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On the physical hypothesis of a possible existence of a new kind of field

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Abstract
Interesting attentions have been extensively given in studying the intense interaction of an electron with magnetic field; the outcomes here mentioned are purely theoretical which shows the possibility of the existence of an unusual type of field which permeates the very tiny part in electron-magnetic field interaction. The physical interpretation here tried to deduce clearly defines the possible mathematical indication and formulation in understanding the possibility of its existence in nature. However the theoretical properties of this kind of field are still incomplete and it requires practical explanation in understanding them. The further properties and consequences of this field and its interactions to matter particles are presently not known.

Keywords: electron-magnetic, mathematical indication

Introduction

Sir J.J.Thomson [1] experimentally discovered the first particle which is much smaller than atom itself and showed that atoms are in fact divisible, however till now electrons are thought to be elementary particle of lepton group which obeys Fermi-Dirac statistics. The matter of excitement is about the movement of charged particle in magnetic field. This negatively charged particle electron interacts in magnetic field when they are accelerated. The theoretical statement can simply be stated as follows: when an electron is accelerated with a potential difference V in uniform magnetic field B, it has been observed that the path of an electron bends in a circle whose radius of curvature is r. Sir J.J.Thomson performed numerous experiments with electron to study its behavior inside magnetic field, he discovered the constant ratio defined as electron's charge to mass ratio e/m ratio. Very precise study shows that when electron enters inside magnetic field it experiences a force given by

$$F_B = Bev$$

Where v is the velocity of an electron

The core argument of this paper which is advanced here is to present the theoretical possibility of the existence of a new kind of a field, the hypothesis is that the curvature is formed in electron's path is the consequence of its interaction with uniform magnetic field, I mean something like this: when an electron is interacting with magnetic field it bends its path in a circle simultaneously emerging the field of magnitude r/B^2 which is measurable if only magnetic field is applied.
Or mathematical representation

$$\in = \frac{r}{B^2}$$

Where $\in$ is the symbol to denote the field

From above definition it is clear that the magnitude of $\in$ is directly proportional to radius and inversely proportional to magnetic field.
However there are certain conditions which must be explained in a mathematical way, it explained as follows

Criteria 1.

$$\lim_{B \to o} \epsilon = \lim_{B \to o} \frac{r}{B^2} = \infty$$

The above consideration is that since no magnetic field means no bending in circular path, simply the magnitude of the field approaches to infinity.

Criteria 2

$$\lim_{r \to o} \epsilon = \lim_{r \to o} \frac{r}{B^2} = 0$$

The second condition is meaningless because if it interacts with magnetic field then it must bend in circular path of radius r, such that $r \neq 0$ or if it does not interacts with magnetic field then $r = \infty$ because

$$r \propto v$$

Where mass is constant

Criteria 3

If electron does not interact with magnetic field then if $B = 0$ then $r = \infty$ the first consideration follows that

$$\lim_{B \to o} \epsilon = \lim_{B \to o} \frac{\infty}{0} = \infty$$

Criteria 4

$$\lim_{B\to\infty} \epsilon = \lim_{B\to\infty} \frac{r}{B^2} = 0$$

This conditions explains that the magnetic field's magnitude approaches to infinity then the field loses its significance, simply no occurrence of the field.

$$\partial p \propto \partial V$$

Change in momentum of an electron is directly proportional to change in potential difference.

$$\partial r \propto \partial p$$

Change in radius of an electron's path is directly proportional to change in momentum.

$$\partial \in \propto \partial r$$

Change in field is directly proportional to change in radius of electrons path.
Other mathematical relations associated as follows

$$\frac{\partial \in}{\partial B} = \frac{-2r}{B^3}$$

$$\frac{\partial r}{\partial p}.\frac{\partial B}{\partial \in} = -\frac{B^2}{2er}$$

$$\frac{\partial r}{\partial p}.\frac{\partial F_B}{\partial (ev)} = \frac{1}{e}$$

Consequently applying these treatments in our calculations we get further equations as follows,

$$\in \frac{\partial r}{\partial p}.\frac{\partial B}{\partial \in} + \frac{1}{2}\frac{\partial r}{\partial p}\frac{\partial F_B}{\partial (ev)} = 0$$

$$-2e \in \frac{\partial r}{\partial p}\frac{\partial B}{\partial \in} - \frac{1}{p}\frac{\partial^2 V}{\partial v^2}\frac{\partial F_B}{\partial B} = 0$$

$$\in +2e\frac{\partial r}{\partial p}\frac{\partial B}{\partial \in} \in^2 = 0$$

