LAT Instrument Test Analysis

Eduardo do Couto e Silva

April 12, 2004
The Context

- There are two data analysis efforts during the LAT Integration and both use the same test data and both benefit from each other
  
  - Pass/Fail tests of the flight hardware data
    - Determine hardware baseline and calibrations
    - Results due with hours or, at most, a day (TBR)
    - I&T, SAS and Subsystems effort
    - See Heather’s presentation in SAS Ground Software meeting from April 8, 2004
  
  - Instrument Data Analyses of the flight hardware data, which assume baseline and calibrations to be already understood
    - To uncover subtle hardware problems
    - To apply reconstruction algorithms to real data
    - Results due in 2 to 3 weeks after data taking (TBR)
    - LAT wide collaboration effort
Instrument Analysis Workshop

- **Date**: June 7 (Monday) and 8 (Tuesday), 2004
- **Location**: SLAC, June 7 (ROB C&D), June 8 (TBD)
- **Goal**: Prepare for data analysis during I&T

- Produce MC datasets with two-tower in a grid at different configurations to
  - Validate geometry implementation
  - Create datasets for data analysis
  - Recommend data taking time based on MC studies

- Define and assign tasks to participants to
  - Evaluate if there are modifications necessary to the reconstruction
  - Evaluate if there are modifications necessary to the analysis (merit) ntup
  - Create reference plots for different configurations

- Define infrastructure necessary for
  - Data pipeline (OPUS)
  - Report generation
  - Comparison of results
Evaluation of Results

• We will meet again at SLAC 1 month later (TBR) to
  
  – Evaluate results and regenerate MC datasets if necessary
  – Suggest modifications for data analysis tests with real data and flight hardware
  – Work with I&T to evaluate if the data taking time is
    – adequate to understand the instrument
    – and if fits the LAT schedule.
  – Define what analyses will be done during the integration sequence.
    – The plan is to have data taking with 1, 2, 4, 6, 8, 10, 12, 14, 16 towers and 16 towers with ACD.
  – Define infrastructure needed full LAT analysis
Who are the people?

- Core and support people
  - GSFC
    - Luis?
  - LLR
    - Pol?
  - SLAC
    - Anders
    - Dan
    - Eduardo
    - Heather
    - Leon
    - Tracy
    - Warren
    - Xin
  - UCSC
    - Bill

- People who expressed interest and should define how much of their time can be allocated for this effort
  - Bordeaux
    - Benoit
  - GSFC
    - Steve
  - LLR
    - Berrie
  - Pisa
    - Michael
  - SLAC
    - Gary
    - Johann
    - Hiro
    - Larry
    - Mutsumi
    - Richard
  - UCSC
    - Marcus
Preparation Phase – Current Status

- **Infrastructure**
  - Generating a MC dataset of the 2 tower geometry in a grid (Xin)
  - Verifying geometry implementation with the event display (Anders)
  - Working on automating script that tracks processing history in OPUS (Dan)

- **Data Analysis**
  - Bill and Eduardo have weekly meetings on Thursday to steer the effort
    - Studying variables in the analysis ntuple for 100 MeV $\gamma$ (Xin, Eduardo, Anders, Warren)
  - Bill, Eduardo and Xin @ NRL for CAL software workshop
    - Need to discuss usage of TKR info by calRecon
    - Need preliminary list of tests on digitized data using CAL (see TKR example in p 6 of Eduardo’s presentation in the ANA meeting of March 21, 2004)
What should you do?

• For people not in the core group, please send an email to Eduardo to
  – Give an idea of your level of commitment so that we can plan and define tasks in a way that everyone can contribute (even if you have limited time)

• Please inform Eduardo if you are coming to the Workshop since we need to know the room size especially for the last day

• Book your room at the SLAC guest house