

MCC12 Test Sample Validation

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Introduction

- Tingjun produced some test samples for the new MCC12 processing and data re-processing
- I've started to have a look at the reconstruction

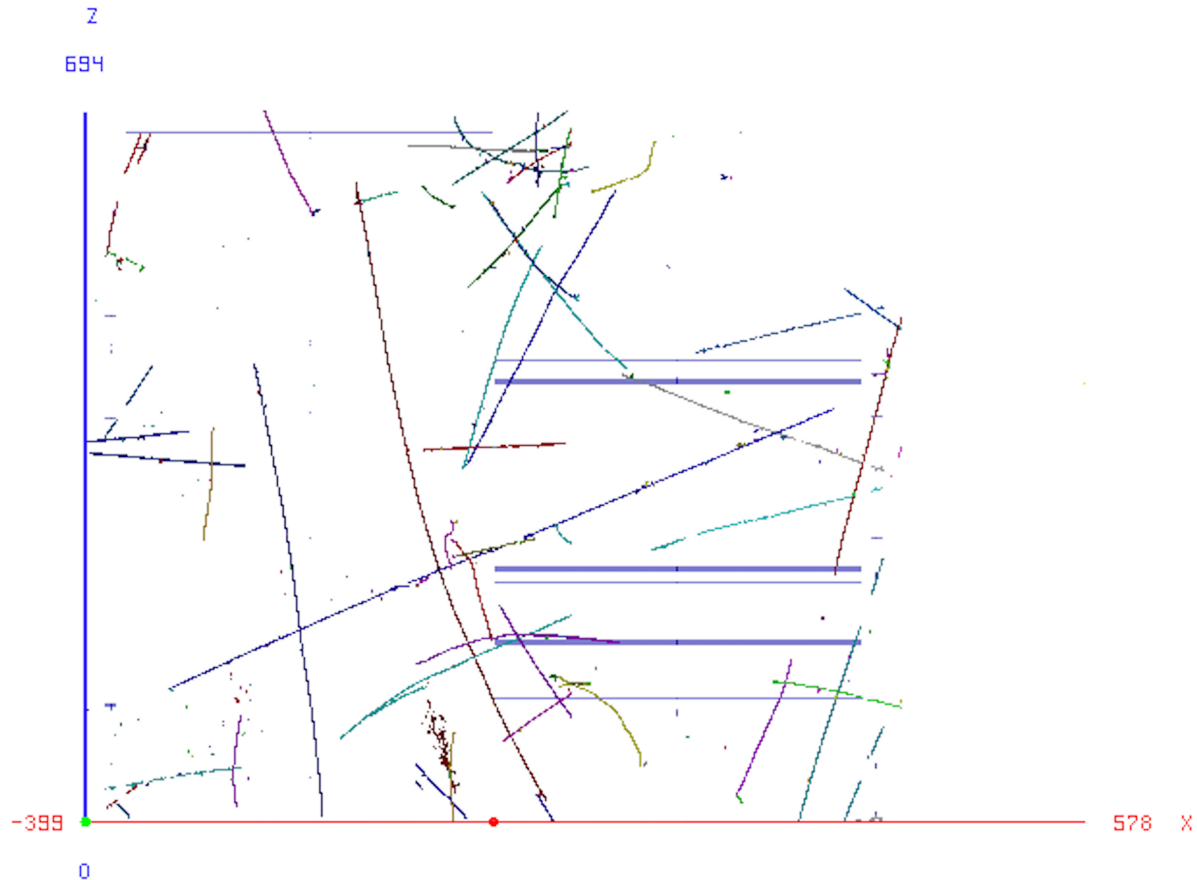
Known changes

- Update to v08_21_00 to analyze the new samples.
- We simulate cryostat signal now.
- Pandora now uses hitpdune as hit input instead of linecluster.
- There have been changes to E-field and temperature for data which affect drift velocity. We recommend using **@table::protodune_data_reco_services** in the service block of your fcl file when analyzing data. Use **@table::protodune_reco_services** for MC.
- Calibrated beam reconstruction is used. Follow https://wiki.dunescience.org/wiki/Look_at_ProtoDUNE_SP_data#Getting_Beamline_Information to get beam information.

