

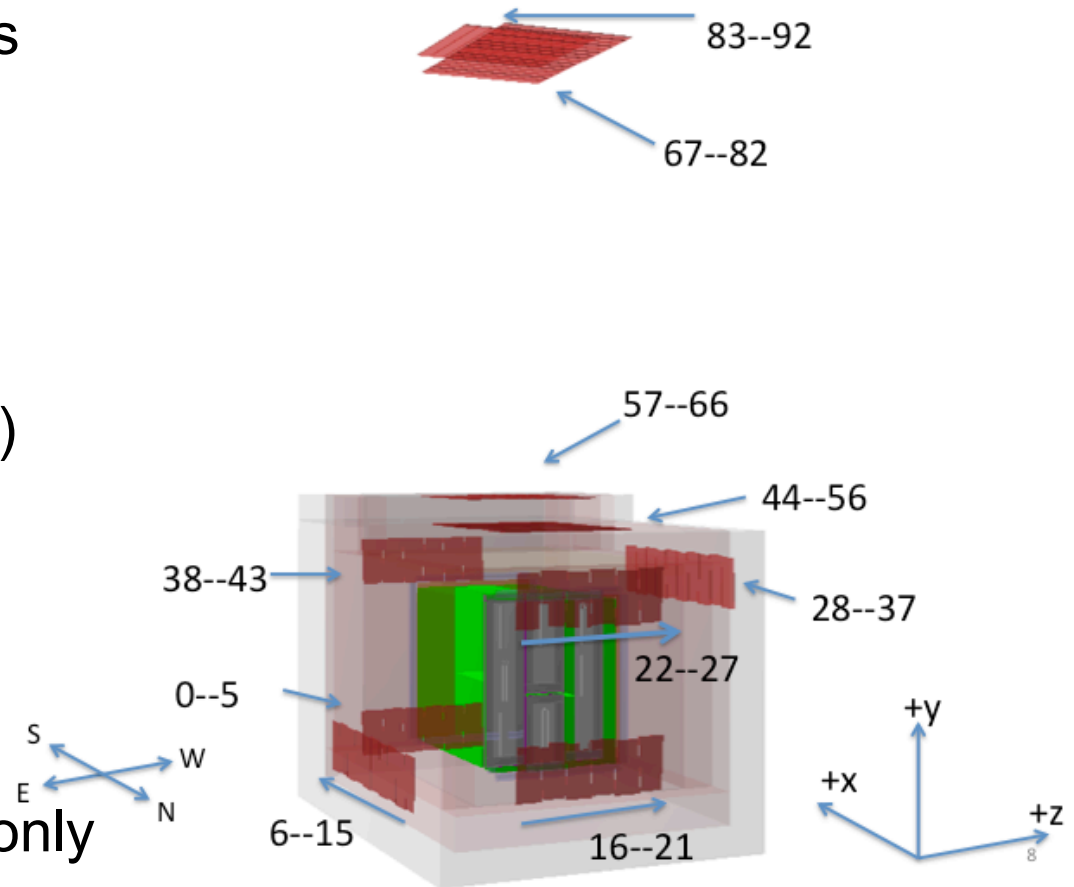
Timing Plots in Milliblock MCC3 Samples

Mark Convery (SLAC)

