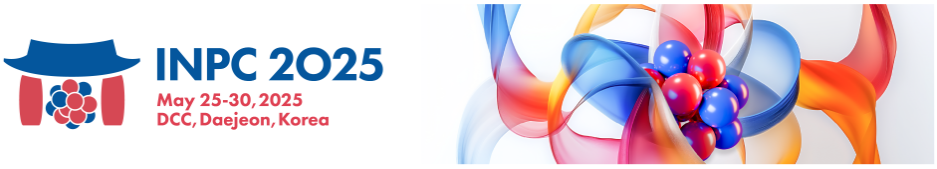

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Influence of the Majoron on Primordial Nucleosynthesis

Thursday, 29 May 2025 11:50 (15 minutes)

The Majoron is a hypothetical Goldstone boson arising from the spontaneous breaking of lepton number symmetry. Due to its presumed long-lived nature, the Majoron has the potential to influence Big Bang Nucleosynthesis (BBN). Our study investigates how non-thermal energetic neutrinos, produced through Majoron decays, can drive various neutrino-induced nuclear reactions. Notably, these reactions may generate additional neutrons via inverse beta decay. This mechanism could enhance key processes such as 7Be(n,p)7Li and 7Li(□,□)4He, potentially addressing the long-standing discrepancy between the observed and theoretically predicted 7Li abundance. Furthermore, we explore how BBN constraints can impose limits on the parameter space of the Majoron.

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