Contribution ID: **446** Type: **Poster**

Cosmic inflation and $(g-2)_\mu$ in minimal gauged $L_\mu - L_\tau$ model

Monday 12 December 2022 14:00 (1 hour)

Minimal $U(1)_{L_\mu - L_\tau}$ extended Standard Model (SM) is well motivated and incorporates the discrepancy between the theoretical prediction and experimental observation of muon anomalous magnetic moment. We study the possibility of identifying the Beyond Standard Model (BSM) Higgs of $U(1)_{L_\mu - L_\tau}$ sector (otherwise required to break the additional symmetry) as the inflaton in the early universe. Within this framework, the BSM Higgs inflaton needs to be non-minimally coupled to gravity to satisfy the Planck-2018 CMB constraints. Although the structure so far seems to be trivial, we observe that studying the cosmological history from inflaton through the reheating phase to late-time, along with the $n_s - r$ constraints, leaves us with a small window of possible reheating temperature, which is also a function of $L_\mu - L_\tau$ model parameters. The combined requirements of satisfying the Planck 2018 bounds and solving $(g-2)_\mu$ restricts the mixing between the inflaton and the SM Higgs. This in turn makes our scenario falsifiable at upcoming lifetime frontier experiments like FASER, depending on the choice of inflaton-gravity non-minimal coupling.

Session

Astroparticle Physics and Cosmology

Author: Mr PAUL, Arnab (IACS, Kolkata)

Co-authors: Dr SAHA, Abhijit (IACS, Kolkata); Prof. ROY, Sourov (IACS, Kolkata)

Presenter: Mr PAUL, Arnab (IACS, Kolkata)

Session Classification: Poster - 1