

Abstract Submitted
for the APR16 Meeting of
The American Physical Society

Argon-39 Background in DUNE Photon Detectors GLEB SINEV, Duke Univ, DUNE COLLABORATION — The Deep Underground Neutrino Experiment (DUNE) is a 40-kt liquid argon detector that will be constructed 5000 ft underground in the Sanford Underground Research Facility in order to study neutrino and proton decay physics. Instrumenting liquid argon with photon detectors to record scintillation in addition to the ionization signal can significantly improve time and energy resolution of the experiment. Argon produces light with wavelength of 128 nm. The reference design for the photon detectors includes acrylic bars covered in wavelength shifter, where the scintillation light can be captured and reemitted with longer wavelengths, then detected using silicon photomultipliers. Radiological backgrounds may noticeably deteriorate the photon detection system performance, especially for low-energy interactions. A particularly important background comes from argon-39 decays, because argon-39 is present in natural argon that will be used in DUNE and the background rate increases with the size of the experiment. The effect of the argon-39 background has been studied and is presented in this talk.

Gleb Sinev
Duke Univ

Date submitted: 08 Jan 2016

Electronic form version 1.4