

Hot Leptogenesis: A naturalness-motivated solution to baryon asymmetry

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In standard leptogenesis models, the baryon asymmetry is initially produced as a lepton asymmetry via the out of equilibrium decays of the lightest right handed neutrino (RHN).

There are however constraints on the RHN mass that are in tension; the naturalness constraint on the Higgs mass from RHN loop corrections, i.e. the Vissani bound, puts a limit on the RHN mass which is lower than is generally required for leptogenesis to produce a sufficient baryon asymmetry (the Davidson-Ibarra bound).

Increasing the temperature of the RHN sector, known as a 'hot leptogenesis' model, allows for a boosting of the baryon asymmetry produced, allowing for both bounds to be reconciled.

Following on from the work of Bernal and Fong on hot leptogenesis from thermal dark matter, we give a comprehensive treatment of hot leptogenesis more generally; exploring the evolution of both sectors, the parameter space of the models, as well as possible UV origins for the initially thermally disconnected SM bath and the hot RHN sector.

Would you be interested in presenting a poster? (this will not impact the decision on your talk)

yes

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