characterized by mass, electric charge, spin, magnetic moment and interaction property [38], therefore it's our view that *energetic charged particles represents a form of charged energy* in a form similar to cloud, in the sense of clouds *capability in merging with each other, the degree of such energy determined by Einstein mass energy formula, given by Eq.(3).*

III. The Strong Interaction Re-Visited

The strong force is resulted from the interaction of two nucleon's Spinning Magnetic Fields (*SMF*) [17], such that the force produced by two protons, in this state can't be thought of as instantly occurring, the building time may start at lower *SMF*' magnitude if opposite proton's *SMF* detect each other at proper angle, and the starting distance is **5.439472777x10^{-11}** m, the strong force at this distance have a magnitude of **1.578896834x10^{-4}** N as given by Eq. (4)**,** (this distance is the hydrogen atom electrostatic radius (r_e) at natural orbit level, and with electrostatic force of **7.796905874x10^{-8}** N. The distance travelled by each proton's from the starting of strong force to the maximum force is

$$d_T = \left(\frac{d_F - d_S}{2}\right) \qquad (1)$$

Where, d_F is final distance in m, d_S is start distance in m, and d_T is distance travelled by the particle. The time travelled is

$$t_T = \left(\frac{d_T}{c}\right) \qquad (2)$$

Where, c is the speed of light in m. s, d_T is final distance in m, and t_T is the time travelled by the particle, example of these is:

If d_F = **5.439472777x10^{-11} ,** d_S= **1x10^{-15}, then** d_T**= 2.719686389X10^{-11}**

If d_T **= 2.719686389X10^{41} , c= 3x10^{8}** = (t_T) = **9.065621295x10^{-20}** s.

As this time (t_T) seems short, but in fact it's very small when compared with the strong force and great acceleration involved, which reached **467,161.8494 N. at 10^{-15}** m (Table.1.) [17]**,** and since two protons only comes together through the strong force, therefore the increase in the strong force is accompanied with an increased in the electrostatic force, thus the followings are suggested to occurred:

The Electrostatic Force (F_e) at **10^{-15}** m = **230.6937913** N.

Electric field due to the force = F_e / q = **1.439876766x10^{21}** V.m^{-1}.

Comparing this electric field with an electric field attracting electron towards the proton to form the hydrogen atom, the following is obtained:
The Electrostatic force (F_e) at distance of **1.1194684920x10^{-10}** m **= 1.840823531x10^{-8}** N.
The Electric field due to this force = F_e / q = **1.148951178X10^{11}** V.m-^{1}.
As seen from the above comparison, the strong force which brings two protons together at such small distance, overcomes an intense repulsive electric field of **1.253209704x10^{11} V.m-^{1},** the force is greater than the electric field produced by both electron and proton, that leads to the formation of hydrogen atom; hence such state could led to either one of the followings:

1. The creation of an intense electrostatic field **attracting nearby electron,** or even **strip nearer atom or molecule** from its **electron.**
2. The tremendous acceleration due to the strong force, increases the energy constituent of the proton in line with Einstein mass/energy formula given by Eq. (3) with great probability some energy will be transformed into **charge energy** to stabilized the state of charge between the two protons.

