The results of the CDF collaboration on W+, W-bosons and their inconsistency with the Standard Model. A new consideration of W+, W-bosons.

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The weak interaction is short-acting. It manifests itself at distances much smaller than the atomic nucleus (about a thousand times smaller than the size of the atomic nucleus).

The carriers of the weak interaction are considered to be minus (plus) W bosons and Z bosons. But the fact that W+ and W-bosons are carriers of the weak interaction may not be true. For example, according to the results obtained by the physicists of the CDF collaboration on the Tevatron, the masses of minus (plus) W bosons will noticeably not coincide with the prediction of the Standard Model. Therefore, in order for the results obtained to correspond to the Standard Model, some consider it necessary to expand the Standard Model. This means that it is possible that there may be some unknown particle that influences the results obtained or some unknown field. And they need to be searched for in the future. It is possible that some superheavy particle existing infinitesimally small fractions of a second will be found, but will it have anything to do with the discrepancy between the results obtained for the minus (plus) W bosons of the Standard Model.

W+ and W-bosons are observed only in the decays of heavy particles, and the fact that they take part in the decays of heavy particles and the formation of lighter particles is not a sign that they are quanta of the weak interaction field. In addition, they themselves decay into lighter stable elementary particles. The quanta of the field of any interaction can only be stable particles with a lifetime much longer than that of W+ and W-. The fact that a particle has a lepton charge is not a sign that it is a quantum of the weak interaction field. After all, even an electron has a lepton charge. Therefore , the photon is a unique particle of the electromagnetic field .
W+ and W - are unstable particles with a lifetime of about ten to minus the twentieth fifth degree. Which decay channel a particle chooses

depends on what energy it has at the decay stage .Therefore, there may be several channels of its decay.

The probability of decay is a function of several factors that determine it. The most important of them is the type of interaction that is responsible for the ongoing decay. The probabilities of processes occurring according to one or another type of interaction depend (as a rule) on the square of the interaction constant. For example, delta - isobar decay occurs by strong interaction, it corresponds to a high probability and a short tau lifetime of 0.5 . 10 ^-23 sec. The processes of electromagnetic interaction have a constant of about two
orders of magnitude less strong, their corresponding average lifetimes are higher than ~10^-19sec. The weak interactions (of which beta decays are an example) have a constant about 6 orders of magnitude smaller than the strong interactions. Therefore, their typical average lifetimes are greater than 10^-12 seconds.

The relationship between the interaction constants and the decay probabilities also determines the most probable decay path of an unstable nucleus or particle in cases where several such paths, the so-called decay channels, are possible.

In addition to the type of interactions, the probability of decay is also determined by

1) the kinetic energy of the emitted particles and
2) the moments of the amount of motion carried away by radiation.

The higher the probability of decay, the greater the transition energy. The influence of this factor on the probability of decay is often masked by the influence of the second factor – i.e., the amount of motion carried away by radiation.

Particles are attractors having a vortex structure of motion.

Most likely, not only the internal kinetic energy of particle motion determines their mass, but also the potential energy of particles during their formation and decay changes during transitions from one space to another (from the space of electromagnetic interactions to the space of strong interactions and from the space of strong interactions to the space of weak interactions) and it contributes to the increase in the total mass of the particle (i.e. the energy of the particle) .

The kinetic energy of particle motion in a collision passes into the internal kinetic and potential energy of the attractors during the formation of attractors of higher or lower orders (depending on the kinetic energy of the colliding particles). These types of attractors are different types of particles or combinations of them.

Plus (minus) W and Z bosons are considered analogs of photons in electromagnetic interactions, i.e. particles carriers of weak interaction, but most likely W - bosons are intermediate particles involved in decays with weak interaction, and they can be considered as a consequence of the acquisition of an additional potential and a new structure in the space of strong or weak interactions by u and d quarks, antiquarks or other particles during their short-term fusion or transition of particles from one space to another At the same time, depending on the directions of rotation of the structures that formed them (were they particles and antiparticles) and the directions of helicity of transitions from space to space, they become W+ or W-bosons having left or right helicity. During decays, W-bosons decay into electrons and antineutrinos along the left-hand helicity and into hadrons along the right-hand helix. W+ bosons decay into positrons and neutrinos along the right-hand helicity and into hadrons along the left-hand helix.

