

Checkout2 GRB analysis

GRB analysis for the science tools checkout

The tools in this area are **gtbin**, its friend **gtbindex**, and **gtrspgen**. The expectation is that the evaluators will be running XSPEC, too, but of course not actually reviewing it.

Unbinned **likelihood** can also be used for GRB analysis. The Band function is available for likelihood source models.

Short descriptions of the tools and links to available documentation are on the [tools summaries page](#).

Please edit this page to include results, issues, advice, etc., or links to these.

(30 March 2005) Here is an [example of GRB analysis using Likelihood and XSPEC](#) *Jim Chiang*

(19 April 2005) The 20% discrepancy found between Xspec and Likelihood fits in the above report is resolved in this [comparison of Xspec and Likelihood results for burst-like transients with known properties](#) *Jim Chiang*

(8 April 2005) *David Band* I worked my way through what will probably be a standard LAT GRB analysis. Thus I extracted the data from the GSSC website, ran **gtselect** for further selections (e.g., choosing the back of the LAT), ran **gtbin** to bin the spectra into a PHA file, ran **gtrspgen** to create a DRM, and then ran **XSPEC**. Because we need to provide users with 'analysis threads' which walk them through an analysis, I created a thread based on this GRB analysis; see <http://glst.gsfc.nasa.gov/ssc/dev/Threads/>.

I ran into a number of small problems and bugs, which I reported on JIRA. A few general impressions:

I found I had to enter the same information a number of times. A DRM (the output of **gtrspgen**) is specific to a given source and time range, and thus to a specific PHA file. Therefore, **gtrspgen** should use information from the PHA file as the default.

As has been commented upon by others, and reported through JIRA, the writing of FITS keywords is not always correct.

Knowledge is often assumed, raising the learning curve. The energy units are not given (yes, I know there is a good reason: the tools are supposed to be mission independent). **gtbin** asks for a channel energy grid, but **gtrspgen** asks for an incident photon energy grid. We may not want the FTOOL prompts to get too wordy, but if we create a GUI interface on top of the FTOOLS, then we should think about providing useful information about the tools (e.g., indicating that the units are MeV) and about the data being analyzed (a little window telling the analyst that the data being analyzed covers a given time range and is from a given spatial region).

Since I am working on defining and simulating the GBM data, I also tried the tools on the simulated GBM I posted. Actually, only **gtbin** and **XSPEC** are relevant since I created the DRM (=RSP file) with the simulation package. I was able to analyze successfully a background-less burst, but had trouble with a burst with background (I think this is a result of an incorrect exposure--I haven't tracked this down yet).

(18 Apr 2005) [Tutorial and comments](#) on GRB tools *Francesco Longo*