Indian Statistical Institute (ISI),
Kolkata - 700108

Physics & Applied Mathematics Unit
(PAMU)

NEUTRINOS IN COSMOLOGY

SEMINAR

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Neutrinos are massless in the standard model, but neutrino oscillation experiments have confirmed that at least two out of the three active neutrino species have mass. Cosmological data can be an important probe for neutrino properties, like mass, energy density, and non-standard interactions. In this talk, I shall first discuss the bounds on the neutrino mass sum and the mass hierarchy from cosmological data, and how cosmological data cannot differentiate between the normal and inverted hierarchy well. Next, using Bayesian evidence and KL Divergence calculations, we shall see that there is no conclusive evidence for normal neutrino mass hierarchy from the combined power of the latest neutrino oscillations, neutrinoless double beta decay, and cosmological data, when we consider mass hierarchy agnostic priors. Finally, we shall look at constraints from cosmological data, on the possible neutrino non-standard self-interactions mediated by a heavy scalar, its role as a potential solution to the Hubble tension, and how this self-interaction model can help reconcile two inflationary models: Natural Inflation and Coleman-Weinberg Inflation, with cosmological data, even though these inflationary models are ruled out at more than 2-sigma in the Lambda-CDM model.

FRIDAY

April **26** 2024

03:00 PM

PAMU Seminar Room

Everyone is invited to attend

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