

# Decay Rate of Right-Handed Neutrinos in Light of Collective Excitations at Electroweak Scale

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The origin of the baryon asymmetry in the Universe (BAU) is a big mystery in particle physics and cosmology. One interesting scenario to explain BAU is the resonant leptogenesis which admits lepton number creation in the electroweak-scale, and therefore, receives lots of phenomenological interests in the LHC era. Then, the decay of right-handed neutrinos which causes the lepton number must be evaluated in the electroweak-scale plasma, where non-trivial collective excitations emerge due to co-existence of a mass scale induced by the Higgs mechanism and temperature. We investigate the decay rate of right-handed neutrinos with respect to such collective modes providing novel decay channels for the right-handed neutrinos. The collective excitation has been well investigated in the physics of the quark-gluon plasma (QGP), and the subject in this presentation would provide a bridge between the leptogenesis and the QGP community.

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