DAQ Successes

Eric, Yale

Collaboration Meeting

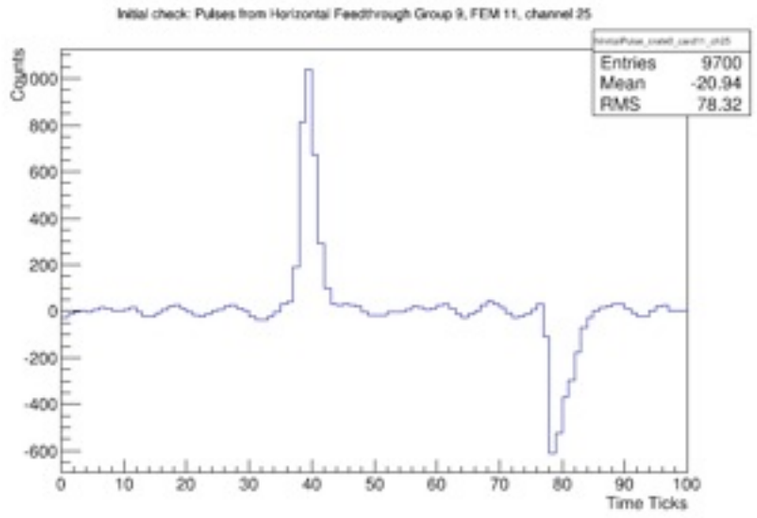
9-January-2014

- Recent Successes!
  - PMT (MRT+) readout (~12/1/2013)
  - TPC (MRT) readout (over the past 6 months)

- Meetings
  - 10:30, Thursdays WH12XO
  - 2pm, Tuesday Run Control, WH12SW.

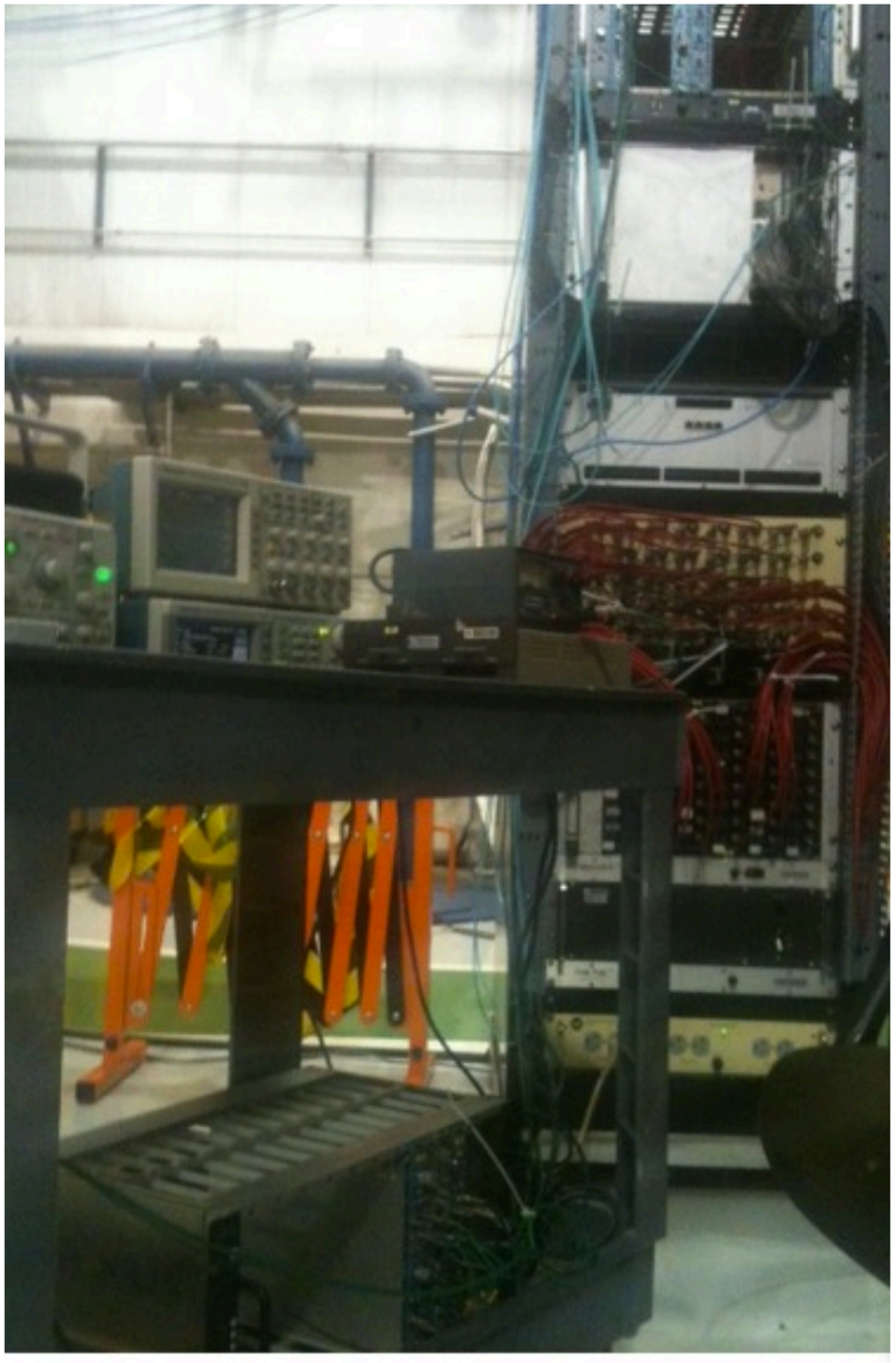
TPC rack (MRT)

