Contribution ID: **174**   Type: **Mini Oral and Poster**

Experience and performance of persistent memory for the DUNE data acquisition system

Monday 12 October 2020 16:31 (1 minute)

The DUNE detector is a long baseline neutrino experiment due to take data in 2025. The data acquisition (DAQ) system of the DUNE experiment will consist of a highly complex and distributed architecture designed to handle O(5) TB/s of incoming data from the readout system at a rate of 2 MHz.

One of the physics goals of the DUNE experiment is to detect neutrino signals from Supernova Burst events (SN). These appear as low energy signals distributed over the detector. In order to achieve this goal, the DAQ system needs to store the data in 10s transient buffers. Once the trigger decision has been taken, the data needs to be continuously persisted for a total of about 100s at a rate of 10 GB/s for each detector unit.

In this talk, we present studies on the DAQ system for the supernovae burst events. After an initial characterization of the performance of both Intel Optane SSDs and Persistent Memory devices, we present the results of an initial prototype capable of handling a data rate of approximately 10 GB/s for 100s.

Minioral

Yes

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No

Are you a student?

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Session Classification: Poster session A-01

Track Classification: Data Acquisition System Architectures