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Analysis of Experimental Data on Neutron Decay for the Possibility of the Existence of the Right Vector Boson W_R

In connection with the assumption that sterile neutrinos are right neutrinos, an analysis of the current experimental situation in neutron decay for right currents was performed. As a result of the analysis, it was found that there is an indication of the existence of a right vector boson W_R with a mass $M(W_R) = 304_{-20}^{+24}$ GeV, and a mixing angle with W_L : $\zeta = -0.039 \pm 0.014$. It is shown that this result does not contradict the collider experiments to search for a hypothetical vector boson. This circumstance is the basis for discussing the possibility of expanding the Standard Model with an additional gauge vector boson W_R with little mixing with the left vector boson W_L . In addition, there are grounds for considering the possibility of the existence of right neutrinos. It can be assumed that sterile neutrinos are, in essence, right neutrinos. In this regard, the possibility of explaining dark matter in the Universe by right neutrinos is analyzed. Various aspects of this approach to the problem of dark matter are discussed: the dynamics of the origin of dark matter and the stability of dark matter consisting of right neutrinos.

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