Contribution ID: **575** Type: **parallel**

Left-Right model with radiative double seesaw mechanism

Tuesday 7 January 2025 14:30 (20 minutes)

We propose an extended Left-Right symmetric model with an additional global symmetry U(1)X, which after spontaneous symmetry breaking collapses to a residual subgroup Z2, ensuring that the light active neutrino masses are generated via a double seesaw mechanism at two loop level, with the Dirac submatrix arising at one loop. It also guarantees one loop level masses for the SM charged fermions lighter than the top quark and protects Dark Matter (DM) candidates of the model. To the best of our knowledge our model has the first implementation of the radiative double seesaw mechanism with the Dirac submatrix generated at one loop level. We show that the model can successfully accommodate the observed pattern of SM fermion masses as well as mixings and is compatible with the constraints arising from neutrinoless double beta decay and DM.

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Session Classification: Parallel session 2: Neutrino Physics (1/2)

Track Classification: Neutrino Physics