

Neutron-antineutron oscillations as a probe of baryogenesis

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An observation of Neutron-antineutron ($n - \bar{n}$) oscillations, would directly imply physics beyond the Standard Model violating baryon number by two units $|\Delta B| = 2$ and hence might provide a close link to the mechanism behind the observed baryon asymmetry of the Universe. In this talk, I will discuss the consequences of such a discovery in the near future, e.g. at the Deep Underground Neutrino Experiment or the European Spallation Source, for baryogenesis mechanisms. I will discuss both an effective field theory approach and a more concrete simplified model approach with a source of CP violation and different hierarchies between the scales of new physics. I will also highlight the complementarity of $n - \bar{n}$ -oscillation searches with other experimental constraints from dinucleon decay, LHC, and meson oscillations and discuss how an observation of $n - \bar{n}$ -oscillation can rule out many potential baryogenesis scenarios and favour only a select few providing an exciting possibility to understand our matter dominated Universe at laboratory.

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