APA stitching

- With the addition of the cryostat-side signals to the simulation we see APA stitching from Pandora

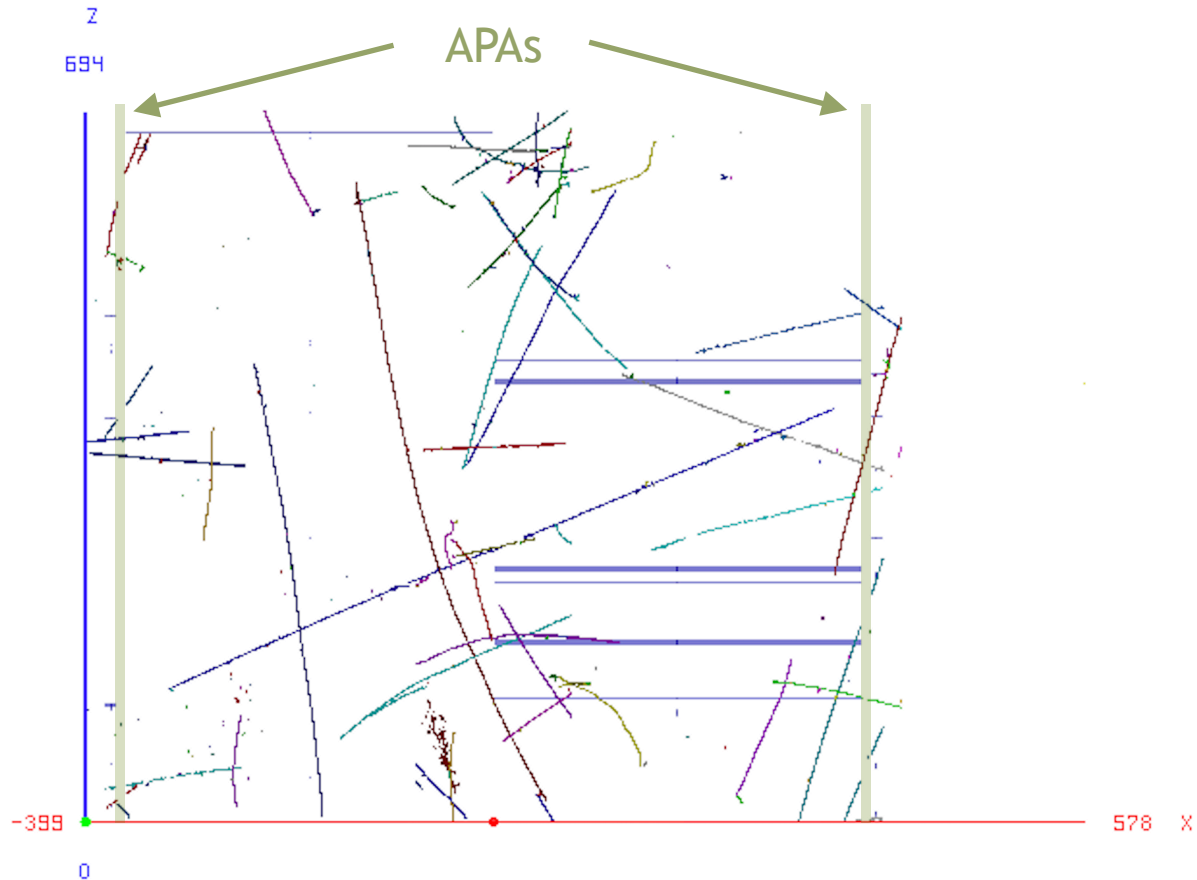
