Two ground software packages will be changed soon.
- EbfWriter Package
- OnBoardFilter Package
The changes must be performed together.
EbfWriter Changes

- **Minor Changes**
  - Bring event contributions from LAT components into compliance with the hardware design
    - GEM Contribution Words
    - LATp Header words
  - Model Contribution (Tkr) Truncation
    - i.e. too many hits on a tracker layer end/tower.
  - ACD Veto Mapping Updated
  - Bug fixes.

- **Major Change**
  - Model event “truncation” for large events
  - Event contributions larger than ~4K get separated into pieces.
  - The new EbfWriter models this aspect of the hardware.
  - The Ebf format of the data is placed on the TDS in this fashion and the new OnBoardFilter properly receives the data.

- **Major Addition**
  - Testing the DAQ and Trigger System with the Testbed.
  - Requires files that represent the output of the Front-end Elec.
  - The new EbfWriter produces these files. (16 CAL, 16 TKR, 4 ACD)
DAQ/Trigger Testbed

GLEAM/EbfWriter → CAL/TKR/ACD Files → VxWorks Nodes → DAQ/Trigger Testbed

Software Event → TEMs → OnBoardFilter → GASU

Hardware Event

Compare Predicted vs Observed

Samples:
- Single Particle
- AllGamma Sample
- Background Sample
- Data Challenge 1
- Integrity Testing
- Rate Testing
- Filter Testing

GASU
OnBoardFilter

- **Current version**
  - Has a wrapper (OnboardFilter.cxx) plus modified version of JJ’s actual c-code source
  - JJ’s code has undergone significant revision since this was done (~1year ago)

- **New version**
  - Depends on 2 CMX packages: EFC (Event Filter Code) and EDS (Event Data Store), which are actual flight software
    - Dependency is through header files and libraries.
    - Libraries are compiled via CMX
    - These are accessed via External packages (like LDF)
  - OnboardFilter.cxx wrapper is modified to handle new call structure of EFC/EDS
  - Same output as previous, placed on TDS
The primary method we have used for validation is to compare to JJ’s filter code itself:

- Create EBF file from some sample (e.g. AllGamma) using EbfWriter
- Run JJ’s code (driver “filter” in EFC package) on this sample, and create summary table #1
  - The summary table contains a breakdown of which events were rejected by the filter
- Run OnboardFilter code on AllGamma digi’s
  - Use EbfWriter to write EBF onto TDS
  - Create summary table #2
- Compare the summary tables
Next Steps

- Finish adding OnboardFilter info to the TDS
  - Added: result vector, energies, etc.
  - Still to do: Projections, TKR hits, etc.

- Need to validate OnboardFilter TDS
  - Use FilterAlg to do this
  - Compare Filtering of current version to previous
    - AllGamma
    - Background

- Need to decide on versioning
  - How to link changes in flight software packages to new versions of OnboardFilter