Contribution ID: **575** Contribution code: **SUP066** Type: **Poster Presentation**

Extinction Monitoring of Pulsed Proton Beams Using FPGA-Based Peak Detection

Sunday 10 August 2025 15:00 (3 hours)

The Mu2e experiment at Fermilab imposes stringent requirements on the elimination of out-of-time beam in its pulsed proton beam - a requirement known as “extinction”. We present a method to measure the out-of-time particle rates to calculate the level of extinction in the inter-pulse gaps, and data measured from beam tests. The proposed method utilizes an array of quartz Cherenkov radiators and photomultiplier tubes to detect particles scattered from a vacuum chamber in the M4 transfer beamline at Fermilab.
The measurement will employ a new µTCA-based FPGA system for data acquisition and signal processing, utilizing real-time peak detection algorithms to count scattered beam particles. By integrating data over many transfers, the time profile of the out-of-time beam will be resolved to fractional levels relative to that of the in-time beam.

Please consider my poster for contributed oral presentation

No

Would you like to submit this poster in student poster session on Sunday (August 10th)

Yes

Footnotes

Funding Agency

Department of Energy grant DE-SC0009999

I have read and accept the Privacy Policy Statement

Yes

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