



Contribution ID: 317

Type: **Presentation**

Studies with the LArIAT Light Collection System

Monday, 31 July 2017 14:00 (15 minutes)

The detection of scintillation from particles in liquid argon time projection chambers (LArTPCs) serves a crucial role in triggering and interaction timing for liquid argon neutrino experiments, with potential to enhance calorimetry and particle identification efficiency as well. The LArIAT experiment provides an opportunity to explore new ideas for light collection in LArTPCs in a controlled test beam environment. Two cryogenic photomultiplier tubes (PMTs) and several varieties of silicon photomultipliers (SiPMs) mounted to custom preamplifier boards are suspended behind the LArIAT TPC's wireplanes. Reflective foils coated in tetraphenyl butadiene (TPB) line the field cage walls to down-shift scintillation vacuum-ultraviolet (VUV) photons into detectable visible light. In the most recent run, this configuration was changed to having a transparent cathode with TPB coated reflector foils mounted behind to more closely mimic proposed upcoming neutrino experiments. Additionally, a new light detection device (the ARAPUCA) was deployed for R&D studies. Analyses are underway which use this light to identify and study Michel electrons, improve particle identification, and enhance calorimetry of beam particles by combining light with total charge collected on the wireplanes.

Primary author: Ms NUNES, Monica (UNICAMP)

Presenter: Ms NUNES, Monica (UNICAMP)

Session Classification: Particle Detectors

Track Classification: Particle Detectors