Two Tower Runs: Useful Things To Know
Two Tower Run Features

• Event ID:
  – Now 32 bits – no rollovers anymore!
  – Currently it starts at 131073 instead of 0:
    – Looks like a LATTE (online) problem – under investigation

• Trigger window:
  – Now 12 ticks instead of 5:
    – Can be seen with the GemCondArrivalTime variables
    – 1 tick = 50 ns i.e. The window is now 600 ns wide

• EvtTicks:
  – New variable in the SVAC ntuple – see Warren's talk!
  – Can be used to find the time between any two events
    – i.e. It's not an absolute time stamp!
    – Unit is 50 ns ticks
  – Accurate trigger time and not saturating!
  – More useful than GemDeltaEventTime:
    – Wrt previous event only and saturating at 3.3 ms
Which Tower Triggered?

• How do you know which tower triggered?
  – Merit variable $GltTower$ is based on TKR digis
  – Not the real trigger information from the GEM!

• A better way:
  – SVAC ntuple variables:
    – $GemTkrVector[iTower]$
    – $GemCalLeVector[iTower]$
    – $GemCalHeVector[iTower]$
    – $GemRoiVector[iTower]$
      » i.e. $GemTkrVector[0]==1$ means the TKR triggered in tower 0
Which Tower Issued A Trigger Request?

- Use the TEM diagnostics (“Trigger primitives”):
  - Not all runs have TEM diagnostics on!

- SVAC ntuple variables:
  - $\text{Tkreq[iTower][iLayer][iView][iEnd]}$ and $\text{CalReq[iTower][iLayer][iEnd]}$
    - Tells you if there was a TKR or CAL trigger request in a specific tower.
    - But you may need to loop over layers, views and ends to get the information.
  - $\text{TkrReqTriRowBits[iTower]}$
    - i.e. $\text{TkrReqTriRowBits[0]}!=0$ means there was a TKR trigger request in tower 0.
Two Tower Run Calibrations and MC

• Both CAL and TKR are calibrated:
  – **CAL**:
    – Calibrated in the grid
  – **TKR**:
    – We use single bay calibrations
    – TOT is calibrated!

• **MC**:
  – **New two tower surface muon MC**:
    – Used the latest CAL calibrations
    – Same EM release as the data: EM v4r060302p23
  – Files available from 'MC Simulated Data' - linked from the main Instrument Analysis web page.
End2End Runs

- **Two tower End2End runs:**
  - No runs with muon telescope were taken!
- **Tower A End2End runs:**
  - Cosmic ray runs will be reprocessed this weekend
  - Am241 runs have already been reprocessed
Useful Things To Know

• Which EngineeringModel did we use to process the data?
  – Always written at the top of the Digi and Recon reports
  – It's now embedded in the digi/recon/merit Root file header:
    – See SAS Workbook:
      » ROOT 5: Accessing data from File header

• What did we do to make the MC?
  – Look at the 'MC Simulated Data' web page linked from the main IA page:
    – Summarizes the main features
  – In the 'batch' subdirectories you can find:
    – Complete Job Options
    – Output log files:
      » Lists all the calibration files that were used
      » Includes full list of dead and hot TKR strips

• The Runs Database is your gateway to all the data!