Update on Integration of dqmtools with justintime display

Wesley Ketchum

DUNE DAQ DQM Meeting

2 May 2024

Reminder/overview
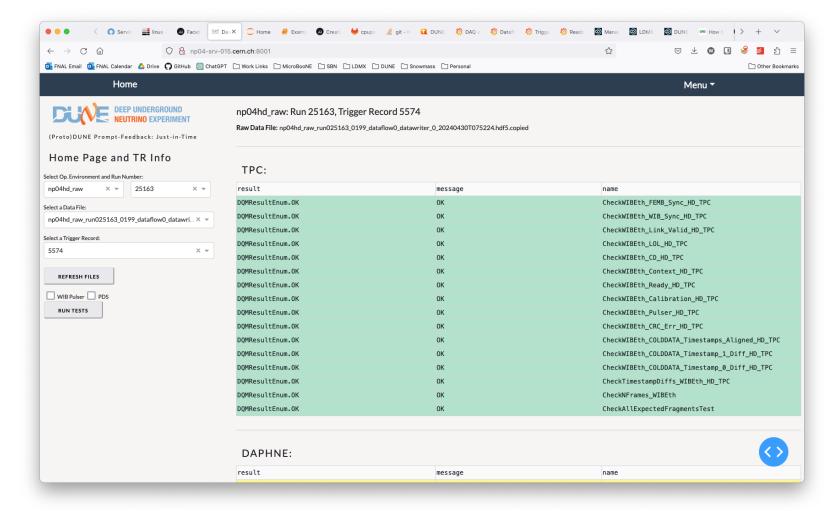
- Current setup of the code

  - [rawdatautils](#) meant to hold general (python-based) unpacking utilities that can be used more generally, using DAQ HDF5 files as input

    - including definitions of [dataclasses](#)

    - And a structure of [unpacking classes](#)

  - It's still not fully featured yet, and the rollout has been a little slow

    - Have classes for WIB and DAPHNE data, but missing most of the trigger objects, other objects

  - [dqmtools](#) has functionality for converting data from unpackers into pandas dataframes for analysis, and concepts of standardized DQMTests and plots that can use those

    - Right now, plots are just functions, no greater class structure

    - Sample analyzer script showing how to use much of these [tools](#)

  - [Presentation](#) in last meeting went over a fair bit of this
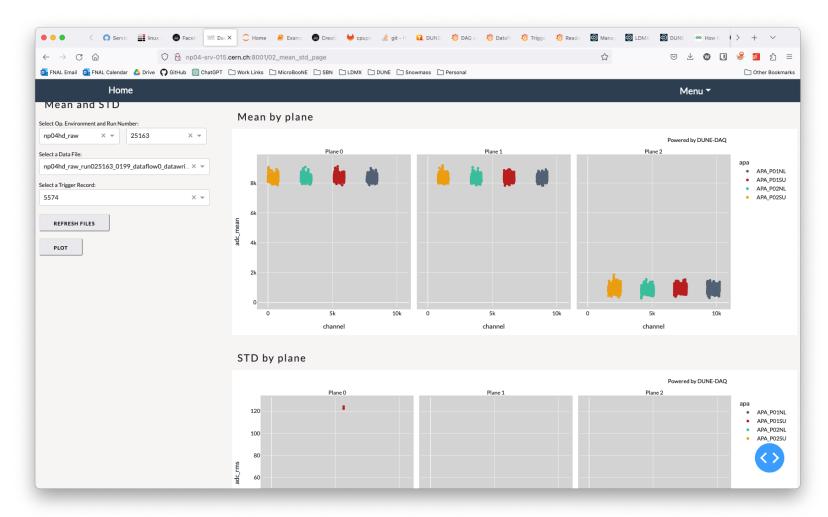
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Processing and display of data

- Currently using the DAQ's [justintime](#) toolkit for processing data from files in online systems, and having a web-based browser of the data

  - Instances for VD coldbox and NP04 have been running in tmux sessions

  - Looks through files in specified data volumes, allows you to select trigger records, and then process data per trigger record to create plots

- Recent work to update this to use the new dqmtools

  - Replace the unpacking tools and data extracted in use to the be those from rawdatautils/dqmtools

  - Simplify the interface to plots to allow for easier development of plots, and then deployment to web

  - Expand functionality to be better ready for use in NP04

    - → Handling more data!
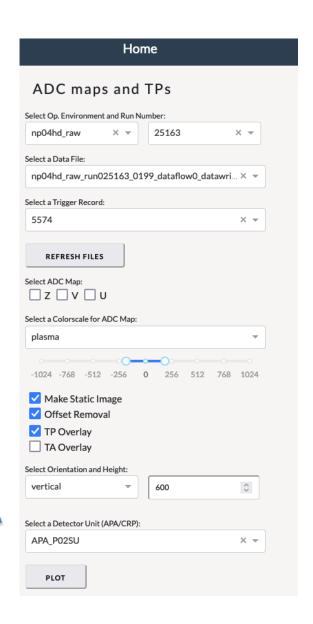
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Recent addition:
Display for DQM Test Results

Presenter Name l Presentation Title

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Recent update:
Use dqmtools plots to produce figure

Presenter Name | Presentation Title

Recent update: Adding ability to select APA in event display…

(of course, still trying to get the updated plot to work, otherwise I'd be showing you that …)

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Progress

- Vitaliy began the process of updating to the dqmtools, and got most of the plots with analyzed data completed

- Working now on more of the event/waveform display plots

  - Can generate waveforms/displays from the pandas dataframes from dataclasses

  - Doing some development of that to match best the expected inputs from justintime

    - Don't want to replace what plots overall, just the interface on how they are made

- I'm hopeful that in the next two weeks, I can ~complete this for the plots that are there

  - But some important todos…

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Other data / unpackers

- We are missing fully featured unpackers for

  - Trigger TPs, TAs, and TCs

  - CTB data

  - Timing data

  - CRT data*

    - Still waiting to see that fully integrated into datastream

- Need the trigger information to provide the same quality of plots from current justintime

  - Shouldn't be too hard to finish, just needs someone reasonably skilled in python / pandas dataframes to focus on it

- Extensions to further data analysis?

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Readiness for shifts

- Need to test an interface that we think shifters will be able to use for checklists

  - Can we auto-update displays? Or will we need to rely on clicks?

  - Can we run this on a data storage server? Or send data to another node and run it from there?

  - How does it scale with number of users? Do we need to restrict access to only a shifter / data-checker?

  - Deployment in k8s?

    - Use of specific mounted data volume an issue?

- Ideally done after we've gotten all the updates to the dataclasses in, since those have a somewhat different usage pattern than previous unpackers

  - And room for optimization there

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Additional plots / tests

- Have a number of useful plots, but not something that's full featured

- Should start to consider more completely what additional plots we may need

  – Likely will be rapidly evolving with early data

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Other things? Questions/comments?

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