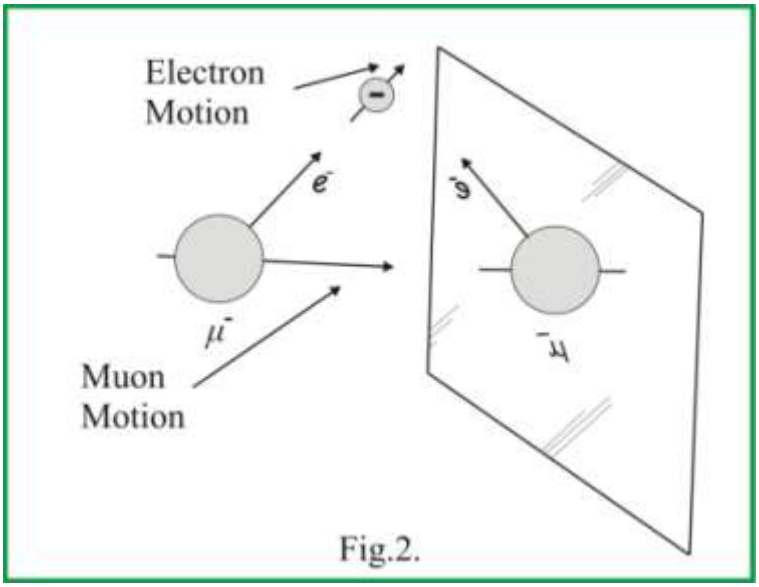

Fig.2. The preference direction at which electron emerged from muon appears to be clockwise, rather than the other way [22], the angle and directions indicated the existence of magnetic force propels such movements.

In the case of two protons, since both are similarly charged as shown in Fig.1-A&B, therefore both the above states are applicable, which should be understood under the suggestion that, "*It's our view that energetic charged particles represent a form of charged energy* in a sense similar to clouds, with *capability of merging with each other, as determined by Einstein mass/energy formula given by."*

$$E = m\,c^2 \qquad (3)$$

The final magnetic resultant of this interaction is the amalgamation of a proton with an electron as shown in Fig.1-B,C&D; the existence of such energetic oppositely charged particles within one space of time created a state of charge neutrality, and the net resultant is the transformation of one proton plus one electron into a neutron [17], bringing a state of charge stability within the established nucleus, although neutron's net charge is zero, but still it do have a charge structure (positive at the center and near the surface, negative in between) and a magnetic dipole moment, these, too, have the opposite signs [4], the probability of this merger had been commented by Davies [22], stating that: "*although the 15 minutes half-life phenomena shown by the neutron when displaced from the nuclei after been bombarded, required a completely new theory of microscopic matter, still the union of both the electron and proton are rejected due to the following*":

1. The lowest electrically bond state of the proton-electron given by quantum theory is the ground state of hydrogen atom.
2. Confine the electron as part of a neutron into the nucleus of few f_m (=10^{-15}), require a new stronger type of force, which the scattering of electron from proton's or nuclei gives no evidence.
3. Intrinsic spin of 1/2, could only be combined, to give either one unit, or zero.
4. The present picture of neutron decay is that, it disappears altogether from the universe, ceasing to exist at a particular point, of space/time and an electron proton being created.

These restrictions are based on interpretations by quantum mechanics, which been overcome by the "*The Magnetic Interaction*" [15] and related "*The Photoelectric Effects-Radiation Based With Atomic Model*," which disputed the quanta (photon) theory and gives the radiation magnetic force embedded in the Electromagnetic Radiation (EM-R) [14], in addition to "*The Compton Effect Re-Visited*", which showed the phenomenon as a production of secondary electromagnetic radiation [20], and "*The Double Slit Experiment Re-Explained*," as an interference between polarized conical diffraction waves [28], and electron diffraction is re-interpreted in the "*Electron Diffraction Re-Explained (The Intense Magnetic Field Interaction with Crystals)*" as an interaction between two intense magnetic fields [16]; therefore the violation stated by quantum, doesn't have credibility, and a new interpretation is made based on characteristics extracted from these hypothesis, thus, *"any particle producing SMF will undergo some degree of strong interaction, named the Strong Spinning Magnetic Force (SMFs)"* and since in the formation of the neutron, a force should be applied to bring the two particles together [39], therefore, the emergence of neutron is carried under the strong interaction conditions, and the neutron should be viewed as consisting of both the proton and the electron; the following is a theoretical thought about the neutron production:

The strong interaction between two protons created intense electric field shown in Fig.1-A, the field attracts an electron towards its centre, the electron will be attracted towards the nearest proton with its *SMF* having specific direction as shown in Fig.1-B, as it reached close distance, where a couple will be produced between the electron's *SMF* and a proton's *SMF*, hence a strong force builds up, given by

$$F_S = B_N\, B_S\, r_r^2\, c \qquad (4)$$

Where B_N is the *SMF* northern pole in Tesla, and B_S the *SMF* southern pole in Tesla, r_r is the distance from *SMF* near the particle surface to the point where both fields interacted in meter, c is the speed of light in $m.s^{-1}$ the strong force F_S is in Newton [17].

