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Type: **Poster**

Long-baseline neutrino oscillation sensitivity with Theia

Theia is a proposed large-scale water-based liquid scintillator (WbLS) detector that could potentially be placed at the Sanford Underground Research Facility (SURF). A series of new developments in liquid scintillator have provided Theia a good ability to discriminate between Cherenkov and scintillation signals. Two proposals with different total masses of 25 (Theia25) and 100 (Theia100) kton have been studied in various physics aspects, including neutrino CP violating phase measurement, observations of supernova neutrinos and searches for nucleon decay and neutrinoless double beta decay. Theia25 would fit in the 4th excavated cavern for the DUNE experiment. With a new water-Cherenkov reconstruction technique named FiTQun which has been applied to Super-Kamiokande, Theia25 can reach a comparable neutrino CP violating phase measurement precision as a DUNE 17 kton LAr module with the same LBNF neutrino beamline at Fermilab. In this poster, the Theia CP sensitivity evaluation will be detailed.

Mini-abstract

Theia CP sensitivity with new water detector reconstruction tool

Experiment/Collaboration

Theia

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