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Searching for Sterile Neutrinos at J-PARC with JSNS²

Thursday 10 August 2017 17:00 (15 minutes)

The J-PARC Sterile Neutrino Search at the J-PARC Spallation Neutron Source (JSNS²) will search for neutrino oscillations with $\Delta m^2 \sim 1 \text{ eV}^2$ at the J-PARC Material and Life Science Experimental Facility (MLF). The experiment will perform a search for $\bar{\nu}_\mu \rightarrow \bar{\nu}_e$ oscillations over a 24 m baseline using muon decay at rest neutrinos originating from 3 GeV proton interactions with a mercury target. Using two tanks of Gd-doped liquid scintillator with a total fiducial mass of 50 tons, JSNS² will exploit the unique signature of inverse beta decay (prompt positron signal, delayed gammas from neutron capture) to look for $\bar{\nu}_e$ appearance. Additionally, JSNS² will do novel cross section measurements using 236 MeV muon neutrinos from kaon decay at rest (KDAR).

Primary author: JORDAN, Johnathon (University of Michigan)

Presenter: JORDAN, Johnathon (University of Michigan)

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