Plus, minus W bosons and Z bosons manifest themselves only in the formation and decay of particles, (and in no other processes) and the duration of their existence is about 3x10 in minus twenty-fifth degree of a second. In decays involving plus or minus W bosons, they accompany the decays of left-polarized particles or right-polarized antiparticles. Z –bosons, unlike W –bosons, cannot change the charge or flavor of particles during decay, but only change the spin and momentum of particles. In fact, these bosons are two different sides of the same physical process - the formation, short-term existence and decay of unstable particles.

Energy is absorbed in portions not only by the atomic nucleus, but also by elementary particles. In quantum mechanics, a formula has long been known in which the product of Planck's constant by the radiation frequency is equal to the energy of the electron transition from a higher energy level in an atom to a lower level. At the same time, the electron always tends to get a level with a lower energy. Like these energy levels in atoms, there are energy levels for elementary particles, but unlike electrons in atoms, the energy levels of particles are related to the internal structure of the particles themselves. The energy of elementary particles is also absorbed and given away in portions. This is most clearly seen in the example of particle decay. But due to the fact that particle attractors do not exist in three-dimensional, but in a curved three-dimensional space (actually in four-dimensional space) the nature of the transition from level to level has a more complex and ambiguous appearance .

So there are analogous particles of the electron, of the second and third generation, or better to say of the second and third level, having a much larger mass than that of the electron - muon and taon, which, when moving from a higher level to a lower one, decay into similar elementary particles. So the muon decays into an electron plus an electron antineutrino plus a muon neutrino. The taon in one of the decay channels (during the transition from level 3 immediately to level 1) decays into an electron, plus an electron antineutrino plus a taon neutrino. The difference is that instead of a muon neutrino, a taon neutrino is formed. The difference between muon and taon neutrinos is the difference in their energies, which is a reflection of the difference in the energy levels at which the muon and taon are located. Another of the decay channels (when switching from level 3 to 2) is the formation of a muon plus a muon antineutrino plus a taon neutrino. Already in this very process of disintegration, a pattern can be noticed. Next, the muon decays with the process described above. The existing one more channel of taon decay is explained by the fact that the transition from a higher energy level to a lower level can occur both along the right-hand and left-hand energy spiral. When moving in one direction of the spiral, decay occurs along the two channels described above. During the decay of the taon along the right-hand energy spiral, the formation of hadrons occurs. Figure 1 shows the transition of taons and muons to a lower stable electron level along the left-hand helicity.

As can be seen from the figure, when the coupon passes to the electron level, bypassing the muon stage, the taon will become an electron with the release of less energy than during the transition with the presence of the muon stage. This can be explained by the fact that in a four-dimensional space there may be two or more options for moving to a lower level, and they will have different energy components. In this case, there are two options for switching to a lower energy level.

