

Probing baryogenesis using synergy between $n - \bar{n}$ oscillation and collider searches

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Neutron-antineutron ($n - \bar{n}$) oscillation violates baryon number by two units and an observable rate of such a process would strongly advocate physics beyond the Standard Model (BSM). Many prospective future experiments such as ESS and DUNE are planning to search for $n - \bar{n}$ oscillation improving on the current limits. In this talk, we will discuss the impact of the observation of $n - \bar{n}$ oscillation on the washout of baryon number in the early universe. Interestingly, an observation of the relevant new physics mediators at the LHC or future collider searches together with an observation of $n - \bar{n}$ oscillation (or di-nucleon decay) can render many direct baryogenesis mechanisms at high and TeV scale ineffective. In particular, we will focus on a class of UV realisations employing effective trilinear baryon number violating couplings and show that a synergy between the upcoming $n - \bar{n}$ oscillation experiments and direct searches at the colliders will probe many scenarios of baryogenesis.

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