Collection view



APA stitching

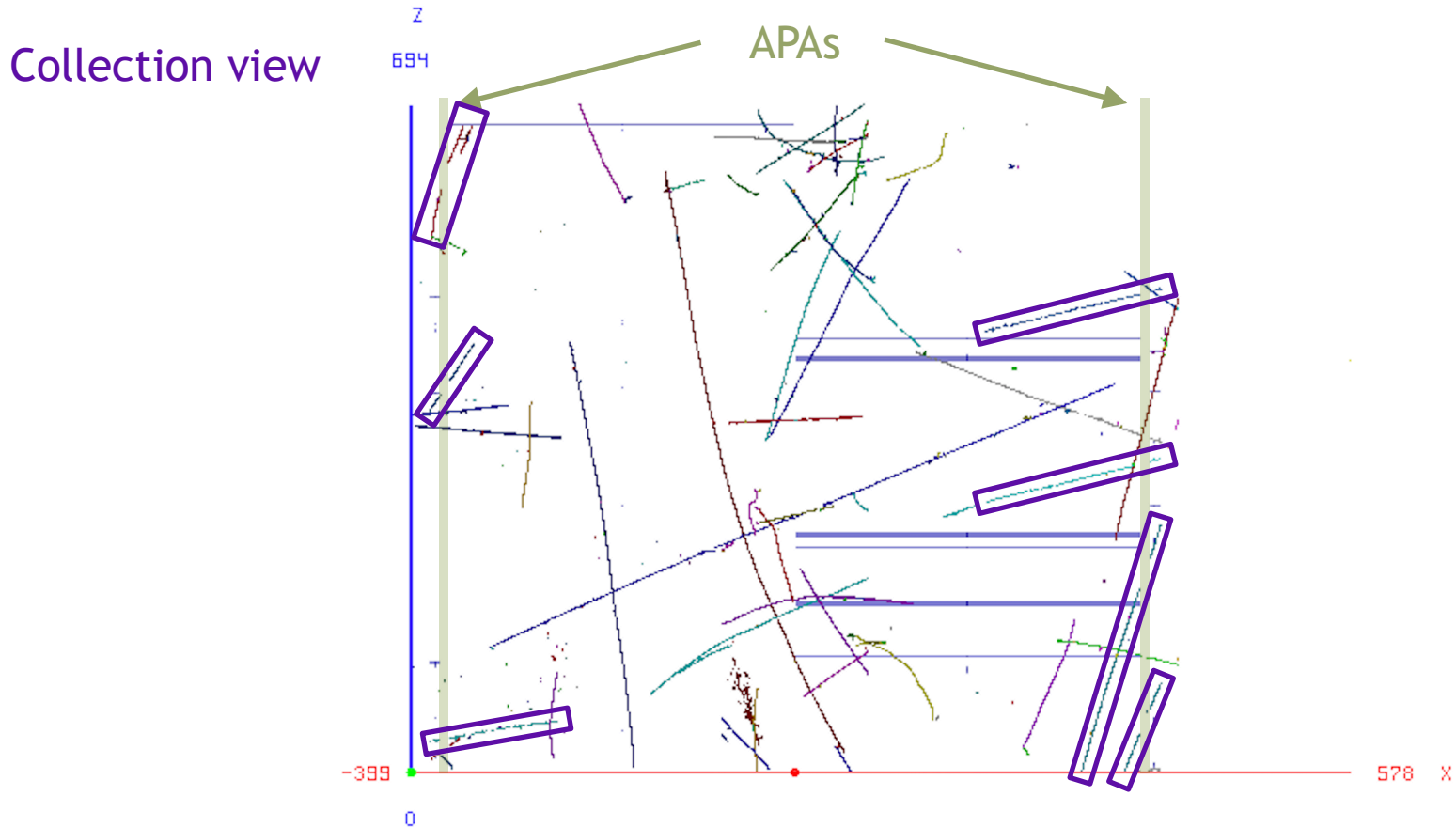
- With the addition of the cryostat-side signals to the simulation we see APA stitching from Pandora

