

Possibility of the sterile neutrino search with NINJA

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Although the standard 3-flavor framework has been firmly established and the phenomenon of neutrino oscillations is very well understood within this framework, there are anomalies in the experimental data which cannot be accommodated in this scenario. One of the explanations for these anomalies is the extension of the 3-flavor paradigm with an additional sterile neutrino.

Although it is theoretically very well motivated to extend SM with a such new SU(2) singlet, its existence is yet to be established experimentally.

NINJA experiment is designed to measure neutrino-nucleus cross-sections using nuclear emulsion films and a high-intensity neutrino beam from J-PARC. This short-baseline experiment allows to explore different physics cases apart from the neutrino-nucleus cross-section measurement. One of them is the search for the sterile neutrino at the eV scale. In this poster, I will explore sensitivity of the NINJA experiment in order to put constraints on sterile neutrino parameters in the future runs. In this context, I will show the effect of different flux options probed at the different target materials.

Poster prize

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