

Triplet seesaw model: from inflation to asymmetric dark matter and leptogenesis

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Abstract content

The nature of dark matter (DM) particles and the mechanism that provides their measured relic abundance are currently unknown. Likewise, the nature of the inflaton is unknown as well. In this talk we investigate the triplet seesaw model in an unified picture. At high energy scale, we consider Higgs inflation driven by an admixture of standard model and triplet Higgs fields, both coupled non-minimally to gravity. At intermediate and low energies we investigate vector like fermion doublet DM candidates with a charge asymmetry in the dark sector, which is generated by the same mechanism that provides the baryon asymmetry, namely baryogenesis-via-leptogenesis induced by decays of scalar triplets. At the same time the model gives rise to neutrino masses in the ballpark of oscillation experiments via type II seesaw. We then apply Bayesian statistics to infer the model parameters giving rise to the observed baryon asymmetric and dark matter density and consistent with the inflationary and direct detection constraints.

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