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LAr Scintillation Light Detection, Simulation and Analysis in LArIAT

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LArIAT is a Liquid Argon Time Projection Chamber (LArTPC) installed in a charged particle beam at the Fermilab Test Beam Facility. This experiment, currently in its third run of data taking, is exploring the response of LAr at particle energies relevant for neutrino experiments. It also serves as a platform to prepare and benchmark the simulation, analysis and reconstruction software, used in LAr neutrino experiments. One of LArIAT's R&D goals is to develop readout methods for scintillation light in LArTPCs. The scintillation light detection system consists of Photomultipliers and Silicon Photomultipliers combined with wavelength-shifter covered reflector foils to enhance the detection efficiency and increase uniformity. This poster will present the methods of using scintillation light in LArTPCs to evaluate detector performance, PID and calorimetry and their results in LArIAT.

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