

Solar neutrino sensitivity with THEIA

Thursday 14 June 2018 10:00 (30 minutes)

A first measurement of neutrinos from the CNO fusion cycle in the Sun would allow a resolution to the current solar metallicity problem. Detection of these low-energy neutrinos requires a low-threshold detector, while discrimination from radioactive backgrounds in the region of interest is significantly enhanced via directional sensitivity. This combination can be achieved in a water-based liquid scintillator target, which offers enhanced energy resolution beyond a standard water Cherenkov detector. We present the sensitivity of such a detector to CNO neutrinos under various detector and background scenarios, and draw conclusions about the requirements for such a detector to successfully measure the CNO neutrino flux. A detector designed to measure CNO neutrinos could also achieve a few-percent measurement of pep neutrinos.

Primary author: Prof. OREBI GANN, Gabriel (UC Berkeley / LBNL)

Presenter: Prof. OREBI GANN, Gabriel (UC Berkeley / LBNL)

Session Classification: SAGE, THEIA and Intertwinements in the determinations of PP and CNO neutrinos