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Peak-finding for Longitudinal Beam Halo Readout System

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Mu2e is a next generation search for muon to electron conversion that will improve the current physics sensitivity by 4 orders of magnitude. The experiment will need a high-quality pulsed proton beam with extinction, or the ratio of out of time to in time protons, better than 10-10. In order to achieve this performance, the beam extinction in the Delivery ring must be better than 10-5. To monitor the longitudinal beam halo, we have developed a system based on quartz Cherenkov counters and photomultiplier tubes read out using commercial electronic based on the MicroTCA standard. We use ADC and FPGA hardware from VadaTech that will be configured to perform a peak-finding algorithm on the signals. The output data will be sent to the data acquisition system via a PCIe followed by a gigabit ethernet link. The system is being tested in the Fermilab Recycler Ring. The result of the peak-finding algorithm and the firmware design will be presented.

Minioral

Yes

IEEE Member

No

Are you a student?

No

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