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The search for 'mirror' fermions with distinguished signatures at the 13 TeV LHC SHREYASHI CHAKDAR, VINH HOANG, University of Virginia, K GHOSH, University of Delhi, India, PHAM HUNG, University of Virginia, S. NANDI, Oklahoma State University — There are four ideas that has been proposed to explain the tiny neutrino masses: the see-saw mechanism with a RH neutrino at the GUT scale, radiatively generated neutrino masses, the neutrino mass arising from a 2nd Higgs doublet having a tiny VEV and coupling only to the neutrinos, and finally the EW-scale ν_R model. This last framework includes new quarks and leptons of opposite chirality at the electroweak scale (for the same SM gauge symmetry $SU(2)_W \times U(1)_Y$) compared to the SM. This model satisfies the EW precision tests and upon introducing an extra Higgs doublet the constraint coming from the 125-GeV scalar. Since in this model, the mirror fermions are required to be in the EW scale, these can be produced at the LHC giving final states with a very low background from the SM. One such final state is the same sign dileptons with large missing p_T for the events. We explore the constraint provided by the 8 TeV LHC and prospect of observing this signal in the 13 TeV. Additional signals will be the presence of displaced vertices depending on the smallness of the Yukawa couplings of the mirror leptons with the ordinary leptons and the singlet Higgs present in the scenario. Of particular importance is also the production of the RH neutrinos at collider energies.

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