

Effective Field Theory and Sterile Neutrinos

Sterile neutrinos are gauge-singlet fields that can have Majorana masses. They interact with the Standard-Model fields through Yukawa couplings and higher-dimensional gauge-invariant operators. In the framework neutrino extended Standard Model Effective Field Theory (ν SMEFT), we study the effect of sterile neutrino on neutrinoless double beta decay ($0\nu\beta\beta$), displaced-vertex searches at LHC and Belle II, and kaon decay with lepton number violation. We find non-standard interactions involving sterile neutrinos have a dramatic impact on the phenomenology and can probe new physics up to the scale of $\mathcal{O}(100)$ TeV.

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