



Contribution ID: 25

Type: **Poster contribution**

## **R&D of the J-PARC muon spin polarization monitor (hardware development)**

*Saturday, 15 April 2023 17:30 (2h 30m)*

In this project's hardware phase, we have designed and developed a detector to measure the polarization of atmospheric muons. The detector consists of scintillator bars read out by silicon photomultipliers (SiPMs) to detect muons as well as their decay electrons and positrons. The SiPM signals are processed and stored using a high-performance CAEN DT5702 front-end digitizer board. Through data analysis, we can reconstruct the trajectory of muons as they traverse the scintillator bars. We fit the spectra of energy deposition to a Landau distribution and performed the ADC-to-MeV energy calibration by comparing the most probable value (MPV) with the one extracted from a Geant4 simulation. This calibration process facilitates the application of our selection algorithm to actual experimental data for subsequent polarization measurements.

**Primary authors:** LV, Meng; YU, Fangyuan

**Co-authors:** XINTONG, Cai; 陈, 思元 (15961622211); KHAW, Kim Siang (TDLI/SJTU)

**Presenter:** LV, Meng

**Session Classification:** Poster session and buffet dinner

**Track Classification:** Precision measurements