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Impact of Neutrinoless Double Beta Decay on Models of Baryogenesis

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Interactions that manifest themselves as lepton number violating processes at low energies in combination with sphaleron transitions typically erase any pre-existing baryon asymmetry of the Universe. We demonstrate in a model independent approach that the observation of neutrinoless double beta decay would impose a stringent constraint on mechanisms of high-scale baryogenesis, including leptogenesis scenarios. In combination with the observation of lepton flavor violating processes, we can further strengthen this argument, closing the loophole of asymmetries being stored in different lepton flavors. We further discuss the potential of the LHC to model independently exclude high-scale leptogenesis scenarios when observing lepton number violating processes.

additional information

Based on http://arxiv.org/abs/1503.04825 and http://arxiv.org/abs/1312.4447.

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