22 July 15

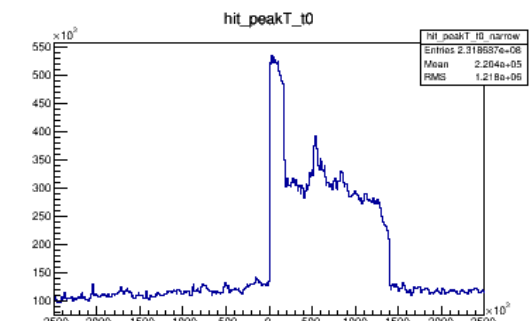
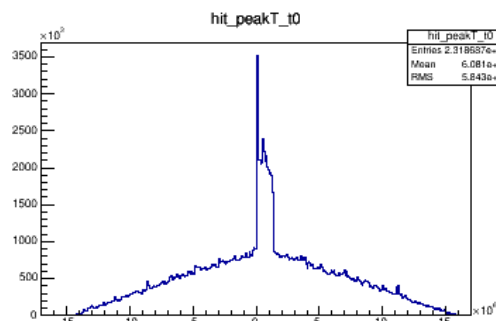
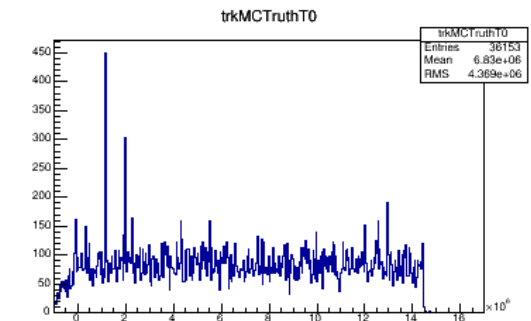
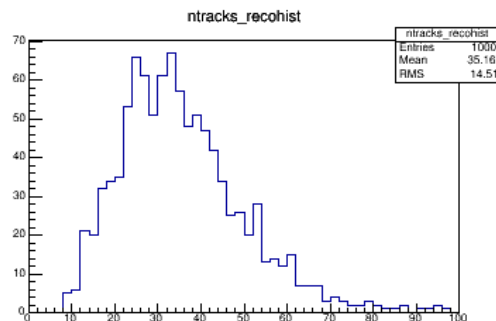
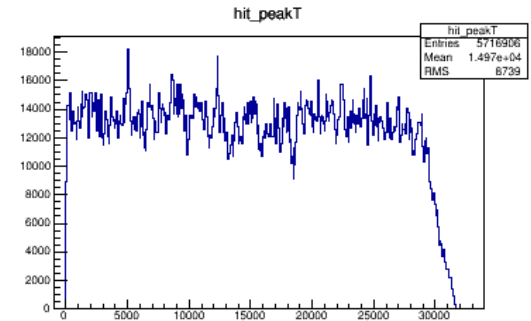
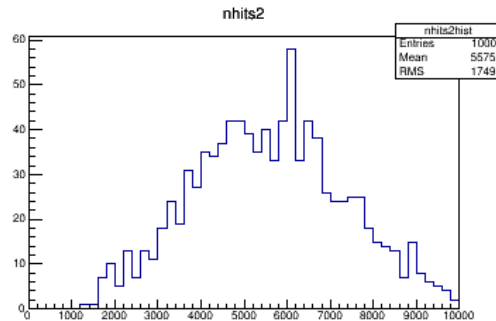
Looking at Timing Between TPC Hits/MC Truth/External Counters

- Counters now included in MC datastream (thanks Michelle and Matt Thiesse)
- MCC3 produced 1000 events milliblock CRY events (thanks Tingjun)
- Look for coincidences between counters and TPC hits
- Could be useful online monitoring plot based only on hit info



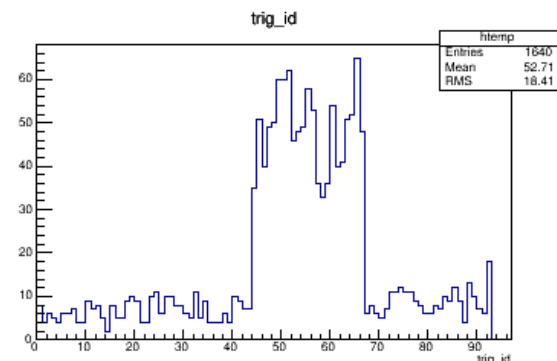
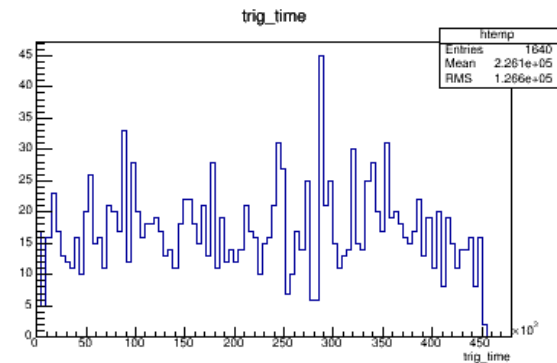
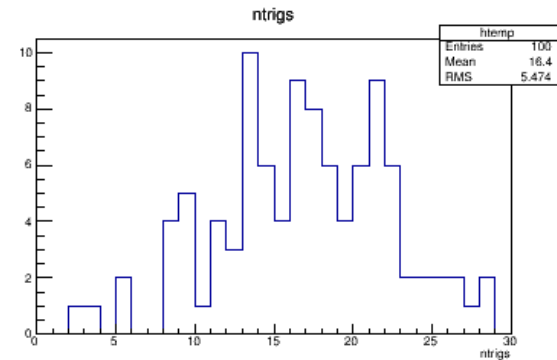
Compare TPC Hit times to trkMCTruthT0

- Warm up using trkMCTruthT0
- Easy to do using mergeana trees from MCC3
- Some problems due to duplicate tracks
- Subtract trkMCTruthT0 from hit time
 - Nice “prompt” peak
 - Short-drift volume spike
 - Long-drift volume wide



