The Intrinsic Relation Between Ether and Particle

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Abstract: the neutrinos and electric charge are the two essences that are formed the particles: Neutrino added to integral charge making up the lepton with electric charge; neutrino added to fractional charge making up the quark. The ether is composed by particles, it is the assembly of the bosons of the least energy state. The transformation among the particles is the course that transferred electric charge and combined anew among the particles, and together with virtual particles generally. This description can accord with actual facts, it is the show of the reasonableness. Some examples will be given by the disintegration of the part of particles.

Key words: Ether(Physical vacuum or Virtual particle), The essence which formed the particles, The transformation among the particles, Disintegration.

In the paper DUPLICATE SPACE-TIME THEORY, ETHER AND THE PHYSICAL MECHANISM OF THE RELATIVISTIC PHENOMENA (DEP), the physical vacuum is called the "ether" and the space-time theory of relativity and gravitational field can be considered as the macroscopic effects of ether. Now, we will probe into the microscopic manifestation of ether, it will show the unity of particles and ether on materiality.

1. Two hypotheses

The physics of particle believes that the particles can be divided into leptons and quarks of three generation: (v_e、 e; v_μ、 μ; v_τ、 τ) and (d、u; s、c; b、t), and the bosons which spread interaction the photon, gluon etc. It has gained great successes, but exists some problems yet, for example, how are intrinsic relation among particles and between the particle and ether? For this problem, two hypotheses are proposed on the basis of relevant facts and signs.

Hypotheses 1: the neutrinos$\left(v_e、 v_\mu、 v_\tau\right)$and electric charge are the two essences that are formed the particles: Neutrino added to integral charge making up the lepton with electric charge (e、 μ、 τ); neutrino added to fractional charge making up the quark. There are three kinds of neutrinos, it is the basis for divide the particles in three generations, these three neutrinos should be three forms of same substance, just as there are solid and fluid and gas from one substance.

Hypotheses 2: The ether is composed by particles , it is the assembly of the bosons of the least energy state. In the gravitational field, the ether is made up of the pair of positive and negative neutrinos (ether particles), it is a most basic and universal Bose-Einstein condensation (so it is necessary a superfluid); in the electromagnetic field, a part of ether particles are transformed to the virtual photons ($e-\bar{e}, \mu-\bar{\mu}, \tau-\bar{\tau}$), which are the products that are transferred integral charge between positive and negative neutrinos within the ether particle; in the color field, there are the pair of positive and negative quarks, the gluon is the pair of positive and negative quarks with color, they are the products that are transferred fractional charge between positive and negative particles within the ether particle or virtual photon

The DEP holds the view that the changed value of pressure of ether corresponds with energy. So the least energy state is that no independent wave-packet of ether density formed, this is just the meaning of "virtual". For example, virtual photon, real photon and the pair of positive and negative electron, their constitution is all the same ($e-\bar{e}$), but the virtual photon doesn't forms alone wave-pack of ether density; a real photon is a alone wave-pack of ether density; a pair of positive and negative electron is a combination of two alone wave-pack of ether density, they are same structure and different state of energy.

2. The transformation among the particles

For concisely, let h express the various leptons or quarks. Thereupon, according to the theory of two essences and relevant facts, it is given: h=neutrino + electric charge, it can carry electric charge of 0、$\pm\dfrac{1}{3}$、$\pm\dfrac{2}{3}$、± 1; and can be transferred electric charge of $\pm\dfrac{1}{3}$、$\pm\dfrac{2}{3}$、± 1. On the basis of these rules and the law of conservation of energy, we can do the new qualitative description for the transformation among the particles, which is the course that transferred electric charge and combined anew among the particles, and together with virtual particles generally. This description can accord with actual facts, it is the show of the reasonableness of above views. Below some examples will be given by the disintegration of the part of particles.

The symbols: $\xrightarrow{h_1\cdots(b)\to h_2}$ stand for transferring b share of electric charge from h_1 to h_2; within the [ ] stand for the combination of h of a alone real particle or the mid condition (the letter before the [ ] is a mark of particle); within the $\langle\ \rangle$ stand for the combination of h of a virtual particle; after the $\Rightarrow$ stand for the result of disintegration which accord with the law of conservation of energy.

2.1 The disintegration of unstable hadrons

we regard the unstable character as the quarks and gluons that be made up of hadrons can be direct combined into new particle with no electric charge transferred.

