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A Two Particle System Without Integer Spin

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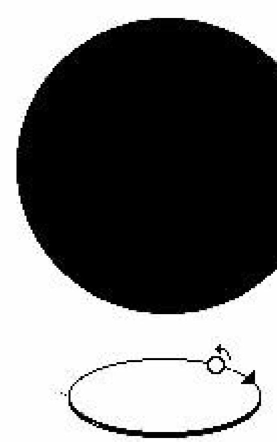
The primary argument against the neutrino being a kind of photon, and of Rutherford's hypothesis that the neutron is a proton and electron, is spin. (Original GSJ publication December 22, 2004)

For example the nucleus of nitrogen consists of 7 protons and 7 neutrons and has an experimentally observed spin of 1. Yet if it is assumed the neutrons contain electrons, the total number of 1/2 spin particles is odd (3x7) and thus the spin of nitrogen should be half integer.

Herein is presented a potential explanation for this inconsistency, which is sketched out in the following figure.



Electron confined to the pole of a highly charged particles, shown completing an orbit to the right yet spinning to the left.

Therein are two 1/2 spin particles, the large black object in the diagram represents a positive highly charged dipole particle. Similar to a Dirac monopole, an electron bound to this highly charged particle is confined to one pole, and its orbit is outlined. The Spin of the electron is in the opposite sense of the orbit.

It is proposed that such a system effectively produces a "particle" without integer spin. Perhaps of critical importance, the axes of spins of the particles may be at an angle. (e.g., 45 degrees). Beautiful it would be if due to spin-coupling the spin of the electron is exactly canceled by an opposite orbital motion.

Note this concept can be applied to a positron in a proton, and for positrons and electrons in charged pions. An interesting expection is the muon, which may be related to its lack of strong interactions.

Thus we see that subsequent to utilizing Dalton's method of stoichiometric analysis to establish the New Quark Theory, the concept of Dirac that there are highly charged particles wherein an electron (or positron) is confined to a pole has proved exceptionally fruitful. Not only has it provided evidence for the hypothesized color charged particles, it also easily explains violation of parity in neutron decay, and may also resolve the significant mystery of spin.

Another major objection to the New Quark Theory is it has not accounted for conservation of strangeness as discovered by Murray Gell-Mann. Herein it is proposed that conservation of strangeness is as consequence of preferential fragmentations of highly unstable large particle aggregates.

For example, let us assume the following:

Xi consists of a nucleon and two pions, N pi pi

Sigmas and Lambda consist of a nucleon and pion, N pi

A Kaon consists of three pions, pi pi pi

As the primary reaction product increases in size by sequential addition of a pion, the following preferred fragmentations occur:

N pi pi --> N pi + pi

N pi pi pi --> N pi pi + pi

N pi pi pi pi --> N pi + pi pi pi

Thus a Sigma or Lambda always is accompanied by a Kaon, and strangeness is conserved.

Your comments are most welcome.

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