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Signal readout system for cryogenic CsI(pure) scintillation detector of tritium neutrino

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We discuss the signal readout system for cryogenic CsI(pure) scintillation detector of tritium neutrino. This detector is constructed in the frame of SATURN experiment for search of electromagnetic properties of neutrino in tritium decay. The elastic scattering of these neutrino at electrons in CsI scintillator deposits the energy below 1 keV that requires detection of extremely low signals. For this purpose, the CsI detector with SiPM light readout is placed in cryostat with liquid nitrogen temperature. The signals after photodetectors are additionally amplified for about three orders and arrange the event trigger. The wave-forms of the signals are digitized in fast analog-to-digital convertor. This work presents the current state of a detector readout system.

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