This however further derives the form

$$\left\{2e \in \frac{\partial r}{\partial p}\frac{\partial B}{\partial \in}\right\}^2 = \frac{2e}{B}\left\{\frac{k}{pr}\frac{\partial r}{\partial p}\frac{\partial F_B}{\partial (ev)}\frac{\partial^2 V}{\partial v^2}\right\} = -B^2\left\{2e\frac{\partial r}{\partial p}\frac{\partial B}{\partial \in} \in^2 \frac{\partial (Be)}{\partial p}\right\}$$

$$\left\{\frac{\partial^2 V}{\partial v^2}\frac{k^2}{p^2}\frac{1}{r}\right\} + \left\{\frac{1}{8}\frac{\partial \in}{\partial B}\frac{B^4 v}{r}\right\} = 0$$

$$\left\{\frac{\partial^2 V}{\partial v^2}\frac{k^2}{p^2}\frac{1}{r}\right\} + \left\{\frac{1}{8}\frac{\partial \in}{\partial B}\frac{B^4 v}{r}\right\} = \frac{\partial}{\partial v}\left[\int \frac{\in}{p}\,\partial B\right]$$

Here it was found that

$$\frac{\partial}{\partial v}\left[\int \frac{\in}{p}\,\partial B\right] = 0$$

It is also expected that, there is no change in electron's density in uniform magnetic field.
Or in other words I mean: density of electron is not at all related with increase or decrease in magnetic field mathematically the statement signifies that

$$\frac{\partial \rho}{\partial B} = 0$$

Consequently from above relations we therefore clearly obtains

$$\frac{\partial \rho}{\partial B} = \frac{\partial}{\partial v}\left[\int \frac{\in}{p}\,\partial B\right] = 0$$

Where
K is the kinetic energy of the electron, ρ is the density of the electron.

The Preliminary Theoretical Indications and Predictions of the New Kind of a Field

The paper entitled "On the Physical Hypothesis of a Possible Existence of a New Kind of Field"** in its extensive efforts has tried to formulate the well-structured theoretical prediction of the existence of a new kind of a field. According to this above mentioned theory when an electron is accelerated with a potential difference V in uniform magnetic field B the off course outcome is that electron's trajectory will bend in a circle of definite radius r, the prior signal of this theory is that in electron-magnetic field interaction a new kind of field of certain magnitude simultaneously emerges (refer to original paper above) **. This field is typically possible only at the time of interaction. The essence of this present paper ladies and gentlemen is to evaluate the possibilities of the existence of this fundamental field, I mean simply the possible theoretical prediction in favor of the theory. Most of us are familiar to Einstein's General Theory of Relativity; this theory is not at all similar but may have some positive analogy. The possible occurrence can be explained as follows: the field which is predicted in the theory, which may be the quantum curvature of small space around the occurrence of interaction, like space and time is curved due to matter and energy. Here due to this interaction the curvature may emerges which is basically a field which is predicted in the above mentioned paper, this field is a quantum field for example like Higgs field and the occurrence of gravitational waves due to collision of super massive black hole which was discovered recently. The experimentally evidence of this field needs to be established with another explained prediction. The second prediction is very foundational but it may or may not occur, which is as follows: when X rays or Gamma Photons are accelerated around the space of this quantum field the direction of the photon will slightly bend from its original path

of travelling, causing a definite angle of deflection at that point.

Simply at other end the light rays may appear to be minute curved not in straight line as it travels from source, like General Relativity. It must also be tested for the case of other charged particles in the presence of this field, if they bend then their bending pattern and else properties. However the example I previously told "Higgs Field" it requires the quantum particle Higgs Boson recently in 2012 confirmed by CERN. It is however not sure that any particle is associated with this field or not as because I would like to tell that the particle Graviton of gravitational force is not yet discovered. But the particle of mass "Higgs Boson" was discovered. However very highly precise with an extreme accuracy measurement is required to prove these predictions in reality.

If these predictions not agree with experiment then simply there might be other cause to detect this field as because it seems me that in reality it occurs.

The existence of field is presently hypothetical and its existence must be determined experimentally. However this paper is not enough to explain everything if any other theoretical consequence it will be mentioned elsewhere, at the same time the search for this field is not easy but also not impossible. Any possible aspect of its existence must be tested according to the present hypothesis here advanced.

References

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