TPC outside of cryostat



- see Chen's talk
- Here we run compiled Root code, not full-on LArSoft, to look at data.
- Chen (as Wes!) can run v3_01_02 of the DAQ.
  - this was handy during snowstorm: Wes and I were largely able to stay home!
- ~0 DAQ errors, ...

PMT rack (MRT+)



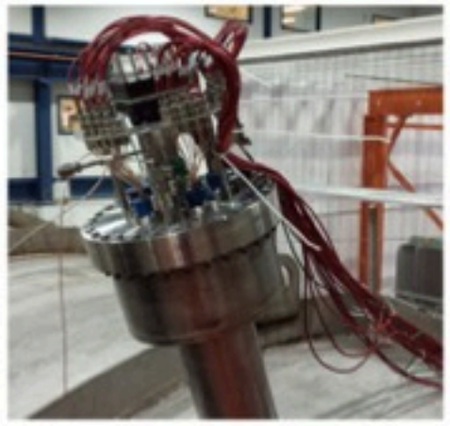
PMT Precommissioning Test

Major achievement this week for **PMTs**, **DAQ**, **Flasher**, **LArSoft**, and more

- All PMT channels operated at HV simultaneously, with slow control GUI
- Successful readout of every 8" and 2" PMT simultaneously using real DAQ
- Light delivered to all channels sequentially using fiber system
- All data swizzled into LArSoft with ~60 second turnaround per run
- Pulses reconstructed using LArSoft modules for every channel
- Automatic gain calibrations made using LArSoft analyzers within ~30 mins of data taking

Contributors:

PMT and flasher team
Nevis Readout people
DAQ + slowmoncon team
LArSofters



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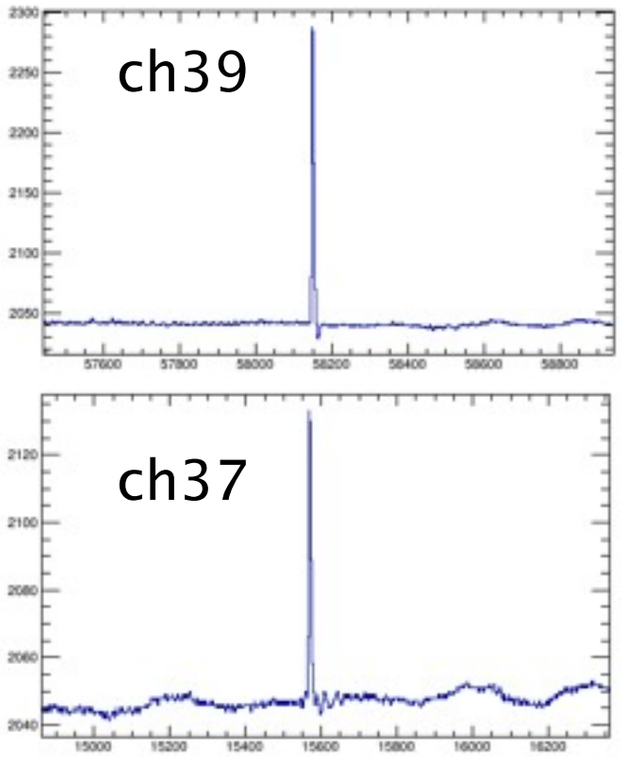
PMT (MRT+ rack)

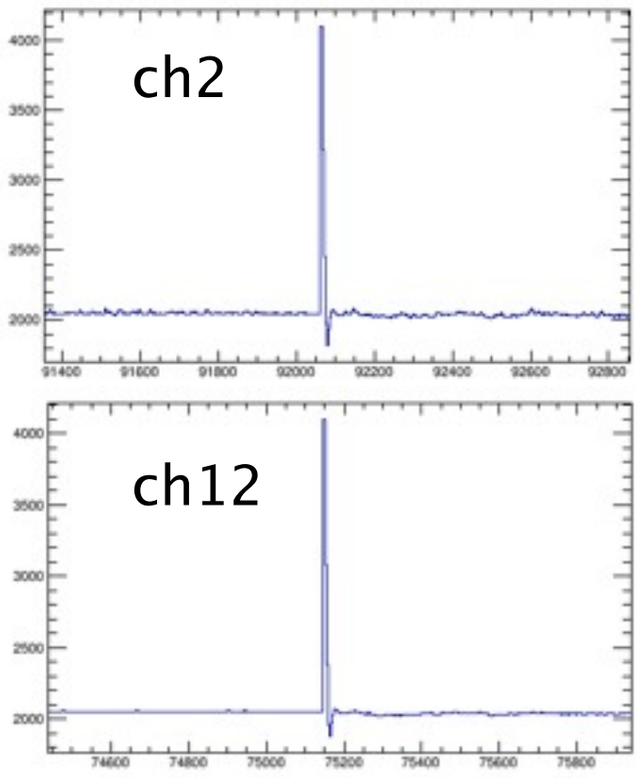
- The 1500 and 40-sample PMT readout windows showed up as dictated: once per trigger and when the (very high, for this exercise) threshold was met, respectively.

