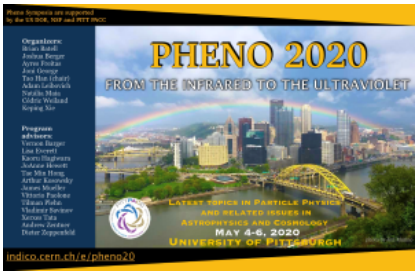

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A comparative study of $0\nu\beta\beta$ decay in symmetric and asymmetric left-right model

We study the new physics contributions to neutrinoless double beta decay ($0\nu\beta\beta$) in a TeV scale left-right model with spontaneous D-parity breaking mechanism where the values of the $SU(2)_L$ and $SU(2)_R$ gauge couplings, g_L and g_R are unequal. Neutrino mass is generated in the model via gauge extended inverse seesaw mechanism. We embed the model in a non-supersymmetric $SO(10)$ GUT with a purpose of quantifying the results due to the condition $g_L \neq g_R$. We compare the predicted numerical values of half life of $0\nu\beta\beta$ decay, effective Majorana mass parameter and other lepton number violating parameters for three different cases; (i) for manifest left-right symmetric model ($g_L = g_R$), (ii) for left-right model with spontaneous D parity breaking ($g_L \neq g_R$), (iii) for Pati-Salam symmetry with D parity breaking ($g_L \neq g_R$). We show how different contributions to $0\nu\beta\beta$ decay are suppressed or enhanced depending upon the values of the ratio $\frac{g_R}{g_L}$ that are predicted from successful gauge coupling unification.

Summary

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