

# Science Tools Update, March 1, 2007

## Science Tools Working Group

Did not meet this week. We'll meet next week, and Richard will be invited to tell us about his **microQuasar** source.

The current version of ScienceTools remains **v7r6p1**.

**Data products:** No news

## Databases and related utilities

No news.

## Likelihood analysis

From Jim: "I have implemented the hierarchical summing scheme inspired by Andy's comments in Likelihood. For relatively small numbers of events, e.g., as in the unit tests that are run with each build, the results are consistent with the old implementation. Runs on larger datasets do show some differences as compared with using previous versions, but I have not studied the changes very carefully yet. I have also fixed a bug in `gtfindsrc` reported by Jean's group at Saclay."

## GRB tools

No news.

## Pulsar tools

From James: "James and Masa continued work on the blind pulsar search tool. Specifically, they compared the output of the tool being developed, `gtpsproc`, to Xronos's `powspec` tool. In the low frequency regime, the periodicity of the spacecraft motion and gaps in the data both give rise to large peaks in the FFT (much larger than even a strong pulsation). These spurious effects are clearly visible in the output of `gtpsproc`, but not in the output from `powspec`. James and Masa isolated and understood the origins of these effects, and are considering several approaches to eliminate them, all of which involve correcting for the exposure in the light curve."

Regarding `gtpsproc`, Masa adds: "we are improving its output, such as plotting and ASCII dumping, for more clarity and more control by users. Also, the improvement will benefit `gtpsearch`, we hope, since they share classes for those functionality."

## Observation simulation

Max has tagged the new version of `PulsarSpectrum` (now `v2r2p2`); it includes a simple model for timing noise. He reports that the problem with running the SC1 pulsars on recent versions of `PulsarSpectrum` seems to have gone away with HEAD1.516 of Science Tools. I don't know why, and have not confirmed this yet. According to the release notes, HEAD1.516 does include a modification to `observationSim` that has a workaround for how `astro::GPS` does or doesn't pay attention to start and stop times in the pointing history file. I have not gotten around to asking Jim whether this change could be the explanation for the apparent fix.

## User interface and infrastructure (& utilities)

Going APE, from James: "James delivered Ape 2.0 to the HEASARC. He plans to add this version to the Science Tools external packages in the near future."

As probably has already been mentioned, last week Marco Frailis (Udine, DataMind), described a concept for a GUI for ScienceTools that he has support from Italian GLAST people to work on. The concept includes managing ways that tools could be sequenced into analysis 'pipelines' - powerful but perhaps ambitious. On Tuesday afternoon, Chris circulated a detailed response with issues that should be considered regarding the proposed GUI. Dave Davis has posted it as the top item in [Design issues for Science Tools](#).

## Source Catalog

Met this week. Jean demonstrated that the spurious sources found in DC2 along the track of the moon were not present in the SC1 source catalog; for the SC1 data set the moon source was implemented with orbital parallax, which smeared out the emission on short time scales. For DC2 no parallax was included. Jean reported that binned likelihood now runs alright in their system: "We solved the environment problem by installing `cmt` on our local farm. The `gtpython` script that Jim mentioned is indeed well advertised in the documentation, but it does not exist in the ordinary software deliveries (it was added specially to the DC2 release). Navid apparently plans to include it (together with a number of other things) but this is not available yet."