ID contributo: **596** Tipo: **Poster**

Technology and reconstruction development for Theia

venerdì 21 giugno 2024 17:30 (2 ore)

Theia is a proposed large-scale neutrino detector that would use both scintillation and Cherenkov light to achieve the lower-energy threshold and finer energy resolution of scintillator detectors, coupled with the direction resolution and particle identification capabilities of water Cherenkov detectors. Such a "hybrid" detector could achieve an extremely broad physics program, including measurements of low energy solar neutrinos, geoneutrinos, supernova neutrinos, and neutrinoless double beta decay. Additionally, Theia would be able to measure δ_{CP} and the neutrino mass hierarchy if placed within the LBNF neutrino beam. An international community is pursuing the cutting edge technologies to realize this hybrid detector, including novel liquid scintillators that can be modified to adjust the scintillation yield and profile, fast photon detectors, and concentrators for chromatic photon sorting. Enhanced techniques for reconstructing particle energy, position, and direction, and characterizing events in hybrid detectors are also being developed and demonstrated, leveraging both AI/ML and traditional techniques. Several technology demonstrators are currently operating or under construction, which will demonstrate the performance of this technology, and its applicability to a rich program of physics. This poster will describe the program of R&D currently underway to demonstrate these advanced technologies and techniques.

Poster prize

Yes

Given name

Tanner

Surname

Kaptanoglu

First affiliation

UC Berkeley

Second affiliation

Lawrence Berkeley National Lab

Institutional email

tannerbk@berkeley.edu

Gender

Male

Collaboration (if any)

Theia

Autore principale: KAPTANOGLU, Tanner (UC Berkeley)

Relatore: KAPTANOGLU, Tanner (UC Berkeley)

Classifica Sessioni: Poster session and reception 2

Classificazione della track: New technologies for neutrino physics