The force will be established between the two charged particles; the final resultant of this interaction is that, the electron will be combined with the proton forming the neutron; this is depicted in Fig.1-D, the interaction expressed by

$$p + p + e^- \longrightarrow p + n + \upsilon_o \qquad (5)$$

Where, p is the positive charge proton, e^- is the negative charge electron, n is the neutral particle neutron, and υ_o is the neutrino, the final result of this interaction is the integration of both electron and proton forming the neutron, and it takes the following form:

$$p + e \longrightarrow n + \upsilon_o \qquad (6)$$

In Fig.1-A, two protons are moving towards each other's Spinning Magnetic Field (*PSMF*), the approaching fields of both protons are opposite in polarity, while in Fig.1-B the approach of the two protons created intense electric field attracting electron as shown, but Fig.1-C, shows the electron is amalgamated with one proton while the distance between the two protons is too closed as given by Eq. (1), and shown in Fig.1-D, where one of the proton merged with the electron forming neutron, while the other proton represents the coherence force unified both the electron and proton inside neutron.

Strong Force (F_S)	Interaction Radius (r_r)	Weak Spinning Magnetic Force (F_W)	Spinning Magnetic Field (B_S	Angle θ
$4.671618494 \times 10^{-3}$	1×10^{-11}	$4.671618494\times 10^{-7}$	3.946145163×10^{5}	0.057295789°
0.467161849	1×10^{-12}	4.67161849×10^{-4}	3.946145163×10^{7}	0.057295789°
46.71618494	1×10^{-13}	0.046716184	3.946145163×10^{9}	0.057295789°
4671.618494	1×10^{-14}	4.671618494	$3.946145163\times 10^{11}$	0.057295789°
18686.47398	5×10^{-15}	18.68647398	$1.578458065\times 10^{12}$	0.057295789°
$29197 - 61559$	4×10^{-15}	29.19761559	$2.466340727\times 10^{12}$	0.057295789°
51906.87216	3×10^{-15}	51.90687216	$4.384605737\times 10^{12}$	0.057295789°
116790.4624	2×10^{-15}	116.7904624	$9.865362908\times 10^{12}$	0.057295789°
207627.4886	1.5×10^{-15}	207.6274886	$1.753842295\times 10^{13}$	0.057295789°
238347.8824	1.4×10^{-15}	238.3478824	$2.013339369\times 10^{13}$	0.057295789°
276427.1298	1.3×10^{-15}	276.4271298	$2.334997138\times 10^{13}$	0.057295789°
324417.951	1.2×10^{-15}	324.417951	$2.740378585\times 10^{13}$	0.057295789°
467161.8494	1×10^{-15}	467.1618494	$3.946145163\times 10^{13}$	0.057295789°

Table.1. The Weak Spinning Magnetic Force (F_W) as derived from the strong force in [17], the weak force is 10^{-4} of the strong force (F_S), similar to the relation between the strong force and the electrostatic force, all data

gives the same field magnitude as for the strong force, the angle θ is a small constant regardless r_r values, which means the weak force initiate the moment SMF forehead lifted slightly, as shown in Fig.4-B.

IV. Neutron Decay And The Weak Spinning Magnetic Force (F_W)

Experiments such as Robson's [4] in beta decay, indicated that the process that separates the two particles will impart a separation velocity and corresponding energy whose maximum value is equal to 1.294 % 10^{-13} Joules, and called "beta decay energy" [39].

The neutron is not a stable particle when out of the nucleus, it's half-life is 885.7 ± 0.8 seconds [40] after which it decay to proton, electron and neutrino, this process which is known as β-decay, represents an electron's emission from nucleus through the following process, [22]

$$n \rightarrow p + e^- + v_o \qquad (7)$$

Where, n is the neutron inside a nucleus, p is the appeared proton, e^- is the appeared electron, and v_o is energetic massless neutrino.

