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Neutrino Ought Comes From Heavy Electron

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Abstract

Based on the insistence that both charge potential energy and neutrino are truly existence, the only way to satisfy the both is that the whole β-decay include two steps. The first step is the neutron divided/decayed into a proton and a fast heavy electron where the charge potential energy had been included. Then, second step (second decay), the fast heavy electron divided/decayed into a common electron (round a nucleus) and a neutrino when arrived and acted with matter. In a word, the neutrino comes from the decay of heavy electron and carrying most of the kinetic energy the fast heavy electron provided.

Keywords: Neutrino; Heavy electron; β-decay; W. Pauli; C. Cowan

Introduction

It seems that the further developments of fundamental physics relate to the events of neutrino today. As a particle, the existence of neutrino was first predicted in early 1930 by W. Pauli (and afterward formally named by E. Fermi in 1932) for an opinionated reason—the loss of energy in the process of β decay. The mantic neutrino was then first discovered in 1956 by C. Cowan and F. Raines's experiment, and later then proved to oscillate between three kinds (νe, νμ, ντ) theoretically by B. Pontecorvo in Russia in 1957 and experimentally by CERN laboratory in Europe in 1989, Takaaki Kajita in Japan in 1998, Arthur B. McDonald in Canada in 2001, KamLAND nuclear reactor in Japan in 2002, K2K accelerator in Japan in 2003, MINOS group in America in 2006 and, Daya Bay in China in 2012 from different sources, respectively. Up to now, more than 6 Nobel Prizes in physics are concerned directly with the research work in field of neutrino. Like a messenger, the neutrino would guide us to unveil more information or secrets of matter structure inside the nucleus.

In this paper, we will solve a basic question—where the neutrino comes from indeed? The reason is arisen from that we proposed a contrary result in our previous paper [1]; it proposed that there is no need of neutrinos produced in the process of β-decay by theoretical calculation.

Reasoning

B-decay is the process that the electron departing from proton indeed. Considering the charges (negative and positive) attracting potential energy, we calculated the separation process accurately in our previous work [1]. The theoretically calculated distribution curve of the kinetic energy of emitted electron has good agreement with the test [2]. The opposite charge departing process consumes energy as much as 0.5339 MeV providing 68.52% in total energy. The rest mean kinetic energy of electron is then 0.2453 MeV. Notice that the mass defect of neutron after β-decay is:

$$\begin{aligned} \Delta m &= 1.3891 \times 10^{-30}\ \text{kg} \\ &= 1.2484 \times 10^{-13}\ \text{J} \\ &= 0.7792\ \text{MeV} \end{aligned}$$

The result showed us that there is no energy loss in process of β-decay. However, W. Pauli disavows the charge departing energy and thinks out a fantastic particle (named as neutrino afterward) that taking away the loss of energy. Amazingly, the fantastic neutrino was really found later.

One side is charge potential energy, another is neutrino. Ignoring the existence (as common) of charge potential energy isn't an advisable attitude for us; the ignoring would cause more severely problems in physics. Then, how can we face such an inconsistent situation? However, the both sides are considered to be alternative in general speaking.

We have insisted on that both sides are to be true. The only way for matching the both truth is that the routine producing mechanism of neutrino must be abandoned. In fact that the whole β-decay process can be divided into two steps. The first step is the neutron divided into a proton and a fast heavy electron where the charge potential energy had been included. Then, second step (second decay), the fast heavy electron divided/decayed into a common electron (round a nucleus) and a neutrino when arrived on and acted with matter, just like the photon produced in process of that an accelerated normal electron bring bremsstrahlung, i.e., the neutrino comes from the decay of heavy electron and carrying most of the kinetic energy which the fast heavy electron provided.

Results and Discussion

According to above reason, a new concept, the heavy electron, has first been proposed in this paper. It exists in process of neutron's β decay. The prediction of heavy electron needs to be verified experimentally for the future. An exciting point is that unlike neutrino the heavy electron is convenient to be controlled. We can manipulate neutrino through manipulating the heavy electron. Its applications would be great important to the world.

An important evidence sustained our opinion firmly is that extremely high energy neutrinos have been discovered many times; the highest energy of 2.6 PeV neutrino was discovered in IceCube neutrino observation station in 2014 up to the present. Now then, a paradox appeared, how could a neutrino obtained the energy to be bigger than the lost energy of merely 0.5339 MeV, even exceeding the total mass defect energy of 0.7792 MeV? As for H.R. Crane and J. Halpern's experiment [3] of the relation between momentum of decayed particles, which insisted on W. Pauli's thought, would be that the emitted electron had already decayed right in time when arrived on and acted with the momentum detector, and at the same time the neutrino yielded.

Evidently that, took the neutrino as the lost energy of β-decay is a wrong thing. However, thanks the god, it's just the wrong thing that guide us discovered the neutrinos as early as possible.

Naturally, the heavy electron would have slightly increased rest mass than normal electron; and the increment of rest mass would in a form transferred to the neutrino after the second decay takes place.

Conclusion

We insist on that both charge potential energy and neutrino are existed in process of β decay. Taking the neutrino as the lost energy of β-decay is a wrong thing. Heavy electron comes from the decay of neutron. And the neutrino is produced by the decay of heavy electron.

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