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Theia Physics Potential

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New developments in liquid scintillator and photon detection technologies make it possible to discriminate between Cherenkov and scintillation signals in large scale detectors. The Theia design leverages these advances to combine the particle direction and identification properties of Cherenkov light with the higher light yield and energy resolution of scintillator to create a broad physics program which spans from hundreds of keV to many GeV. The scientific program would include low and high-energy solar neutrinos, neutrino mass ordering, measurement of neutrino CP-violating phase, observation of diffuse supernova neutrinos and neutrinos from a supernova burst, the search for various modes of nucleon decay, and a search for neutrinoless double beta decay. This talk will present the latest advances in detector research and development, and provide an overview of the physics it enables.

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