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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, spectrallysensitive 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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