Tests of Low-Scale Leptogenesis in Charged Lepton Flavour Violation Experiments

We consider low-energy tests of low-scale leptogenesis based on the type I seesaw scenario with three right-handed singlet neutrinos ν_{lR} . In this scenario, successful leptogenesis is possible for quasi-degenerate in mass heavy Majorana neutrinos $N_{1,2,3}$, $M_{1,2,3} \cong M, |M_j - M_i| \ll M, i \neq j = 1, 2, 3,$ heavy Majorana neutrino masses $M \sim (0.05 - 7 \times 10^4)$ GeV, and N_j charged current and neutral current weak interaction couplings as large as $\mathcal{O}(10^{-2})$. We derive the constraints on the corresponding leptogenesis parameter space from the existing data from low-energy experiments, including the limits from the experiments on $\mu \rightarrow e\gamma$ decay and on the rate of $\mu - e$ conversion in gold. We show also that the planned and upcoming experiments on charged lepton flavour violation with μ^{\pm} , MEG II on the $\mu \rightarrow e\gamma$ decay, Mu3e on $\mu \to eee$ decay, Mu2e and COMET on $\mu-e$ conversion in a luminium and PRISM/PRIME on $\mu - e$ conversion in titanium, can probe significant region of the viable leptogenesis parameter space, and thus have a potential for a discovery.

Participation

I plan to attend in person

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Session Classification: Heavy Neutral Leptons and possible connections with active neutrino physics