β-decay mechanisms, is explained based on the Magnetic Interaction, where the limited half-life of neutron outside nucleus and the appearance of the three particles shown above suggested as mentioned [17] that, the neutron is not an elementary particles [4]; an example of muon decay that was carefully studied under controlled conditions by producing beams of pions in particle accelerators and allowed their decay through [22]

$$\pi^- \rightarrow \mu^- + \ddot{\nu}_\mu \qquad \pi^+ \rightarrow \mu^+ + \nu_\mu \qquad (8)$$

Where, the pion ($\pm\ \pi$) decay into muon ($\pm\ \mu$), and neutrino ($\ddot{\nu}_\mu\ \nu_\mu$), the observation of muon decay showed it takes the following mechanism

$$\pi^- \rightarrow e^- + \nu_\mu + \ddot{\nu}_e \qquad \pi^+ \rightarrow e^+ + \ddot{\nu}_\mu + \nu_e \qquad (9)$$

Where, the muon ($\pm\ \mu$) decays into electron (± e) and neutrinos ($\ddot{\nu}_\mu + \nu_e$). When both the direction of the muon's spin and the direction of motion of the emitted electron (or positron) during muon decay is measured, it is found that although, for example, the electron can be emitted from μ^- over a whole range of angles relative to the muon's spin axis (depending on which way the neutrinos are emitted)***, there is a preference for the electron to fly off towards the side from which the spin of the muon appears clockwise, rather than the other way*** as shown in Fig.2, this effect was discovered in 1957, through the study of another weak process [22], and that, the electrons is ejected from the nucleus is found to varies over a continuous range up to maximum value, although the total energy available for beta decay is the same in all nuclei of the same type [22], and that, the weak force (which is responsible for beta decay) is of extremely short range, [4], and although neutron's net charge is zero, but still it do have a charge structure (positive at the center and near the surface, negative in between) and a magnetic dipole moment, these, too, have the opposite signs [4], and observations showed the neutron has a magnetic moment, and its caused by circulating charge [39], such tiny magnet was detected through an experiments by Otto Stern in 1933, later it was found that the magnetic field surrounding it, is like what could be caused by a spinning point particle with a negative charge of about 1.9 times the fundamental unit (e) [22], and since the neutron's magnetic moment is the sum of two components, one provided by the electron moment and the other by the proton moment [39], such as derived for the strong force [17], therefore charge existed internal of neutron producing the *SMF*.

By nuclear standards, the 15-minute lifetime of the neutron is extremely long, *indicating a very weak process at work* (we interpreted this as a long process), the range of the weak force is less than 10^{-2} *fm*, and *the weak force did not act on the motion of matter but in its form* ($n \rightarrow p\ and\ v \rightarrow e$), in the beta decay the electron may be ejected at speed close to that of light, while electromagnetic interaction is rejected in all the weak interactions because gamma ray photon is expected, and weak interactions in hardens are severely complicated by the fact that they are also subjected to the strong interactions, while weak interactions involve leptons are understood, [22], but for some scientists the process of disintegration is governed by electromagnetic fields and forces, not by chance events or an imagined "Weak Force." [39], while n*eutrino is always found to spin like a left-handed corkscrew*, no right-handed neutrino exists, the preference had been interpreted within the parity breakdown due to asymmetry shown in Fig.2 [22], hence a different interpretation is given, based on the Magnetic Interaction, by which only the *β-decay* (or neutron decay as given) bellow is explained.

$$N \rightarrow p + e^- + v \qquad (10)$$

And since the formation of a neutron is the reverse process of beta decays [39], and with reference to Fig.1, Fig.2, Fig.3, and Fig.4, given for neutron production and disintegration, therefore the following is the sequences through which the Weak Spinning Magnetic Force (F_W) undergo the disintegration of *β-decay* given by Eq. (10) above:

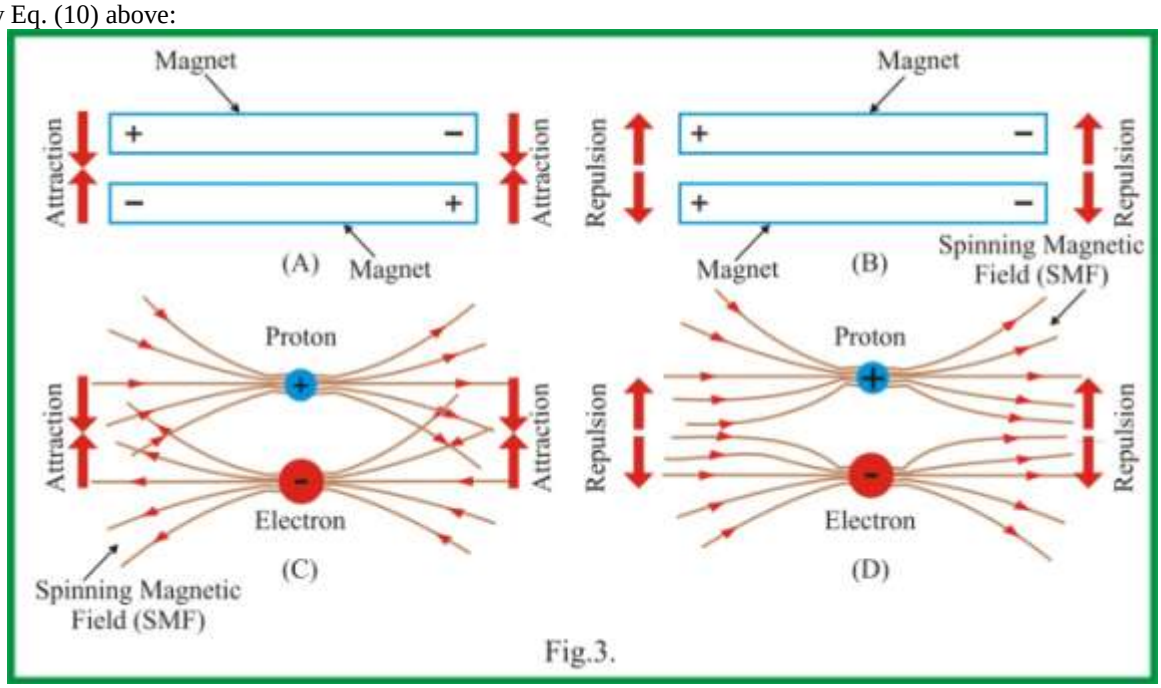

Fig.3. Two bars magnet in (A), placed together with their opposite poles, producing attractive force, a state similar to an electron's and proton's *SMF* of opposite direction shown in (C), while (B) shows two bar magnets of similar poles placed together, producing repulsive force, similar to the *SMF* of the two charged particles in (D).

1. The interaction of the Spinning Magnetic Field (*SMF*) for both the proton' and the electron', integrated both particles and fields through several sequences started with the unification of both fields as shown in Fig.1-B, where both *SMF* build up resulted in magnitudes shown in Fig.1-B, then to Fig.3-C, and finally to both charged particles merged with each other as shown in Fig.1-D, the electron's magnetic field becomes similar in direction to that of the proton, from opposite when they started the merger in Fig.1-B, hence becomes alike when both formed the neutron, as in Fig.1-D [17], and since electron radius is larger, its moment is larger; therefore the magnetic moment of the electron predominates, giving the neutron the negative magnetic moment [39]
2. Fig.3-A, shows two bars magnetic, the pole of each is opposite to the other, the interaction of opposite poles resulted in strong attraction force, similar to the positioning of opposite Spinning Magnetic Field (*SMF*) produced by proton and electron of opposite pole's as in Fig.3-C; while Fig.3-B, shows two bars magnet of similar poles attached together, the resulted force, is a repulsive one, this is similar to forced similar Spinning Magnetic Field (*SMF*) produced by proton and electron of similar pole's as in Fig.3-D, the produced force repel the magnets apart; the produced force for both states, is given by [15]

$$\pm F_m = 2\left\{\frac{1}{k}\,\frac{B_1\,B_2\,r^2}{2}\right\} \qquad (11)$$

Where, B_1 is the magnetic field of the first magnet in Tesla, B_2 is the magnetic field of the second field in Tesla, r is the radius between center of the two poles in meter, the constant k is related to the medium with a value of 3.333333333 X 10^{-9} Newton per square ampere, and the magnetic force $\pm F_m$ is given in Newton, from Eq. (11) the force is given by

