MWPC fADC125 Interface Update

Andrew Schick

March 5, 2016

Outline

Experimental Setup

Timing Issues

- Lookback function
- Solution Strategy
- Run with Properly Working Lookback Function

Next Steps with fADC

MWPC Studies

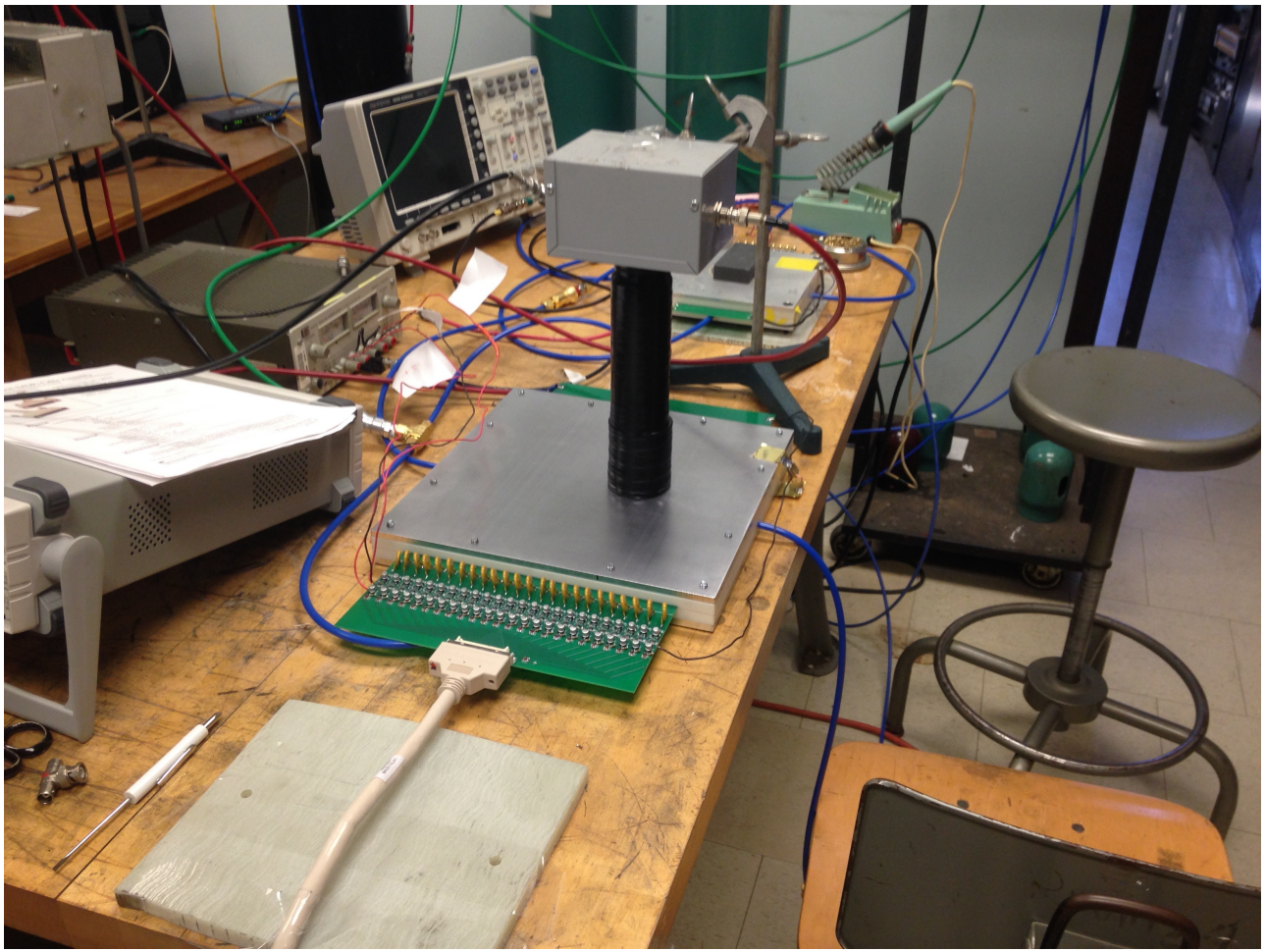


Figure 1: PMT is used to trigger the readout on the fADC

Experimental Setup

The MWPC and NaI PMT fire on cosmic ray signals. The NaI PMT is positioned above wire 7 of the MWPC. The PMT gets turned into a ECL signal which is used to trigger the fADC readout of the MWPC.