Getting Counters into anatree

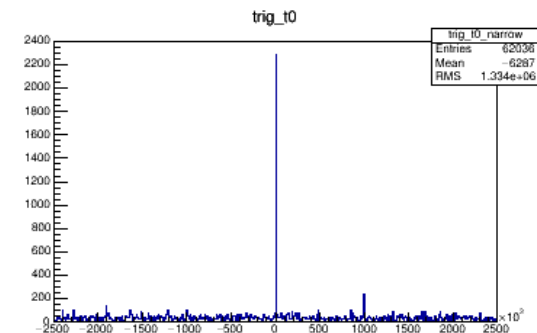
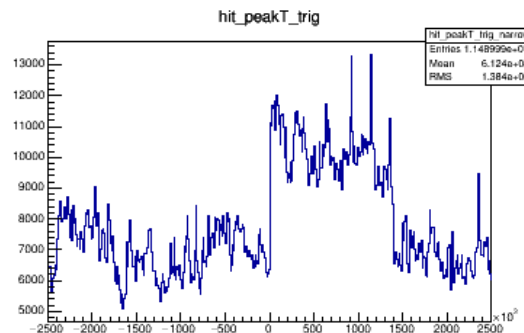
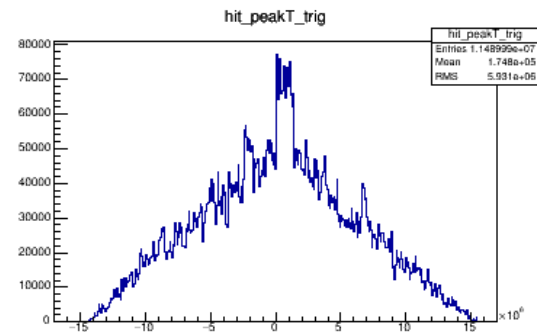
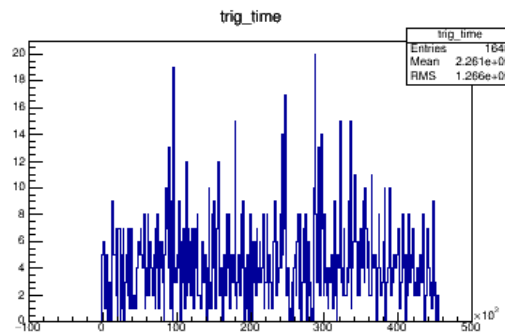
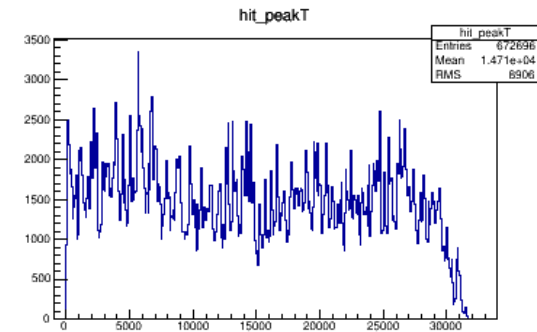
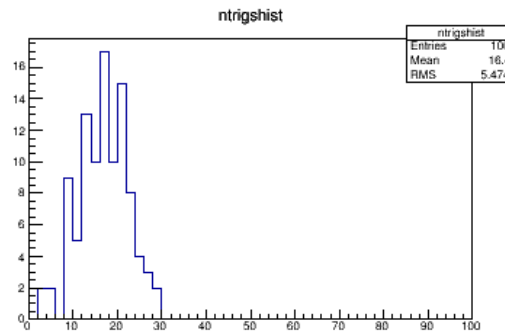
- Requires a few changes to AnaTree
 - Change Tree variable (trig_time) dynamic array
 - Add trig_id
 - In anatreemodule.fcl
 - TrigModuleLabel = simcounter
 - Prodcosmics_lbne35t.fcl also needs simcounter added
 - Will get changes in for next MCC
 - For now, rerun ana part of MCC (only 100 events)
- Rate in cryo-top counters = 60/1600 mS = 40 Hz
- Rate in roof-top counters looks low
 - Need to extend CRY box?



Compare External Counters to TPC Hits



- Requires a few changes to AnaTree
 - Change Tree variable (trig_time) dynamic array
 - Add trig_id
 - In anatreemodule.fcl
 - TrigModuleLabel = simcounter
 - Prodcosmics_lbne35t.fcl also needs simcounter added
 - Will get changes in for next MCC
 - For now, rerun ana part of MCC (only 100 events)



Next Steps

- Fix duplicate MCtrk and counter problems
- Commit anatree changes
- Re-run more MCC3 ana
- With large CRY sample and counters simulated can now measure counter coincidence rate in fully simulated data
 - Will try to get this done this week
- Try to understand roof counter rates
- Look at doing this with DAQ data