

GammaLib - Change request #2881

Replace log flag in GEbounds and GEnergies constructors by string and implement "POW" binning

05/02/2019 03:56 PM - Knödlseider Jürgen

Status:	Closed	Start date:	05/02/2019
Priority:	Normal	Due date:	
Assigned To:	Knödlseider Jürgen	% Done:	100%
Category:		Estimated time:	0.00 hour
Target version:	1.7.0		
Description			
<p>So far a flag specifies in the GEbounds and GEnergies constructors whether a logarithmic or a linear binning should be used. The flag should be replaced by a string so that additional binning methods can be passed. Specifically, the POW method should be implemented which implements a power-law binning that leads to equal integration intervals for each energy bin for a specific power law slope. The user should be allowed to specify the power law slope through an additional user parameter.</p> <p>The GEbounds::set_lin() and GEbounds::set_log() methods could be replaced by a single GEbounds::set() method with the same logic. The same is true for GEnergies::set_lin() and GEnergies::set_log(). Alternatively, a set_pow() method could be added.</p>			

History

#1 - 06/11/2019 08:26 PM - Knödlseider Jürgen

- Target version set to 1.7.0

#2 - 07/02/2020 03:43 PM - Knödlseider Jürgen

- Status changed from New to Pull request

- Assigned To set to Knödlseider Jürgen

- % Done changed from 0 to 100

I change the interface of the following constructors:

```
GEnergies(const int& num, const GEnergy& emin, const GEnergy& emax, const std::string& method = "LOG", const double& gamma = 1.0)
GEbounds(const int& num, const GEnergy& emin, const GEnergy& emax, const std::string& method = "LOG", const double& gamma = 1.0)
```

and implemented the methods:

```
GEnergies::set(const int& num, const GEnergy& emin, const GEnergy& emax, const std::string& method = "LOG", const double& gamma = 1.0)
GEbounds::set(const int& num, const GEnergy& emin, const GEnergy& emax, const std::string& method = "LOG", const double& gamma = 1.0)
```

The GEbounds::set() method makes use of the GEbounds::set(const GEnergies& energies) method so that the actual algorithms for defining the energy bins are only implemented in the GEnergies class, reducing any code duplication. The GEbounds::set_lin() and GEbounds::set_log() methods were therefore removed.

For the GEnergies class the GEnergies::set_lin() and GEnergies::set_log() methods are now in private scope and a private GEnergies::set_pow() method was added to handle the power-law binning.

All GammaLib unit tests were adapted accordingly.

I also adapted ctools to match to the new interface. In addition I added to the following tools the possibility to specify a power-law binning in the parameter file (the ebingamma parameter was added to all these tools): ctbin, ctendispcube, ctexpcube, ctmapcube, ctmodel, ctpscube, csphagen, csresmap, csrespec, and csspec.

#3 - 07/02/2020 04:30 PM - Knödseder Jürgen

- Status changed from Pull request to Closed

Merged into devel.