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LHC bounds on the inverse seesaw neutrino production

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In the inverse seesaw scenario, pseudo-Dirac neutrinos with mass at the electroweak scale can have a sizable mixing with the Standard Model (SM) neutrinos, while providing the light neutrino masses through a small lepton number violation. We study the production of the heavy neutrinos through their mixing with the SM neutrinos at the Large Hadron collider (LHC). Utilizing the search result by the CMS collaboration for anomalous production of events with three leptons using 19.5/fb of $\sqrt{s}=8$ TeV LHC data, which is consistent with the SM prediction, we obtain the upper bound on the mixing between the heavy and SM neutrinos as a function of the heavy neutrino mass. For a heavy neutrino with mass 91.2 GeV, the upper bound is found to be 0.0478, which is comparable to the one from the electroweak precision measurement.

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