

ProtoDUNE II PDS Updates

PDS Operations

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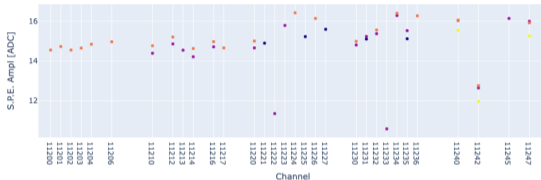
Summary

- ▶ We have been running stable with beam since July 31 with minor communication errors in the configuration path. We have identified the problem and it is mostly related with fibers.
 - ▶ This problem produced two long stops for PDS (few hours) one on Aug 23 and Aug 26.
 - ▶ 3 weeks ago the WIBs started using Cu cables for slow control communication. (They see less noise using this configuration).
 - ▶ We replaced the PDS fibers for the spare fibers from the WIBs and we do not see any other communication problem.
- ▶ Since there's no need for hardware interventions in ProtoDUNE II we are focussing in analysis, and production of signatures for trigger primitives development and integration with DAQ.
- ▶ We can say the summer campain to bring students to do analysis was very succesful. We have a strong group developing WAFFLES and producing results. Nevertheless we will need feedback particualry from the sim groups.

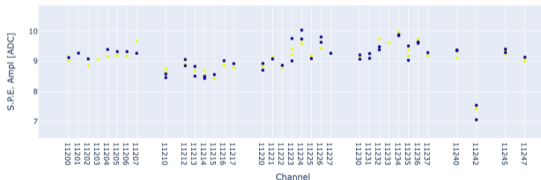
Attenuation and THR

- ▶ Federico presented an estimation for the average s.p.e. amplitude
- ▶ The current firmware does not configure the threshold independently for different channels in the same board
- ▶ The current thresholds are 45 ADC counts for the single module on DAPHNE controller 13 and 65 ADC counts for the rest of the self triggered modules.
- ▶ global gain can be controlled in DAPHNE per AFE (eight ch)
- ▶ we have been running with this new configuration since the beginning of the current beam time
- ▶ a VGain scan was made by Anslemo and analysis will be presented soon

EP 112 - Before VGain tuning

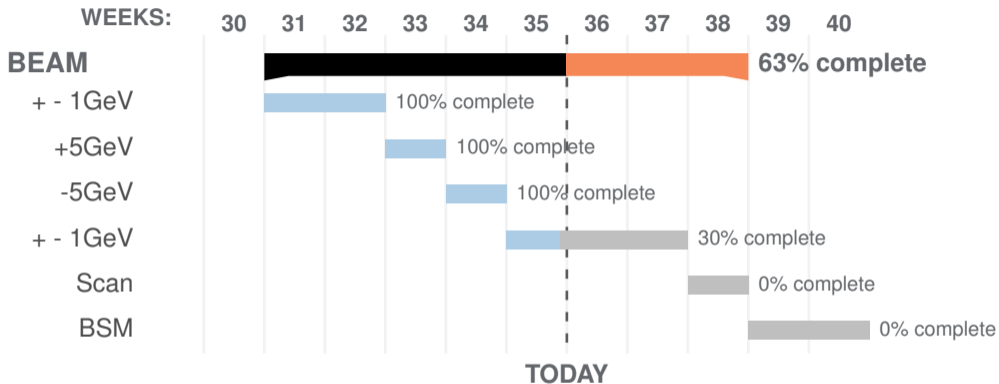


EP 112 - After VGain tuning



Federico Galizzi





We have been taking calibration runs, IV, and LED, regularly during this time approx once a week.

R&D Gateway Firmware and Software

New versions of the Firmware have been tested

Esteban has prepared new versions of the Firmware, integrating trigger primitive calculation, selftrigger, and counters. One has been tested.

The new version looks stable but we didn't deploy this new implementation since the configuration of the thresholds is not yet coded in the DAQ system.

TPs, TAs, TC, and T Activities

We will need to present a plan for the use of TPs within the DAQ system.

A signature for events from scintillation light has to be well described and hopefully supported by data and simulations.

R&D Gateware Firmware and Software

Context: A new whole system...

- ▶ DAQ will suffer a major upgrade to the OKS system
- ▶ Most of existing code for monitoring, configuration and general integration has to be rewritten
- ▶ DAPHNEs V3-HD, and V3-VD, will use a very different fabric, more powerful but also more complex in terms of development.
- ▶ We are decided to test the self trigger capabilities of the PDS system during the operation of NP02
- ▶ The current collection of self-trigger algorithms in DAPHNE have to be adapted to the new SoM

R&D WAFFLES

A few weeks ago **WAFFLES** went through a massive redesign of the code, gaining usability and maintainability. Main changes include:

Redesign of the dataclasses

A massive part of the code has been splited, pulling the methods for plotting and analysis out of the data classes

Addition of agnostic plotting tools

Now it's possible to plot few waveforms in a standalone way.

pep8 Compliance

The marroyav_reformatting branch is ready to be pulled from the main
The pull request is ready to be reviwed

hdf5 Readout

The hdf5 reader has been finally merged to target the waveformset class and it is ready to be used

The PDS repos

WAFFLES

Waveform Analysis Framework for Light
Emission Studies

<https://github.com/DUNE/waffles>

Daphne Interface

Set of tools to communicate and program
DAPHNE [https://github.com/marroyav/
daphne_interface.git](https://github.com/marroyav/daphne_interface.git)

PDS Error Page for Shifters

A collection of errors and handling tools.

[https://twiki.cern.ch/twiki/bin/
view/CENF/PDSErrors](https://twiki.cern.ch/twiki/bin/view/CENF/PDSErrors)

daphnmodules

Booting, Configuration, and integration with
DAQ [https:](https://github.com/DUNE-DAQ/daphnmodules)

[//github.com/DUNE-DAQ/daphnmodules](https://github.com/DUNE-DAQ/daphnmodules)

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M.Arroyave*

Talks for today and Monday

Talks for Thursday 29th 17h00

1. IV curves and break down voltage status
2. SPe characterization and noisy channels
3. **WAFFLES** drawing tools

Talks for Monday 2nd 16h30

4. Deconvolution and particle discrimination
5. Tau slow
6. LY vs beam energy
7. LY vs drift field
8. Trigger rate
9. Pulse neutron source