$$\pm F_m = 2\left\{\frac{B_1\,B_2\,r^2}{k}\right\} \qquad (12)$$

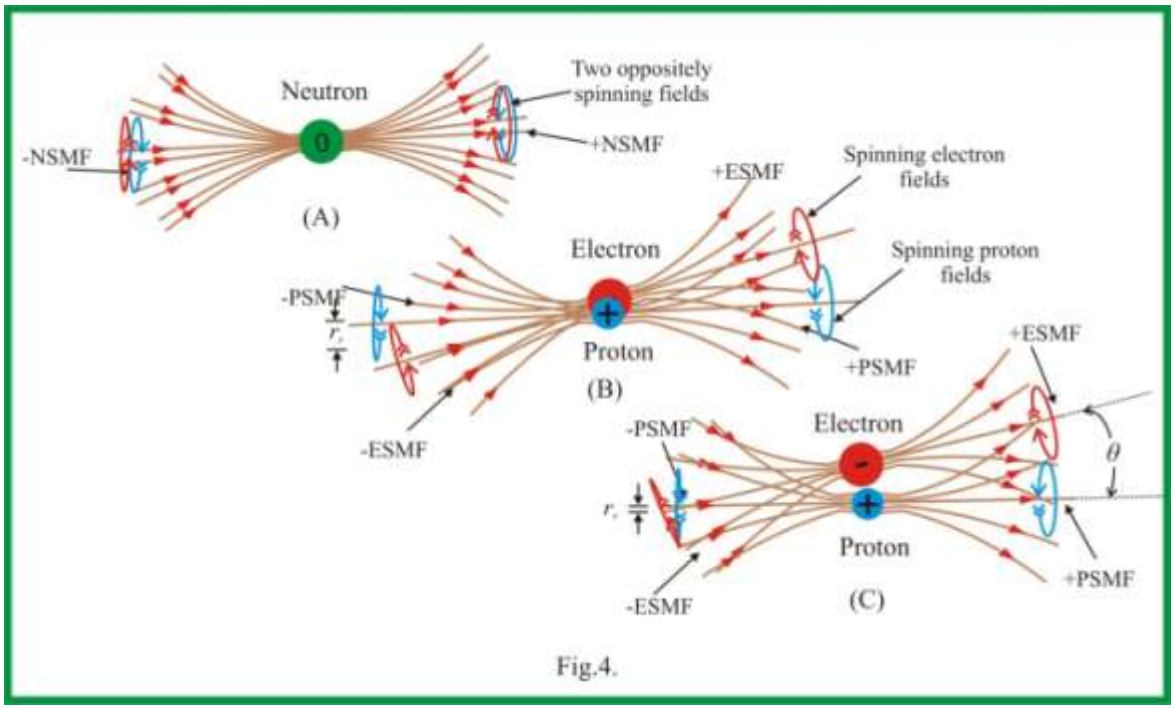

Fig.4. The mechanism through which an isolated neutron undergo ***β-decay*** within 885.7 ± 0.8 seconds [40], through the Weak Spinning Magnetic Force (F_W); the similar *SMF* of electron and proton within the neutron in (A) started an agitation spiral, the moment neutron is in isolation, which increased at (B), leading to the generation of Weak Spinning Magnetic Force (F_W) at (C), resulted in disintegration of the neutron and the release of electron at specific angle θ.

