GLAST Large Area Telescope: SVAC Data Products

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Outline

• What
  – Description of data products, and where to find documentation

• How
  – How to find the data

• Where
  – Description of directory structure
5 File Types

- LDF
  - Raw
- Digi
  - Raw
- Merit
  - Cooked
- Recon
  - Details on the process of cooking
- SVAC
  - Half-baked
Raw Data Types

- LDF
  - Provided by Online
  - Raw data in electronics space (topological)
  - Raw (.ldf) and FITS (.fits) flavors
  - FITS is the official product
  - Opaque (but FITS can separate events)
- Digi
  - Raw data in detector space (geometrical)
  - Tree
  - [http://confluence.slac.stanford.edu/display/WB/digiRootData](http://confluence.slac.stanford.edu/display/WB/digiRootData)
Cooked Data Types

- **Recon**
  - Reconstructed data, plus details of recon process
  - Tree
  - [http://confluence.slac.stanford.edu/display/WB/reconRootData](http://confluence.slac.stanford.edu/display/WB/reconRootData)
- **Merit**
  - High-level summary of reconstructed data
  - Tuple
  - [http://confluence.slac.stanford.edu/display/WB/Merit+Ntuple](http://confluence.slac.stanford.edu/display/WB/Merit+Ntuple)
- **SVAC**
  - High and low-level data
  - Tuple, plus fixed-size arrays
Where?

- Data may be on different disks, or even move from disk to disk
- Best way to find a run is to use the shift log
  - http://www.slac.stanford.edu/cgi-wrap/eLog.pl/index
  - Click on a “SvacReport,” then work your way up
- Wherever the data are, the structure of a run directory will be the same
  - Details to follow
  - $(HEAD)$ represents the location of the run directory in following slides
Uncalibrated Data

- $(HEAD)/rawData/$(runID)/
  - LDF, configuration snapshots, schema, run report
- $(HEAD)/rootData/$(runID)/grRoot
  - Digi, MC
- $(HEAD)/rootData/$(runID)/config
  - Configuration report
- $(HEAD)/rootData/$(runID)/digi_report
  - Report on contents of Digi file
Calibrated Data

- $(HEAD)/rootData/$(runID)/$(calib_ver)/
  - Everything that depends on calibration
- .../$(calib_ver)/grRoot
  - Recon & Merit
- .../$(calib_ver)/recon_report
  - Report on contents of recon (& digi) files
- .../$(calib_ver)/svacRoot
  - SVAC “tuple”
Configuration Report

• Describes instrument configuration used for run
• Current contents
  – CAL DAC thresholds
  – TKR split points
• To be added
  – Time delays
  – CAL zero supression
  – ?
• Currently HTML only, PS and PDF will be added
SVAC Reports

• Detail contents of recon & digi files
• Include text, tables, distributions, and graphs
• See Xin’s talk
Reprocessing

• Reasons for reprocessing
  – Major software update (EM package, Calibration algorithm)
  – New calibration constants
• Since it may be time consuming to reprocess all the data, a review is required to decide whether it is necessary to do the reprocessing
• Procedure to do the reprocessing
  – Determine appropriate directory tree to hold reprocessed data
  – Create a new version of task in the pipe line
  – Run the new task
  – SAS database will automatically track multiple versions of the “same” data product
  – Determine whether the reprocessed data should be present on the web (the eLog can only display one set of data)
3. Launch SVAC scripts (delivered to Online)
4. Parse Online report into electronic logbook (Web)
5. Parse schema from Online into tables (Web)
6. Parse LDF from Online into SAS ROOT
7. Create a summary digi report (E2E tests)
8. Create calibrated/reconstructed ROOT files
9. Create a summary recon report (detailed analysis)
10. Create Analysis ROOT files (detailed analysis)
• Following slides are backup
The runs database is
- used to support the data analysis
- part of the electronic logbook
  - for details on other usage see the Online Peer Review

The runs database stores information about
- Data runs
- Instrument settings
- Trigger conditions

http://www.slac.stanford.edu/cgi-wrap/eLog.pl/index
Run selection (1)

Select a run
Run selection (2)

Get run info produced by on line

Get report containing info extracted from digi root file

Get configuration info
Query List of Runs via the Web

- Run number
- Date
- Particle source
- Hardware type
- Hardware orientation

GLAST Shift Logbook
Shift Run Info

Run Range: G-10000000000
Date Range: taken from 2004-06-01 to 2004-06-30
Particle Type: Cosmos
Instrument Type: MiniTower
Orientation: Vertical

Additional query conditions:

- EBF FITS file
- Test Name
- Duration (seconds) cut
- Number of event cut

List of Runs:

<table>
<thead>
<tr>
<th>Run</th>
<th>Test Report</th>
<th>Config Report</th>
<th>Events</th>
<th>Duration(s)</th>
<th>Start (GMT)</th>
<th>End (GMT)</th>
<th>Status</th>
<th>Particle</th>
<th>Instrument</th>
<th>Orientation</th>
</tr>
</thead>
</table>
GLAST LAT Project

Instrument Analysis Workshop II, Sep 27, 2004

Configuration Report

GLAST Shift Logbook
Shift Run Info

Run Range: 0-1000000000 (e.g. 2500-2550.2557)
Date Range: (use format YYYY-MM-DD)
Particle Type: Cosmics
Instrument Type: Minitower
Orientation: Vertical
Completion status: Any
EBF FITS file: (e.g. "2005")
TestName: (e.g. "TKRTrg")
Duration (seconds) cut: (e.g. > 1000)
Number of event cut: (e.g. > 1000)

Additional query conditions:

Run | TestReport | ConfigReport | Events | Duration(s) | Start(GMT) | End(GMT) | Status | Particle | Instrument | Orientation | RAW file
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
Register settings

Configuration for run 139000001

Low Energy Trigger Discriminator

CAL FLE DAC Settings

Tracker Split Points

TKR GTRC Splits