For example: $\Delta^-\left[ddd\left\langle u-\bar{u}\right\rangle\right]\Rightarrow n\left[ddu\right]+\pi^-\left[d\bar{u}\right]$

2.2 The disintegration of stable strange baryons

Under the participation of virtual particles (owing to the restriction of energy they are only $d-\bar{d}$、$u-\bar{u}$), after to transfer electric charge between quark s and u, the s become u and the u become d, then they are combined anew. Thus the result identified with actual major forms of disintegration (except Σ^0):

$\Lambda^0\left[uds\left\langle u-\bar{u}\right\rangle\right]\xrightarrow{s\cdots(-1)\to u}\left[udud\bar{u}\right]\Rightarrow p\left[udu\right]+\pi^-\left[d\bar{u}\right]$，或$n\left[ddu\right]+\pi^0\left[u\bar{u}\right]$

$$\Lambda^0\left[uds\left\langle d-\bar{d}\right\rangle\right]\xrightarrow{s\cdots(-1)\to u}\left[ddud\bar{d}\right]\Rightarrow n[ddu]+\pi^0\left[d\bar{d}\right]$$

$$\Sigma^+\left[uus\left\langle u-\bar{u}\right\rangle\right]\xrightarrow{s\cdots(-1)\to u}\left[uuud\bar{u}\right]\Rightarrow p[uud]+\pi^0\left[u\bar{u}\right]$$

$$\Sigma^+\left[uus\left\langle d-\bar{d}\right\rangle\right]\xrightarrow{s\cdots(-1)\to u}\left[udud\bar{d}\right]\Rightarrow p[uud]+\pi^0\left[d\bar{d}\right],或n[dud]+\pi^+\left[u\bar{d}\right]$$

$$\Sigma^-\left[dds\left\langle u-\bar{u}\right\rangle\right]\xrightarrow{s\cdots(-1)\to u}\left[ddud\bar{u}\right]\Rightarrow n[ddu]+\pi^-\left[d\bar{u}\right]$$

$$\Xi^0\left[uss\left\langle u-\bar{u}\right\rangle\right]\xrightarrow{s\cdots(-1)\to u}\left[usud\bar{u}\right]\Rightarrow\Lambda[sud]+\pi^0\left[u\bar{u}\right]$$

$$\Xi^0\left[uss\left\langle d-\bar{d}\right\rangle\right]\xrightarrow{s\cdots(-1)\to u}\left[dusd\bar{d}\right]\Rightarrow\Lambda[dus]+\pi^0\left[d\bar{d}\right]$$

$$\Xi^-\left[dss\left\langle u-\bar{u}\right\rangle\right]\xrightarrow{s\cdots(-1)\to u}\left[dsud\bar{u}\right]\Rightarrow\Lambda[dsu]+\pi^-\left[d\bar{u}\right]$$

$$\Omega^0\left[sss\left\langle u-\bar{u}\right\rangle\right]\xrightarrow{s\cdots(-1)\to u}\left[ssud\bar{u}\right]\Rightarrow\Lambda[dsu]+k^-\left[s\bar{u}\right],或\Xi^0[ssu]+\pi^-\left[d\bar{u}\right]$$
或$\Xi^-[dss]+\pi^0\left[u\bar{u}\right]$
In

above process of disintegration, the results are decided by the combinative relations among quarks. The combinative relations are ud, ud, uu in p; ud, ud, dd in n etc.

Let the combinative probability of uu is bigger by 15 per cent that of dd; and the combinative probability of $d\bar{u}$ or $u\bar{d}$ is bigger by 13 per cent that of $d\bar{d}$ or $u\bar{u}$; then the probability of $\Lambda\to p\pi^-$ is bigger by 28(15+13) per cent that of $\Lambda\to n\pi^0$; and the probability of $\Sigma^+\to p\pi^0$ is bigger by 2(15-13) per cent that of $\Sigma^+\to n\pi^+$;

Both above datum are identical with facts.

As for the disintegration of Σ^0, its internal virtual particles are disintegrated to the photon (this is a electromagnetic interaction, its velocity is more fast):

$$\Sigma^0\left[uds\left\langle d-\bar{d}\right\rangle\right]\xrightarrow{d\cdots\left(\frac{2}{3}\right)\to\bar{d}}\left[uds\left\langle e-\bar{e}\right\rangle\right]\Rightarrow\Lambda[uds]+\gamma\left[e\bar{e}\right]$$

The not major forms of disintegration are all the result that translating fractional electric charge among h, for example:

$$\Sigma^-\left[dds\left\langle u-\bar{u}\right\rangle\right]\xrightarrow{s\cdots\left(\frac{2}{3}\right)\to\bar{u}}\left[dde(\mu)\bar{v}_e\left(\bar{v}_\mu\right)u\right]\Rightarrow n[ddu]+e+\bar{v}_e,或n[ddu]+\mu+\bar{v}_\mu$$

The disintegration of neutron and the lepton with charge

Owing to the restriction of energy, the neutron is as disintegrated together with virtual photon as the leptons with charge:

$$n[udd]\langle e-\bar{e}\rangle \xrightarrow{d\cdots(-1)\rightarrow\bar{e}} p[udu]+\bar{v}_e+e$$

$$\mu\langle\bar{e}-e\rangle \xrightarrow{\mu\cdots(-1)\rightarrow\bar{e}} v_\mu+\bar{v}_e+e$$

The form of τ disintegration is similar to μ, but owing to its energy is huge, so it is stimulated into hadron too.

Above the ether and particle are united on material form. Of course, those are qualitative descriptions yet. It is expected that raise them to the quantitative descriptions.