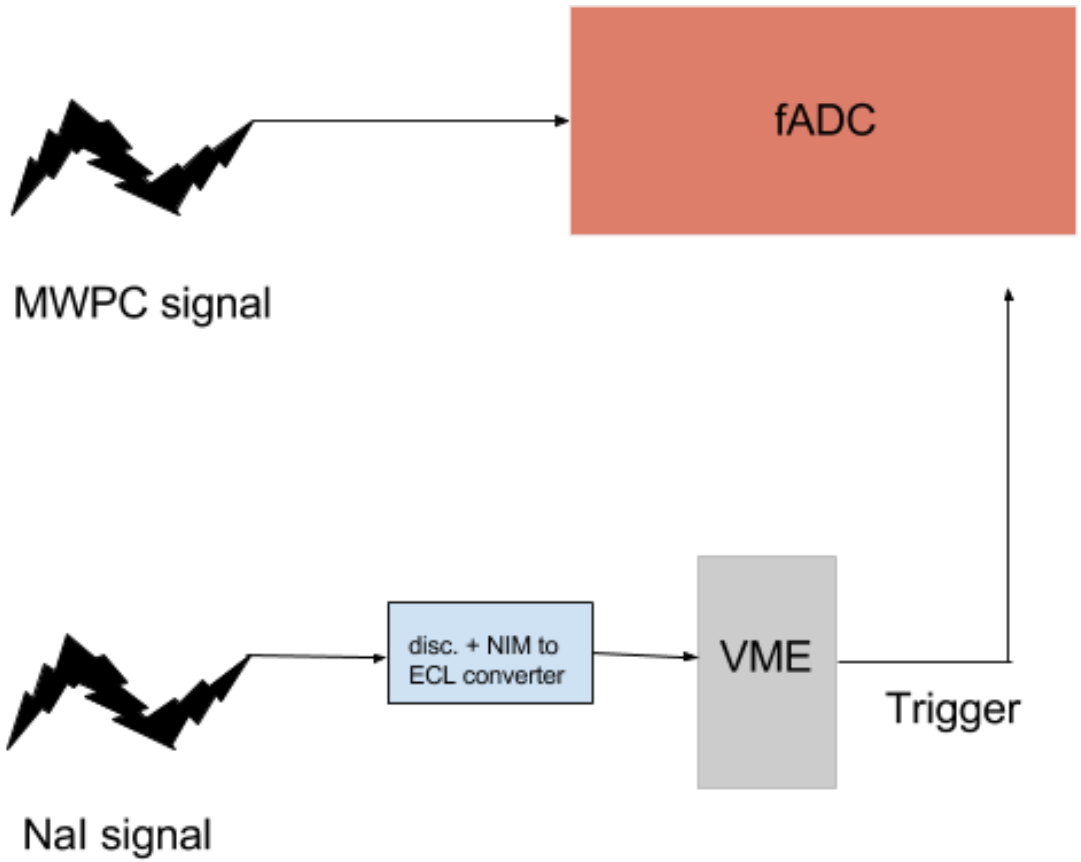
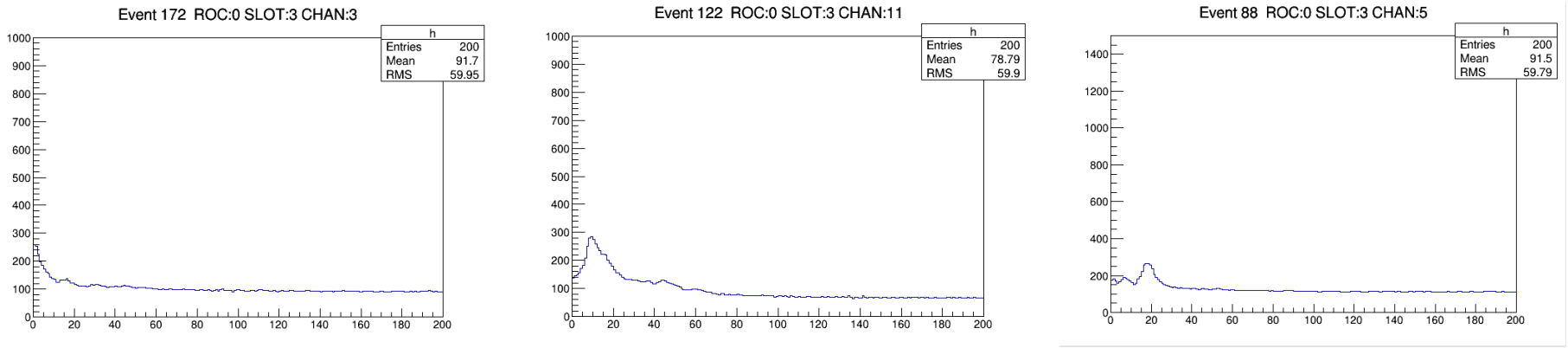

fADC
MWPC signal
disc. + NIM to
ECL converter
VME
Trigger
NaI signal

Figure 2



(a) (b) (c)

Figure 3: Pictures of Timing Issue

Timing Issues

Leading edges of cosmic rays in the MWPC were not being captured within the fADC's window.

Lookback function

The fADC has a constant pipeline of data entering it, broken down into 8 ns frames.
When it receives a trigger it consults a CONFIG file that instructs it on how much data to take.
Within the CONFIG file are two important parameters for figuring out when to start taking data and how long to do that for: lookback and window

lookback: determines how many 8 ns frames to go back in the pipeline to begin saving the data stream
window: how many frames to keep saving that data for.
The window can only have a max value of the lookback.

