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FPGA network cards developments for the supernovae trigger of the DUNE dual-phase 10 kton detector module

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The DUNE 10 kton dual-phase module is foreseen acquiring data in continuous streaming via 10 Gbit/s links from 240 uTCA crates hosting 2400 front-end AMC digitizers of 64 readout channels each. The transmitted data flow is compressed in the AMCs with a lossless algorithm. Triggers are defined online by the back-end DAQ system, which continuously analyses the data stream from the uTCA crates to define trigger primitives, which are then considered globally at the level of the detector in order to define physics triggers implying permanent storage of the corresponding data. The most challenging task is to trigger on supernova neutrino bursts. This task implies continuously analyzing and storing the data on a sliding window of at least 10 seconds looking for low energy depositions of the single neutrino interactions. This talk will focus on the R&D on a back-end architecture based on FPGA network cards, connected to the front-end units, capable of performing data decompression and the search for trigger primitives on real time.

Minioral

No

IEEE Member

No

Are you a student?

Yes

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