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Variations on Leptogenesis

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We study variations of the standard leptogenesis scenario that can arise if an additional mass scale related to the breaking of some new symmetry (as for example a flavor or the B-L symmetry) is present below the mass M_{N_1} of the lightest right-handed Majorana neutrino. Our scheme is inspired by U(1) models of flavor \'a la Froggatt-Nielsen, and involves new vectorlike heavy fields F. We show that depending on the specific hierarchy between M_{N_1} and the mass scale of the fields F, qualitatively different realizations of leptogenesis can emerge. We compute the CP asymmetries in N_1 decays in all the relevant cases, and we conclude that in most situations leptogenesis could be viable at scales much lower than in the standard scenario.

 Author:
 Dr ARISTIZABAL, Diego (LNF (INFN))

 Presenter:
 Dr ARISTIZABAL, Diego (LNF (INFN))

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