PROBLEM: Updating the lookback function had no effect.

Solution Strategy

Figure 4: Diagram detailing how problem was solved.

Run with Properly Working Lookback Function

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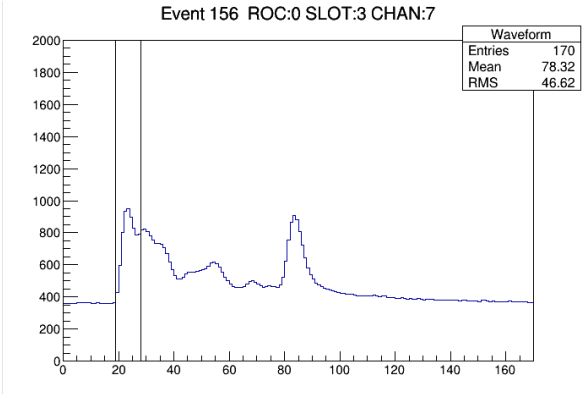
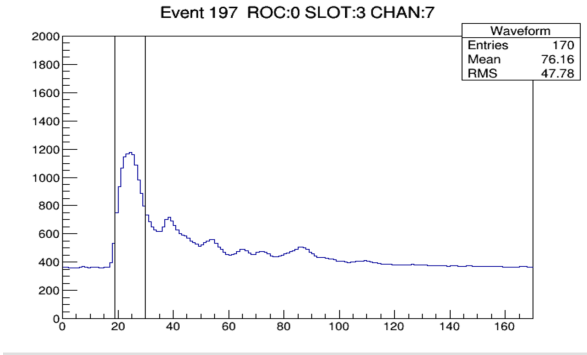
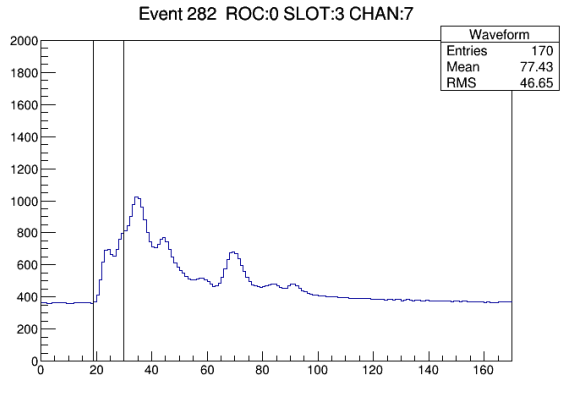
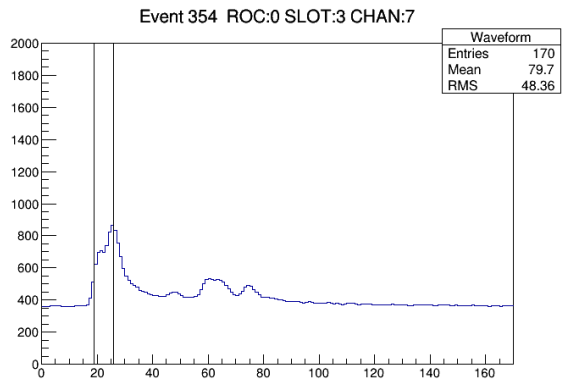
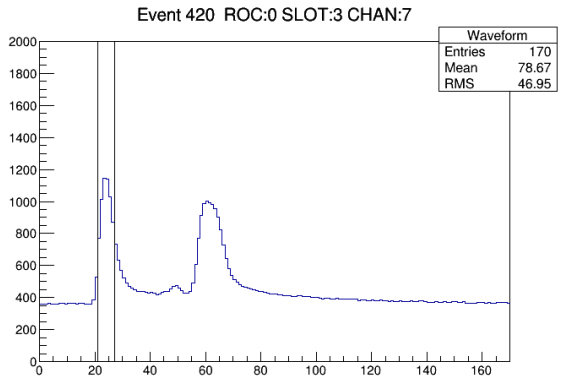
MWPC Studies

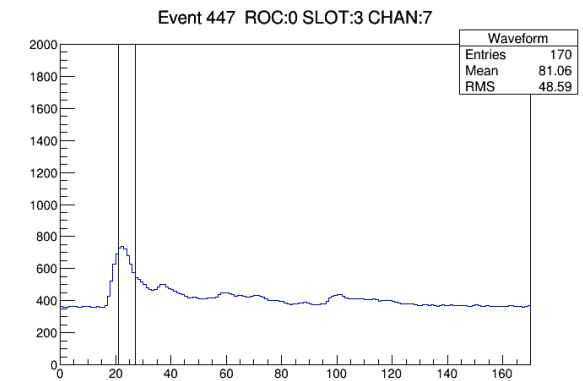












Next Steps with fADC

DRIFT TIME STUDIES