

Gain calibration using dark hits in off-time region of regular data at JSNS2 experiment (at WG6)

Tuesday, August 2, 2022 5:15 PM (10 minutes)

The JSNS2 experiment aims to search for the existence of sterile neutrino oscillations with Δm^2 near 1eV^2 at J-PARC MLF. A 1MW beam of 3 GeV protons incident on a spallation neutron target produces an intense neutrino beam from muon decay at rest. The experiment will search for muon antineutrino to electron antineutrino oscillations which can be detected by the inverse beta decay interaction followed by gammas from neutron capture on Gd. PMT in the detector is an essential device to find a signal in JSNS2 experiment. Currently, there are 120 PMTs in JSNS2 detector. But, since the performance of PMTs is not uniform, it is necessary to get the consistency of each PMTs. For that, we have calculated the PMT gains to have a calibration using a laser. However, the method can not monitor the gain in real-time. Thus, instead of that, the gain was monitored by using regular data in real-time. But, it is not sensitive to monitor due to multiple PE of the regular data. So, we developed an algorithm for the gain calibration method using dark hits in an off-time region of regular data.

Attendance type

In-person presentation

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