Contribution ID: **143** Type: **Poster**

Constraints on Dark Matter-Neutrino Interaction from 21-cm Cosmology

We have done a thorough investigation of the possible effects of interaction between dark matter (DM) and neutrinos during both the reionization and post-reionization epoch. We have constrained the interaction strength using 21 cm Cosmology and found possible deviations from standard, non-interacting ΛCDM scenario. Comparing the results with the existing constraints from present cosmological observations reveals that 21 cm observations are more competent to constrain the interaction strength by a few orders of magnitude. We have also searched for prospects of detecting any such interaction during the reionization epoch using the upcoming 21 cm mission SKA1-Low by doing a forecast analysis and error estimation. In the post-reionization era, we have conducted both Fisher matrix forecast analysis and Markov Chain Monte-Carlo (MCMC) simulations to investigate the constraints on the upcoming 21 cm missions SKA1 and SKA2, as well as galaxy surveys like Euclid. Furthermore, to improve the constraints, we have performed a joint analysis by combining future CMB missions with Large Scale Structure (LSS) experiments. Our analysis reveals that both SKA2 and the combination of CMB-S4, Euclid, and SKA1 IM2 will impose tighter constraints on the interaction parameters.

Email

antaraaddey@gmail.com

Affiliation

Indian Statistical Institute, Kolkata

Author: DEY, Antara

Presenter: DEY, Antara

Session Classification: Cosmology

Track Classification: Cosmology