Overview Of Data Taking

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Science Verification, Analysis and Calibrations
Overview

• Eight tower:
  – Data taking
  – Calibrations and Reprocessing

• Reprocessing of:
  – 1 tower
  – 2 tower
  – 4 tower
  – 6 tower data

• Our issues this Monday .....
Eight Tower Data

- Eight tower data has been taken:
  - No known problems with the data!
- Processed with EngineeringModel v5r0608p6:
  - No known problems or bugs!
  - Includes the new CAL ntuple:
    - Pedestal subtracted ADC values and Log end energies
- Calibration procedure has changed:
  - Before we calibrated the CAL before SVAC data taking:
    - Data was immediately available
  - We now use the eight tower data to calibrate the eight tower data
    - Both for CAL and TKR!
    - Takes some additional time before the data is available:
      - But the data quality will be even better than before!
      - We are sorry for the additional delay due to 'pipeline problems' :-((
- Runs list will be available at the usual place:
  - Main Instrument Analysis page --> End2End runs
Reprocessing

• We have reprocessed all:
  – 1 tower
  – 2 tower
  – 4 tower
  – 6 tower data
• Same EngineeringModel release as for 8 tower data:
  – Entire SVAC data sample now processed with same EM release!
  – CAL ntuple available for all runs
• Used original calibrations for reprocessing:
  – Unless there were bugs/problems!
All Were Fine ..... 

- Until our French collaborators started looking at the data :-) 
  - Energy per Xtal (still) does not come our right!
  - Two distributions in 4 tower data
  - Most Probable Value (MPV)/xtal shifted in 2 and 6 tower data

4 tower: MPV/xtal

6 tower: MPV/xtal

Plots by E. Nuss
CAL Calibrations

- Two issues concerning the CAL calibrations:
  - Charge injection not correct for 2 and 4 tower data:
    - FLE thresholds set too low
      » Introduces energy bias when reading out (0.5 MeV)
      » This happens when the FLE fires
      » Does not depend on whether it is allowed to open the trigger window or not
      » We now make sure this does not happen anymore!
    - Affects the integral non-linearity calibrations
  - MuTrg vs B10 runs:
    - Before 8 towers we used muons from muTrg for calibrations instead of the 15h of SVAC B10 runs
    - Problem with statistics and possibly FLE thresholds
- Reprocessed 4 tower data by hand with new calibrations from Sasha:
  - See plot
Deviation From Linearity

CI calibrations of FM104, layer=0, side=0, col=0, range=0

pre-ship, NRL - Dec, 2004, k=11.4

single bay, SLAC - Mar, 2005, k=11.52

2 towers, SLAC - May, 2005, k=11.8

6 towers, SLAC - July, 2005, k=11.8

8 towers, SLAC - Aug, 2005, k=11.8

Plot by Sasha
Most Probable Value per Xtal: New Calibrations

4 tower:

Double distribution gone!

Plot by E. Nuss
Summary

- Eight tower data:
  - Taken
  - Calibrated
  - Reprocessing nearly done
- Reprocessed all 1, 2, 4 and 6 tower SVAC data
- New CAL ntuple available for all the SVAC data
- New CAL calibrations for 2, 4 and 6 tower data using B10 runs and correct charge injection available (from Sasha):
  - Will reprocess .... eventually :-)!
- The system worked!
  - Our French collaborators look at the data and discover a problem
  - SVAC is notified
  - I can walk down the hall and talk to somebody from NRL!
  - Sasha looks into the problem
  - Workworkworkwork ......
  - Problem understood!
- We are now working on getting ready for 8 towers + ACD!