

Tau Neutrino Studies at ICAL Detector in INO

Friday, 5 August 2022 16:54 (22 minutes)

We present our results of tau neutrino events analysis at the Iron Calorimeter (ICAL) detector in India-based Neutrino Observatory (INO). We calculate the tau neutrino interaction with the detector via charged current(CC) interaction over background neutral current (NC) events of neutrinos of all flavors. We find that the presence of tau neutrinos with 10 years exposure at ICAL can be detected with nearly 4 sigma confidence. We show that the tau neutrino events are sensitive to the neutrino oscillation parameters θ_{23} and Δm^2 . By performing combined analysis of tau neutrino events and muon neutrino events, we show the significant improvement in oscillation parameter θ_{23} and its octant measurement and moderate improvement in Δm^2 measurement.

Attendance type

Virtual presentation

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Session Classification: WG1: Neutrino Oscillations

Track Classification: WG1: Neutrino Oscillation Physics