Contribution ID: **20** Type: **not specified**

Tagging neutrino events with the SBND's Photon Detection System

Liquid Argon Time Projection Chambers (LArTPCs) have become one of the main detection technologies in the field of neutrino physics. In addition to the ionization electrons produced by charged particles, used to reconstruct near photographic images of neutrino interactions, LAr is also a very prolific scintillator. New experiments like the Short Baseline Near Detector (SBND) are focusing on harnessing the potential of the light signals. Its pioneering Photon Detection System (PDS) is a hybrid concept combining photomultiplier tubes and X-ARAPUCAs devices. Furthermore, covering the cathode plane with highly reflective panels coated with a wavelength shifting compound enables recovering part of the light emitted towards the cathode, where no optical detectors exist. Among the advanced capabilities of the SBND PDS, we will focus on its excellent time resolution and its ability to independently reconstruct the location of the events. This will enable SBND to accurately tag neutrino events with a predicted resolution $\mathcal{O}$(2 ns) and ultimately retrieve the pulse structure of the Booster Neutrino Beam (BNB).

Session Classification: CMS