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Viable Twin Cosmology from Neutrino Mixing

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Twin Higgs models solve the little hierarchy problem without introducing new colored particles, however they are often in tension with measurements of the radiation density at late times. I will explore viable cosmological histories for Twin Higgs models where the mixing between the SM and twin neutrinos can thermalize the two sectors below the twin QCD phase transition, significantly reducing the twin sector's contribution to the radiation density. The requisite twin neutrino masses of $O(1 - 20)$ GeV and mixing angle with SM neutrinos can be probed in a variety of current and planned experiments. These parameters are naturally accessed in a warped UV completion, where the composite twin neutrino sector can also generate the Z_2 -breaking Higgs mass term needed to produce the hierarchy between the symmetry breaking scales f and v .

Summary

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