3. When neutron disintegrated from the nucleus, it started the process of beta decaying [22], the process started, when the neutron which is attached to nucleus constituent by *SMF*, as shown in Fig.1-D detached from it by a force, and disintegrated from the attached *SMFs*, and becomes free as illustrated in Fig.4-A, in which the electron' and proton' *SMF* which spins oppositely in neutron, as shown in Fig.1-D, they represents the existence of two unlike poles explained in Fig.3:D, forced to exist by the odd strong force of *SMF*, thus force to be presence together as neutron inside the nucleus while bonded with the force created by the proton's *SMF* as shown in Fig.1-D, but when forced to emerged from nucleus, the neutron constituent been deprived from the proton's strong *SMF* joining its two similar fields together as in Fig.1-D, thus only remains the electrostatic force and the two similar electron' and proton's *SMF*.
4. As Shown in Fig.4-A, the embedded electron's *SMF* and proton's SMF under great repulsion fields agitating, such as in Fig.3-D.
5. The similar non-coherent two *SMF*, created a state of agitation and an imbalance, between the similar two *SMF* of different magnitudes; the electron with total acquired magnetization *SMF* been reduced to lower level, and the strong proton's *SMF*, becomes so strong, while the proton is spinning and moving energetically foreword, the electron acquired its normal *SMF*, hence a state of spiral is created as shown in Fig.4-B, therefore both fields created a repulsive force, exceeding the attractive electrostatic force between both particles, during which the electron's forward *+ESMF* pole diverted sideways due to the spiral rotational mechanism as shown in Fig.4:B, then diverted towards the left side, with an increase of this force as shown in Fig.4-C.
6. As repulsive force finally established at the end between both electron's *SMF* and proton's *SMF*, as shown in Fig.4:C, ***the emerged electron will move forwards with a force that is determined by both SMF*** **($B_{S1\&2}$),** the radius r_r between the points of interaction, which also determined the field strength, angle θ at which both fields interacted and c.
7. This repulsive force is the Weak Spinning Magnetic Force (F_W), it is derived from re-arrangement of Eq.(4), and given by:

$$F_W = B_{S1}\, B_{S2}\, r_r^2\, c\, sin\theta \qquad (13)$$

Where, $\boldsymbol{B_{S1}}$ is the south-pole of the major charged particle the partial that moving forward in Tesla, $\boldsymbol{B_{S2}}$ is the south-pole of the minor charged particle the particle that disintegrated and diverted from the major one given in Tesla, r_r is the radius between the centers of both fields during the interaction in meter, c is the speed of light in meter per second, θ is the angle between the two fields in degree, the Weak Spinning Magnetic Force (F_W) is given in Newton. Since the weak force was estimated as 10^{-4} of the strong force, or as given by

$$F_W = F_S \times 10^{-4} \tag{14}$$

Where, $\boldsymbol{F_S}$ is the strong force as given by Eq. (l) in Newton [17], thus 10^{-4} represents the ratio between the weak and the strong force, the weak force $\boldsymbol{F_W}$ is given in Newton, and F_S in Eq. (14) is

$$F_S = F_W \times 10^{4} \tag{15}$$

If both proton's and electron's *SMF* have the same magnitude $\boldsymbol{B_{S1\&2}}$ while disintegrating, hence from Eq. (4) and Eq. (15), the following is obtained

$$B_{S1(S2)}^2 = \frac{F_W \times 10^4}{r_r^2\ c\ sin\theta} \tag{16}$$

From Eq. (16), the magnitude of the field is given by:

$$B_{S1(S2)} = \sqrt{\frac{F_W \times 10^4}{r_r^2\ c\ sin\theta}} \tag{17}$$

Where, either field $\boldsymbol{B_{1S}}$ or $\boldsymbol{B_{S2}}$ is given in Tesla. If the value of $\boldsymbol{r_r}$ is known, the field $\boldsymbol{B_S}$ can be derived from strong field [17], and given by:

$$B_{S1(S2)} = \frac{M_S}{r_r^2} \tag{18}$$

Where, $\boldsymbol{M_{SF}}$ is the Total field produced by *SMF* the magnitude of which depends on the nuclide in Tesla, $\boldsymbol{r_r}$ is the point at which the field is measured in meter, and $\boldsymbol{B_{S1}}$ or $\boldsymbol{B_{S2}}$ magnitude *is* given in Tesla, while the angle θ is given by

$$sin\theta = \frac{F_W}{B_{S1(S2)}^2\ r_r^2\ c} \tag{19}$$

The Weak Spinning Magnetic Force (F_W) is of extremely short range [4], and since theories suggest the range of the weak interaction is on the order of $10^{-16}\ -10^{-17}$ m [5], Table.1, give-the different values of weak force as related to different values of the strong force, while Table.2, give two values for the weak force, the upper is due to the strong field that could be produced at the distance of $6.5x10^{-15}$ ($\frac{1}{2}$ of $1.3\ x\ 10^{-15}$, which is the average distance between two nucleons) [22], while the lower part in Table.2, related to the strong force at a distance of $1\ x\ 10^{-15}$ m.

