

Development of Low Temperature Analog Readout (LTARS 2018) for LAr-TPC

Monday, 25 May 2020 15:12 (18 minutes)

We currently developed a new front-end electronics for a liquid argon time projection chamber (LAr-TPC) detector, which has been developed for neutrino oscillation and nuclear decay search experiments.

We developed the electronics (LTARS 2018) to have a wide dynamic range for input charge up to 1600 fC and a function to output a signal with an appropriate time constant for signals having various peaking times. These unique properties may make the LTARS 2018 multi-purpose, for example, not only for LAr-TPC but also a negative-ion gas TPC for dark matter search.

In this paper we will report the design concept of the LTARS2018, and results of the evaluation test on the noise and charge signal conversion performance. In addition, the results of the test at cryogenic temperature will be described.

Funding information

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Session Classification: Readout: Front-end electronics

Track Classification: Readout: Front-end electronics