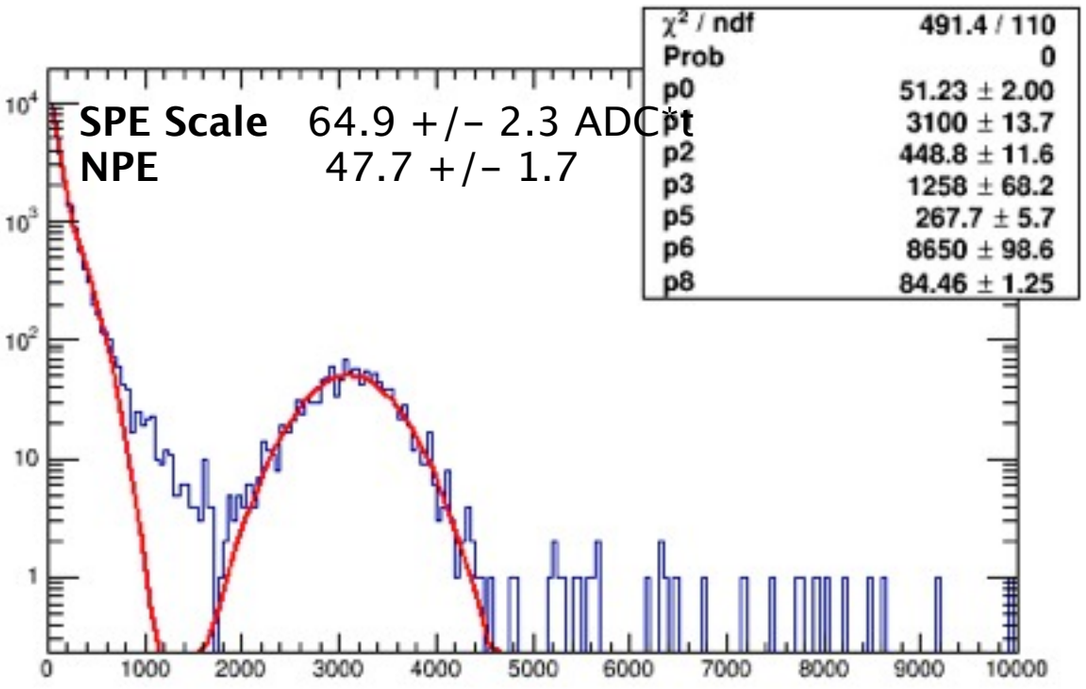
- The trigger/flasher rate was ~50 Hz

- binary, serialized data written to disk by assembler. LArSoft then swizzled it into ART Root format, pulses made, and an ED::analyze module was run on it
- PMT group ran the DAQ (at crazy hours of the night)

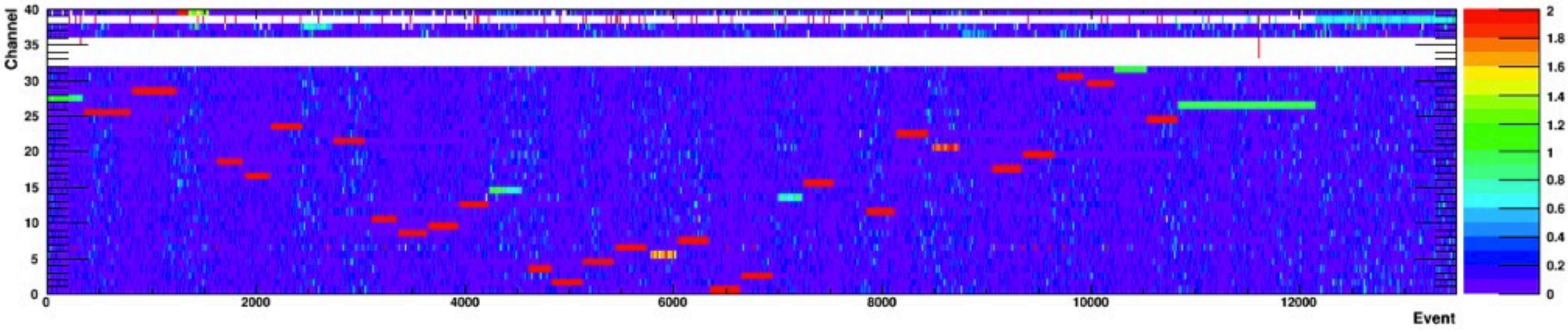
Some results







Seen on all 36 channels



2 crate data-taking

- We even hooked up MRT to MRT+ and took PMT and TPC data simultaneously, using one to trigger the other

- assembler received both streams and did the proper collation and writing to binary data file.

Still lots to do …

- DAQ readout pre-commissioning list:
  - https://cdcvs.fnal.gov/redmine/projects/uboonedaq/wiki/TasksRO
- Build out the DAQ at LArTF!