Collection view



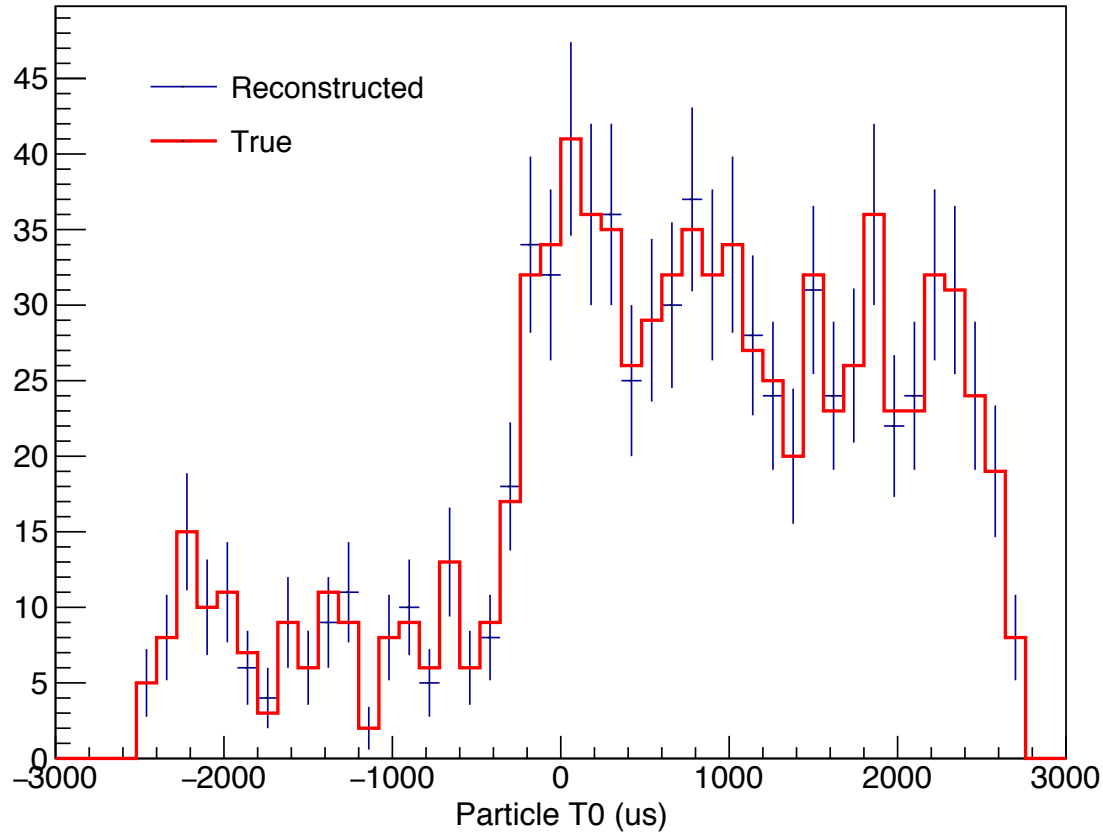
APA stitching

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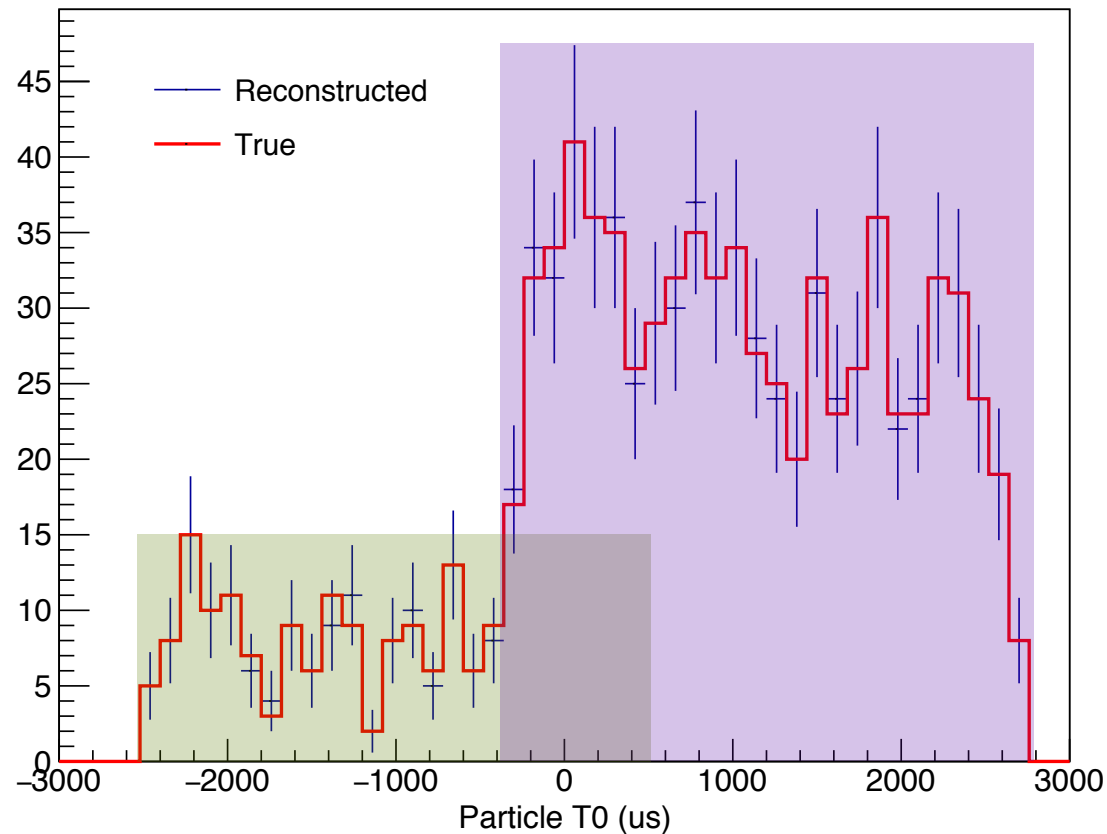
T0 distributions

