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N2 Leptogenesis in presence of a Pseudo Dark Matter

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Abstract: We study the N2 Leptogenesis in the presence of an extra complex singlet scalar field under $U(1)$ symmetry extension. The VEV of the new scalar spontaneously breaks the $U(1)$ symmetry. A remnant CP-like Z_2 symmetry stabilizes the imaginary part of the complex scalar field as a Pseudo-Goldstone DM. The additional scalar which couples to RHN opens up new decay channels which can lead to a larger CP-violation in generating the lepton asymmetry.

Presenter: NARENDRA, Nimmala (IACS, Kolkata)

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