

The broad physics program of Theia

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Theia is a proposed large-scale neutrino detector designed to discriminate between Cherenkov and scintillation signals in order to enable a rich program of fundamental physics. The baseline design consists of a tank filled with a novel scintillator, such as water-based liquid scintillator (WbLS), along with fast, spectrally-sensitive photon detection, in order to leverage both the direction resolution of the Cherenkov signal and the remarkable energy resolution and low detection threshold of a scintillator detector. This poster will present the breadth of the Theia physics program, from low-energy neutrino physics, such as solar, geo, supernova burst, and diffuse supernova background neutrinos, as well as measurements of δ_{CP} and the neutrino mass ordering using high-energy neutrinos from the LBNF neutrino beam. Moreover, Theia can be adapted to search for neutrinoless double-beta decay, with a sensitivity reaching the normal ordering regime of neutrino mass phase space.

Poster prize

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