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## The Photon Detection System of SBND experiment

The SBND (Short Baseline Neutrino Detector) is the near detector of the short baseline neutrino program (SBN) at Fermilab. The SBN consists of three detectors (SBND, MIcroBooNE and Icarus) using liquid argon time projection chambers (LAr-TPC) technology. SBND, is located at 110m from neutrino beam and will record millions of neutrinos charged-current and neutral-current interactions in argon. Beyond searches for sterile neutrinos, the experiment will be able to provide precision studies of neutrino-nucleus interactions in the GeV energy range. One of the goals of the experiment is to develop new technologies which can be used in large scale LAr-TPC. In particular, the scintillation light detection is an area in which SBND is studying a variety of different solutions. The Photon Detection System is a hybrid system, the scintillation light will be readout by an array of standard 8"photomultipliers and also by an array of X-ARAPUCA modules. The X-ARAPUCA is a new generation of light collection device for large LAr-TPC. The PDS will collect not only the direct VUV LAr light, but also the visible one, shifted by the layer of Tetra-Phenyl Butadiene (TPB –emission wavelength around 430nm) deposited on reflective foils installed on the cathode of the TPC. This will allow to test a new version of X-ARAPUCA which is sensitive to visible light, and SBND is the only experiment which will operate this version of X-ARAPUCA.

## **Primary experiment**

Short Baseline Neutrino Detector

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