## THEIA: A hybrid optical detector for neutrino physics and astrophysics

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Traditional optical neutrino detectors have fallen into two general categories: Cherenkov detectors that utilize the prompt, directional light from superluminal charged particles, and scintillator detectors that use the isotropic light from excitation of aromatic molecules via ionization. Both types have advantages and disadvantages as regards to tracking, energy resolution, and particle identification. The development of very fast photosensors, chromatic filters, and water-based liquid scintillator has led to the possibility of making large hybrid detectors where both Cherenkov and scintillation light are detected separately. This talk explores the scientific potential of THEIA, a hybrid detector being developed by an international consortium to investigate current questions in neutrino physics, astrophysics, and nucleon decay. Versions of the THEIA concept have been proposed both for the DUNE long-baseline experiment at SURF and as a stand-alone detector for deep underground facilities.

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