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Long-lived particles and meson decays in N_R LEFT

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Electroweak scale neutrino mass models predict the existence of heavy neutral leptons (HNLs) at an energy range that could be within reach of collider experiments. In particular, GeV scale HNLs could be produced in heavy meson decays at the LHC. In this scenario, the relevant theory to study HNL phenomenology is the low-energy effective field theory extended with right-handed neutrinos, N_R , denoted by N_R LEFT. We are especially interested in the regime where the HNLs produced from meson decays are long-lived and can potentially decay within proposed future (far) detectors at the LHC. We determine the expected sensitivities of these far detectors to HNLs for N_R LEFT four-fermion operators containing N_R and a pair of quarks.

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