

Scintillation light simulation in the context of DUNE dual phase liquid argon TPC

In a LArTPC, the scintillation light is an important signal as it will provide the t_0 for track reconstruction, may improve the calorimetric performances and can be used as a inner trigger for non-beam rare events. However, the optical properties of liquid argon for scintillation light wavelength are poorly known. A detailed light simulation allows us to study the impact of these parameters (e.g. absorption and scattering length) on the amount of light collected and drove the protoDUNE-DP photon collector positioning.

The amount of photons produced by a charged particle crossing the active volume is large whereas their probability to be collected by the light detector is low. In order to avoid tracking down all photons for each track, a light map has been generated and parametrized for protoDUNE-DP. As for the DUNE module trigger optimization studies, this method is still too heavy, and new technics are being developed.

Authorship annotation

on behalf of the DUNE collaboration

Session and Location

Wednesday Session, Poster Wall #65 (Auditorium Gallery Right)

Poster included in proceedings:

yes

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Track Classification: Poster (not participating in poster prize competition)