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Data Acquisition System for the COMPASS++/AMBER Experiment

Tuesday 20 October 2020 08:00 (20 minutes)

We present a new data acquisition system for the COMPASS++/AMBER experiment designed as a further development of the Intelligent FPGA-based Data Acquisition framework. The system is designed to have a throughput of 5 GB/s. The system includes front-end cards, fully-digital trigger processor, data multiplexers, data switch, an event builder, and a PCIe interface to the PC for data storage. We designed the system to provide free-running continuous read out. The free-running continuous detector read out allows us to implement a sophisticated triggering algorithms by delaying data filtering until the event builder stage. The data selection and event assembly then require a time structure of the data streams with different granularity for different detectors. By routing data based on the time structure we can average data rates on the event builder inputs and easily achieve scalability. The scalable architecture allows us to increase the throughput of the system and achieve a true triggerless mode of operation.

Minioral

Yes

IEEE Member

No

Are you a student?

No

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