No	Strong Force (F_S)	Interaction Radius (r_r)	Weak Spinning Magnetic Force (F_W)	Spinning Magnetic Field (B_S	Angle θ
1	467,161.8493	6.5x10^{-16}	46.71618493	6.070992558 x 10^{-13}	0.005729577^o
2	467,161.8494	6.5x10^{-16}	46.71618494	6.070992558 x10^{-13}	0.005729577^o

Table.2. Two results for the Weak Spinning Magnetic Force (F_W), the first for fields that are separated by $1.3x10^{-15}$ m, and second for fields with distance to its point of field interaction is $6.5x10^{-16}$ m. The upper result is obtained due to the field that could be produced at that distance using Eq. (l), while the lower result is due to the value of the strong force at a distance of 1 x 10^{-15}.

From all these discussion, a conclusion is made that:

"***The Weak Spinning Magnetic Force (F_W) is the reverse process through which the previously captured and integrated particles through the Strong Spinning Magnetic Force (F_S), released the particle as a consequences of the repulsive two similar Spinning Magnetic Field (SMF) of the combined particle, the degree of weakness associated with this force is due to the small angle involved in the repulsion mechanism.***"

V. Results and discussion

- The Weak Spinning Magnetic Force (F_W) is related to the Strong Force in that; both are produced by the same mechanism of the Spinning Magnetic Field (*SMF*).
- Electron and proton each produced the Spinning Magnetic Field (*SMF*).
- The interaction of any two opposite Spinning Magnetic Field (*SMF*), produced the intense *Strong* Spinning Magnetic Force (F_S), which could lead to one of the followings:

1. The production of neutron from the amalgamation of both the electron and proton.
2. The interaction of both the neutron and proton to come together within Fermi distance, in the nucleus.

- The existence of neutron in nucleus with its similar *SMF* for both the proton and electron, contained by proton's *SMF*, restricted the similar *SMF* of electron and proton as one field of the neutron, created the state of force field stability on neutron within the nucleus, for as long as it's not removed from the nucleus.
- If the neutron is removed from the nucleus by bombardment or any means, an instability mechanism of agitating repulsive force will build up within the neutron, resulted in spiral motion by the electron *SMF* lasting 15 minutes, leading at the end of which to the establishment of the Weak Spinning Magnetic Force (F_W), which moved the electron in forward motion at specific angle.
- The above spiral movement is defined as "*a curve on a plane that winds around a fixed center point at a continuously increasing or decreasing distance from the point.*" [41],
- This as an initial suggestion in this complicated field, many works needs to be done to elaborate the details structure of the neutrons.
- The Weak Spinning Magnetic Force (F_W), is weak because interaction of *SMF* doesn't take place at points where fields are stronger, such as that of the strong force [17], rather the force is resulted from weaker *SMF* at farther distance from r_r.

VI. Conclusion

The Spinning Magnetic Field (*SMF*) produced by both the electron and the proton interacted to produce the *Strong* Spinning Magnetic Force (*SMFs*), suggested as the strong force, or the nuclear force binding the nuclides [17], the *SMFs* fused both electron and proton together to form the neutron. The existence of neutron within the nucleus with the similar *SMF* of electron and proton as one field of the neutron, is contained by the adjacent proton's *SMF*, created the state of force field stability on neutron within the nucleus, thus upholding the repulsive opposing *SMF'* of both the electron and proton inside the neutron.

Since the Weak Spinning Magnetic Force (F_W) is the reverse of Strong Force [39], therefore when neutron is removed from the state of stability in nucleus, the weak force start a mechanism of agitation between the two similar repulsive *SMF*, lasted is 885.7 ± 0.8 seconds [40], during which both *SMF* opposed each other, leading to the establishment of spiral movement, which ended when both *SMF* comes at an interaction radial distance to produce the magnetic repulsive weak force, sending electron away with neutrino in form of beta decay.

This paper unified the three forces of nature as an Electromagnetic force, formed from the Weak Spinning Magnetic Force (F_W), the Magnetic Force (*MF*) and the *Strong* Spinning Magnetic Force (*SMFs*), with an aim to bring common sense to the physical world, which could reflects positively in great achievements towards a better human society.

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"Thanks to God"

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