- Look at all T0s from Pandora (CPA and APA stitches)



T0 distributions

- Look at all T0s from Pandora (CPA and APA stitches)
- Remember CPA stitches give us T0 in range -2500us to 500us*
- We can hence see the APA stitched population in purple
 - Gives us T0s from readout window start to end

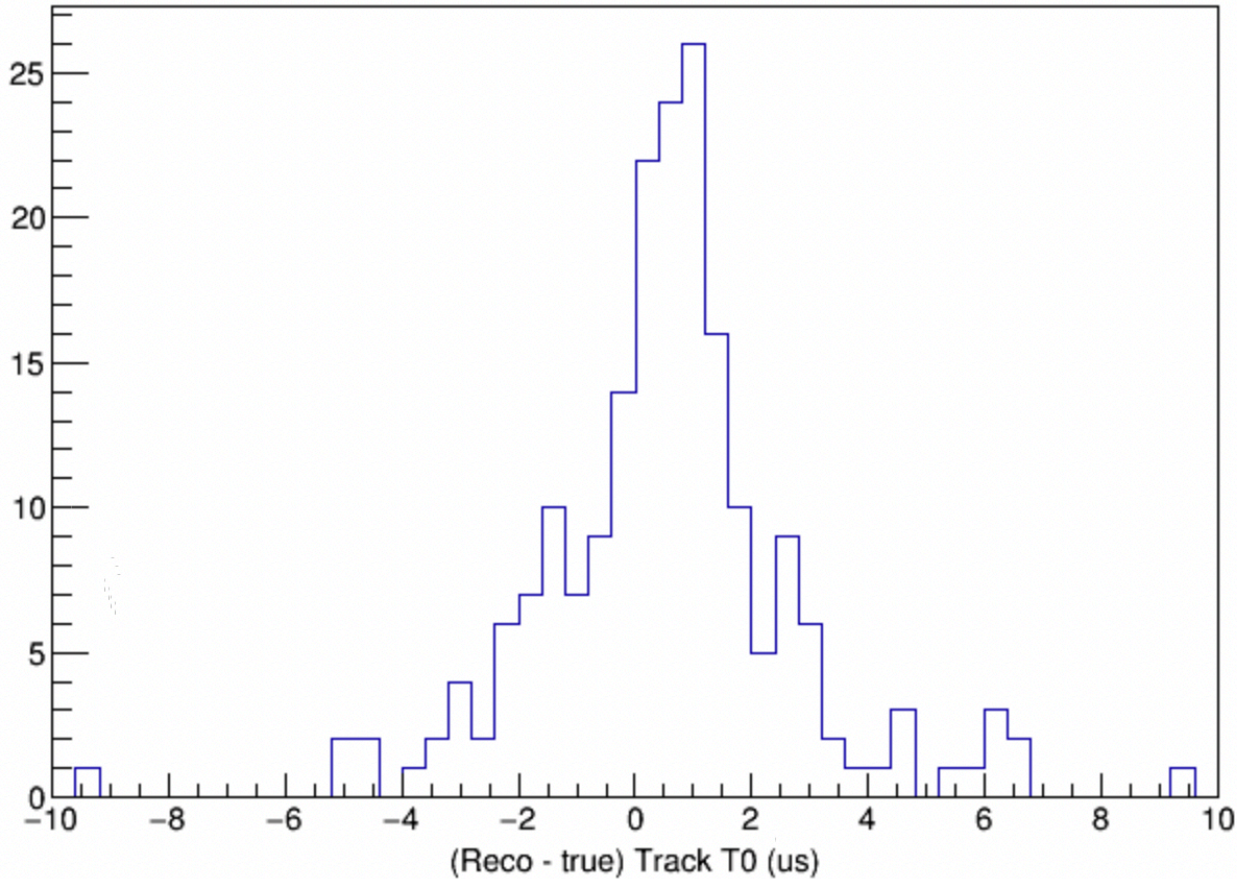


*Minimum time for CPA charge to reach anode = offset - drift time = -250us - 2250us = -2500us

Maximum time for CPA charge to reach anode = readout close - drift time = 2750us - 2250us = 500us

T0 performance

- We also need to make sure our T0s are reasonable!



Summary

- I have had a quick look at the reconstruction output
- Pandora APA stitching looks good and as expected
- We will run the full validation metrics of the beam particle efficiency shortly
- Just scanning some events by hand gives anecdotal evidence that things generally look good