Status of CGBM
- data flow & software -

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CGBM wiki

Please visit

http://cgbm.wikidot.com/

Please find the invitation e-mail from Taka Sakamoto.

If not, please make contact with him at

tsakamoto(at)phys.aoyama.ac.jp
All the dedicated softwares implemented in C++ and Python (w/ astropy library)

Analysis s/w are based on the standard HEAsoft by HEASARC GSFC/NASA: i.e., FTOOLS, XANADU, ... etc
HEASoft

http://heasarc.nasa.gov/lheasoft/
Overall data flow

CALET

Real time downlink (~70%)

Quicklook Data

JAXA Tsukuba Space Center

Level 0 Data

Level 1 Data (processed binary data)

Waseda CALET Operations Center

Level 1.5 Data (un-calibrated FITS)

Level 2 Data (calibrated FITS)

Level 3 Data (processed FITS)

CGBM Data Server

- TH light curve (real time)
- FITS data (level 1.5, 2, and 3)
- Ground analysis

Waseda CALET analysis center/AGU

Gamma-ray burst Coordinated Network (GCN)

alerts

CGBM Real time Data Analysis PC (prepare by AGU)

- On-board trigger
- Ground trigger

Archive servers (JAXA/ISAS, NASA/HEASARC, etc)
Level 1.5 & 2 data

- The level 1 data are converted into the FITS format => level 1.5 (uncalibrated)

- Energy correction apply => level 2 (in Waseda)
  Using CALibration Data Base (CALDB)
  - conversion into PI (Pulse-height Invariant) form (event data)
  - Energy conversion & re-binning (PH data)

- Level 1.5 -> 2 processed automatically (needs no human effort)
• Time conversion (not implemented)
  – Two ideas in discussions
    1) Mission Elapsed Time (MET) filled in the level 1.5
    2) Application (e.g., calet-time) delivers time conversions among UTC, MET, MJD, GPStime, MDCtime, ... etc

• Aspect data FITS conversion (not implemented)
  – Should be consistent with Time conversion.
    (filling MET or not)
Level 3 data (processed FITS)

• Level 3 are data processed by a human
  – needs human judgements for selection of data (e.g., signal / background region etc...)
  – processed in Waseda (data analysis center?) or AGU
    • Not decided
Level 3: background subtracted light curve

- **FITS aspect file**
- **FITS HK file**
- **Energy calibrated FITS event file**
- **FITS TH file**
- **Energy calibrated FITS PH file**

**extractor (ftools)**

**Raw FITS light curve file**

**(I) deadtime correction**

**Deadtime corrected FITS light curve file**

**(J) ISS obstacle correction**

**ISS obstacle corrected FITS light curve file**

**(K) Background subtraction**

**Level 3 FITS file**

**Level 3 FITS light curve file**

Not yet done
Level 3: making spectra

- Energy calibrated FITS event file
  - extractor (ftools)
  - (L) Background PHA generator
  - Foreground FITS PHA file
- Energy calibrated FITS PH file
  - (H) TH/PH extractor
  - Background FITS PHA file
- Level 3 FITS file