

## Supersymmetric model for neutrino masses with two dark matter candidates

We discuss a supersymmetric extension of the radiative seesaw model for neutrino masses. The model can induce the tri-bimaximal neutrino mixing and have two dark matter candidates. One of them is the lightest neutralino appeared in the  $R$ -parity conserved MSSM. The other one is a right-handed neutrino with mass of  $O(1)$  TeV. The latter one is metastable and its longevity is guaranteed by a  $Z_2$  subgroup of anomalous  $U(1)_X$  gauge symmetry, which forbids the neutrino mass generation at tree level. The flavour structure causing both the tri-bimaximal mixing and the smallness of neutrino mass eigenvalues may be partially related to this anomalous  $U(1)_X$ . We study the phenomenology of the model such as the dark matter relic abundance, the lepton flavor violating processes and also the direct and indirect searches of dark matter.

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