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Lepton number violation in non-standard Higgs sectors

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We consider the phenomenology of extended Higgs sectors that allow the neutrino masses to be Majorana. This means that the extra scalars do violate lepton number. For that purpose, we classify them using an effective field theory approach. Then, using appropriate current ATLAS and CMS analyses we set the first bounds on lepton number violation in the scalar sector. We also describe how to measure the quantum numbers of the corresponding scalar fields if they were detected in a second phase of the LHC running.

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