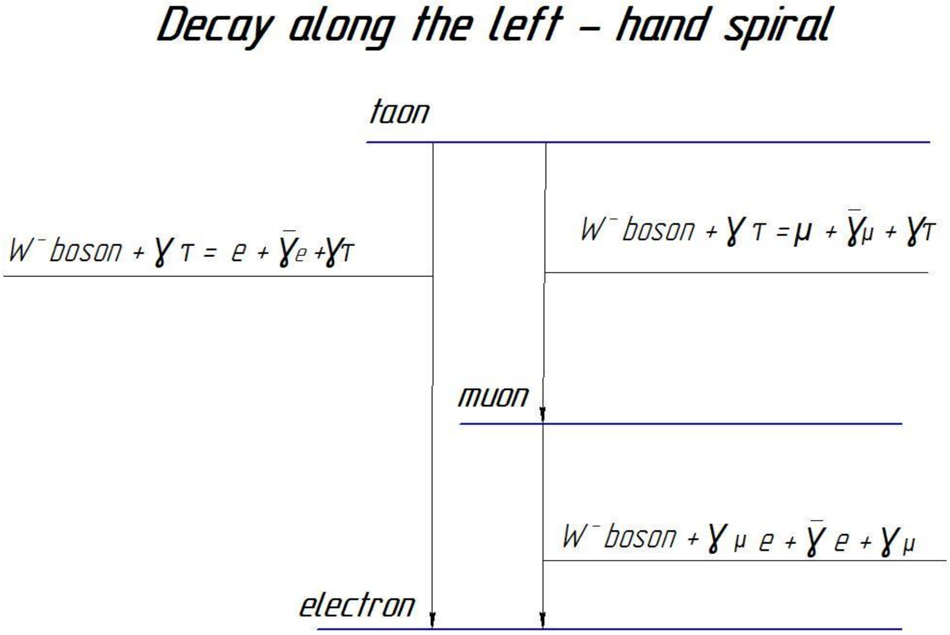
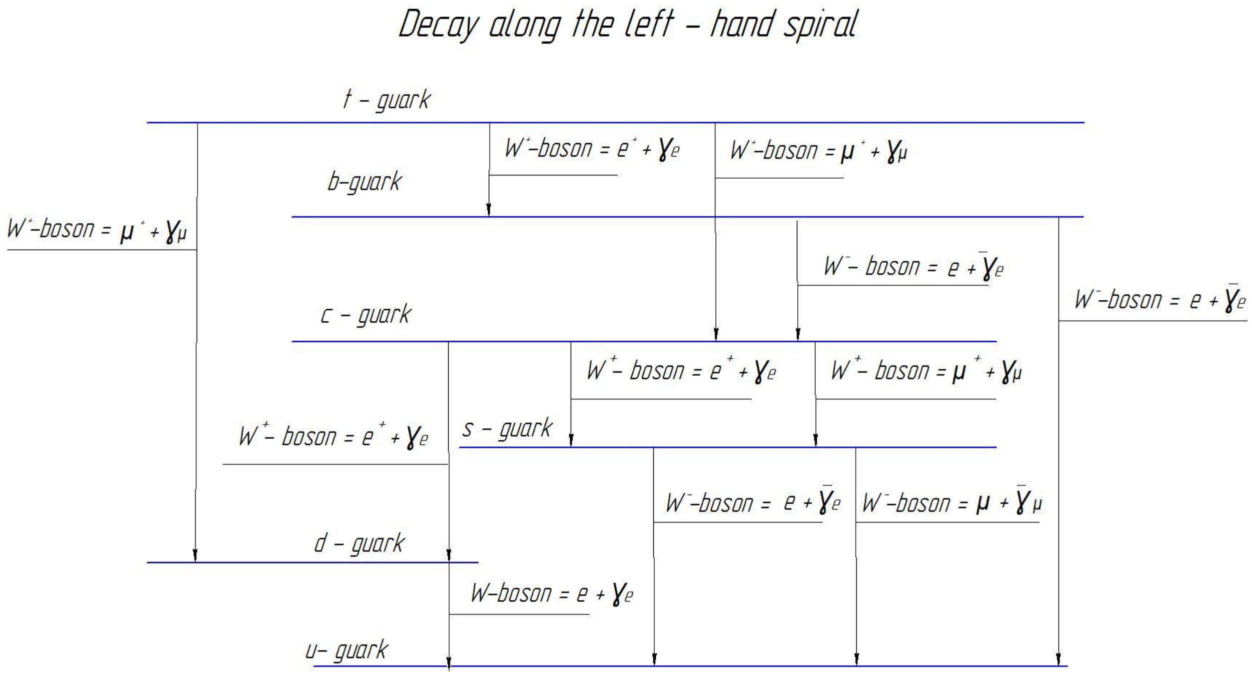


Fig. 1 The process of decay of talons and muons along the left-hand helicity.

During the decay of the antiaone, the process has a mirror image of the taon decay process, i.e. (for example, when moving from level 3 to level 1, it will decay into a positron plus an electron neutrino plus a taon antineutrino). During muon decay, the process of hadron formation does not occur because there is not enough energy.

Also, the existence of different energy levels and the quantization of their energies can be observed by the example of the decay of particles with the participation of W-bosons and Z-bosons. The attractor particles of higher energy levels decay into particles of lower energy levels to form W+ or W-bosons and neutrinos or antineutrinos.



In Fig.2 shows the decays of quarks of different generations, - heavy to lighter. During transitions, W + b W bosons are formed, which in turn decay into muons (antimuons) or electrons (positrons) and neutrinos (antineutrinos).

Considering all these particle decays using the example of taon, muon, as well as particle decays involving W bosons, we can conclude that the energy during decays, and hence the formation of particles, is dosed. Their energy is absorbed and given away in portions.

The positive or negative charge of W bosons is determined by the direction of the rotational component of the boson parallel to the plane of the electron charge. Whether a particle has mass is determined by the presence of the rotational component of the particle. For example, a photon has no rotational component in the space of electromagnetic interactions, so it has no rest mass and charge. Other particles in their topology have rotational motion, so they have at least a small mass. Plus (minus) W bosons are antiparticles to each other. If we compare the structures of quarks of the first, second and third generation , we can see that additional properties (energy - mass) they received when moving from one level to another and it is a metered value.