GammaLib - Action #1518

Feature # 1517 (Closed): Add support for Fermi/LAT Pass 8 response functions

Generalize Fermi-LAT front/back response handling to general handling of response types

07/24/2015 09:32 PM - Knödlseder Jürgen

Status:	Closed	**Start date:**	07/24/2015
Priority:	Normal	**Due date:**	
Assigned To:	Knödlseder Jürgen	**% Done:**	100%
Category:		**Estimated time:**	0.00 hour
Target version:	1.1.0		

Description

Pass 8 has now different response types, not only front and back, but for example also 4 PSF response types. The front-back handling has to be generalized so that different response types can be covered.

History

#1 - 07/24/2015 09:56 PM - Knödlseder Jürgen

Here some information from the FSSC web pages:

Internally the IRFs for each event class contain a set of IRF parameterizations for individual event types. The event types are organized in partitions that split the events within a class according to different criteria. Whereas previous data releases provided only a single partition based on the conversion plane of the reconstructed track (FRONT versus BACK), the Pass 8 data release defines three event type partitions: FRONT/BACK (two types), PSF (four types), and EDISP (four types).

The Science Tools support analysis with both individual event types as well as any superset of event types within a partition (e.g. PSF2+PSF3 or FRONT+BACK). In the case that the data selection is a superset of event types within a partition, the Science Tools will apply the response function appropriate for the sum of those event types. In the typical usage scenario in which all events within a class are selected (equivalent to evtype=3) the Science Tools will apply the response function for the sum of FRONT and BACK events.

Event types within a partition are mutually exclusive and therefore an event can only belong to one of the types in each partition.

Conversion Type Partition	
Event Type	evtype
FRONT	1
BACK	2
PSF Type Partition	
Event Type	evtype
PSF0	4
PSF1	8
PSF2	16
PSF3	32
EDISP Type Partition	
Event Type	evtype
EDISP0	64
EDISP1	128
EDISP2	256
EDISP3	512

#2 - 07/24/2015 10:01 PM - Knödlseder Jürgen

Looking a bit in the actual code, it seems already pretty well prepared for general event type handling. Each response component has a size() method and the different event types can be accessed via an index, so the only thing needed may be related to loading the right number of response functions.

#3 - 03/03/2016 05:10 PM - Knödlseder Jürgen

- Status changed from New to In Progress

- Assigned To set to Knödlseder Jürgen

- Target version set to 1.1.0

- % Done changed from 0 to 80

The code has been modified so that it does not depend specifically on front/back but can handle any kind of event types.

Note that the actual code does not support loading of PSF2+3 for example (I need to check what syntax is used for that in Fermi LAT).

#4 - 06/21/2016 05:20 PM - Knödlseder Jürgen

- Status changed from In Progress to Closed

- % Done changed from 80 to 100

Code seems to work (see #1799), close this now.