Science Tools Update, January 22, 2008

Science Tools Working Group

We met last week (13 attendees) and probably will meet next week.

Since Jan. 11, the current version of the Science Tools is **v9r4**. It has the **pointlike** package, and omits **gtorbsim**, as have been previously described. It also includes for the first time the new **gtptest** pulsar tool. It also has a fix for simulations of binary pulsars. Other package updates since v9r3p4 are listed here . If you are a Science Tools user, you will want to upgrade. Note that you need to be careful to not mix livetime cubes from earlier versions with the **v9r** Science Tools (see below).

Data products: After a lot of work this past week, graciously and carefully updating the specifications of some of the Science Data Products to be consistent with current usage in the Science Tools, David has submitted the Science Data Products ICD and FFD for baselining. I'm not exactly sure what the process is. Several of the templates in the Science Tools for the headers of the data products needed updating in one way or another for consistency with HEASARC conventions and these are in progress or in some cases already complete. The detailed definition of LS-001 (the extended version of FT1) was left incomplete. This is understood to be an evolving data product in any case. David expects to rebaseline the documents before launch - this is a way of saying that many updates are expected, but they will be done in a formal way.

Other news: The GLAST Users Group will **'beta test'** the Science Tools in early March. For this test the GUG members will be at their home institutions, i. e., no hands-on help will be available. Eric Winter and Brian Irby (GSFC) have succeeded in porting the Science Tools to the HEASARC hmake build system, which is how they will be distributed by HEASARC. The port is for **v9r3** and currently the plan is to stick with it for the test. The **Big Run** data will not be ready by the time of the test; most likely the GUG members will be directed to the **LEO 55-day data set** (with some guidance about time ranges, etc.). In anticipation of the beta test, Analia Cillis has been assembling extended, current versions of our reference pages for the Science Tools in the User Workbook; Masa has been working on the pulsar tools versions of these pages. They anticipate circulating these more widely for comment soon, and delivering them to Chuck for **incorporation in the Workbook**.

Databases and related utilities

No news

Likelihood analysis

In **v9r4** of the Science Tools the default coordinate system for the livetime cubes (HEALPix) was changed from equatorial to Galactic. In principle would not have to be a problem, since the coordinate system is listed in the headers of the livetime cubes. However, it turned out that the coordinate specification was not read in. Jean noticed the strong effect on exposure maps right away and Jim tracked down the problem. Toby has changed the default back to equatorial and I think has also made the code interpret the coordinate specification from the header.

GRB tools

No news.

Pulsar tools

No development news; last week Masa circulated a proposed updated format for the pulsar ephemeris database file. This incorporates parameters for additional binary pulsar timing models that David Smith pointed out we will want.

Observation simulation

Jim and Toby worked out a scheme to assign unique IDs to **SourcePopulation** sources. Until now, the faint blazars in the sky model have been specified as steady sources using SourcePopulation; this is a compact, convenient, and fast way to define theme but had the side effect of assigning only one ID to potentially thousands of different sources. This matters if you are studying source detection and the catalog analysis. The scheme that they worked out seems to work; Nicola's test run of the Ops Sim 2 sky model is evidence. The one-week **gtobssim** run has gamma rays from >18,000 unique sources.

As mentioned above, Max has implemented a fix to the simulation of binary pulsars.

User interface and infrastructure (& utilities)

Jim reported that the behavioral issues with APE in the **hoops** package are fixed in a more recent version of APE. James will import this - it may have already been done. APE is not yet in a release version of the Science Tools; waiting on a Windows build of the APE library.

Source Catalog

Did not meet last week.