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P3.095 Falsifying baryogenesis mechanisms with lepton number and flavour violation

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Interactions that manifest themselves as lepton number violating processes at low energies in combination with sphaleron transitions typically erase any preexisting baryon asymmetry of the Universe. In this article, we discuss the constraints obtained from an observation of neutrinoless double beta decay in this context. If a new physics mechanism of neutrinoless double beta decay other than the standard light neutrino exchange is observed, typical scenarios of high-scale baryogenesis will be excluded unless the baryon asymmetry is stabilized via some new mechanism. We also sketch how this conclusion can be extended beyond the first lepton generation by incorporating lepton flavor violating processes.