Prepare for a small data production

Tingjun Yang

ProtoDUNE Sim/Reco Meeting

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Introduction

- Steve Green requested a small production of a few selected runs of ProtoDUNE data using the latest software release to help improve the Pandora reconstruction (broken tracks, t0 tagging of APA crossing tracks, TDR plots).

- George and I think it is a good idea to request this small production to incorporate all the improvements we have.

Keep-up production

- Dunetpc version v07_08_00_xx

  - All the beam data

  - Beam instrumentation information (uncalibrated)

  - 1D deconvolution with a low frequency noise filter

  - FEMB 302 timing improvements

  - Sticky code mitigation for APA3

  - Dead/noise channel list for APA3

  - Two reconstruction chains: Pandora (recommended) and PMA

  - Still used by most analyses

January small production

- Dunetpc version v08_03_00

  - Two 1 GeV runs: 5387 (hadrons) and 5809 (electrons)

  - Main purpose: test 2D deconvolutions and other improvements

  - Undershoot correction

  - Sticky code mitigation for all APAs

  - Dead/noise channel list for all APAs

  - Discovered two issues:

    - Time offsets were wrong, which led to wrong x coordinates (my fault, fixed)

    - A rare problem with deconvolving V channels (see Wenqiang's talk today)

Improvements to be incorporated in the new small production

- Calibrated beam instrumentation information (available since v08_12_00)

- Improved 2D deconvolution (will be available in this week's release v08_14_00)

- Enable cryostat side hits (done)

- Set readout window and HV from sam metadata (done)

- Add track trajectory point index to anab::Calorimetry (will be available next week)

- ADC gain calibration – in preparation

- Coherent noise removal – in preparation

- A first version of SCE?

- Time scale – send the request in a couple of weeks

New CI test for protodune-sp data reconstruction

- New continuous integration test set up by Vito Di Benedetto to test protodune-sp data reconstruction:

  - http://dbweb5.fnal.gov:8080/LarCI/app/ns:DUNE/view_builds/index

  - ci_datareco_regression_test_protoDUNEsp

- It tests reconstruction on one single data event and compares with a reference file to check for differences. It will be triggered by any commit to develop head of dunetpc/larsoft.

- It already discovered issues with photon detector reconstruction, dataprep (sticky code mitigation), BeamEvent, Gaussian hit finder.

- Christoph Alt has been closely monitoring the CI tests.

  - Expect an email from him if your commits change the reconstruction results.