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Heavy neutrinos in cosmology and particle physics

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We study experimental and cosmological constraints on the extension of the Standard Model by three right handed neutrinos with masses between those of the pion and W-boson. This low scale seesaw scenario allows to simultaneously explain the observed neutrino oscillations and the baryon asymmetry of the universe. We combine indirect experimental constraints from neutrinoless double β -decay, lepton flavour violation and neutrino oscillation data with bounds from past direct searches and big bang nucleosynthesis. For masses of a few GeV the heavy right handed neutrinos can be found in meson decays at LHCb, BELLE II or the proposed SHiP experiment, for larger masses they can be searched for in ATLAS and CMS. The chances for a discovery would be even better at a Future Circular Collider.

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