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Study on the neutrino masses and mixings, baryogenesis and effects of keV-scale sterile neutrino as dark matter

Tuesday 13 December 2022 14:00 (1 hour)

We develop an $A_4 \times Z_4 \times Z_2$ symmetry model of neutrino masses and mixings within the Minimal Extended Seesaw mechanism where three right-handed neutrinos N_1 , N_2 and N_3 and a keV-scale singlet sterile neutrino S are added to the Standard Model. This model breaks $\mu - \tau$ symmetry of neutrino mass matrix and successfully explains leptonic mixing with non-zero θ_{13} . We study the phenomenological results of the keV-scale sterile neutrino as a dark matter candidate by calculating the relic abundance of the sterile neutrino and its decay rate. The effects on effective neutrino mass in neutrinoless double beta decay as well as baryogenesis via resonant leptogenesis is also studied and significant results are observed within the experimental bounds.

Session

Neutrino Physics

Primary author: SINGH, Soram Robertson (Manipur University)

Co-authors: Mr SINGH, Mayengbam Kishan (Manipur University); Prof. SINGH, N. Nimai (Manipur University)

Presenter: SINGH, Soram Robertson (Manipur University)

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