

GammaLib - Action #3912

Add event selection capabilities to likelihood computation

11/28/2021 04:10 PM - Knödlseider Jürgen

Status:	Closed	Start date:	11/28/2021
Priority:	Normal	Due date:	
Assigned To:	Knödlseider Jürgen	% Done:	100%
Category:		Estimated time:	0.00 hour
Target version:	2.0.0		
Description Add comdataselect script that allows removal of Phibar layers from the DRIs.			

History

#1 - 11/28/2021 06:29 PM - Knödlseider Jürgen

Instead of implementing such a script a virtual method

```
GObservation::use_event_for_likelihood(const int& index) const
```

should be added that always returns true. This method should be called in the event loops of `GObservation::likelihood_poisson_unbinned`, `GObservation::likelihood_poisson_binned` and `GObservation::likelihood_gaussian_binned`.

Now an instrument specific implementation of `GObservation` can reimplement the method, allowing to select the events or bins that should be used for likelihood computation. This allows for example to implement for COMPTEL a Phibar selection.

#2 - 11/28/2021 06:30 PM - Knödlseider Jürgen

- Project changed from *ctools* to *GammaLib*

- Subject changed from *Add comdataselect script* to *Add event selection capabilities to likelihood computation*

- Target version changed from *2.0.0* to *2.0.0*

#3 - 11/28/2021 06:34 PM - Knödlseider Jürgen

- Status changed from *New* to *In Progress*

- Assigned To set to *Knödlseider Jürgen*

- % Done changed from *0* to *10*

Add

```
virtual bool use_event_for_likelihood(const int& index) const
```

and used method in likelihood computation.

#4 - 11/28/2021 09:54 PM - Knödseder Jürgen

- % Done changed from 10 to 50

I added an equivalent method for GCOMObservation, which now has two more members

```
int      m_phi_first; //!< First Phibar layer to use for likelihood
int      m_phi_last;  //!< Last Phibar layer to use for likelihood
```

and methods

```
const int& phi_first(void) const;
const int& phi_last(void) const;
void      phi_first(const int& phi_first);
void      phi_last(const int& phi_last);
```

to get and set the values for the members. These members specify the first and the last Phibar layer that should be used for likelihood fitting.

I also added parameters phi_first and phi_last to comlifit and some code that sets the members for all COMPTEL observations.

#5 - 11/29/2021 12:48 PM - Knödseder Jürgen

- % Done changed from 50 to 90

I added phi_first and phi_last parameters to comlifit and comlifmap so that Phibar layer selection is possible in these two scripts.

#6 - 03/14/2022 02:03 PM - Knödseder Jürgen

- Status changed from In Progress to Closed

- % Done changed from 90 to 100