

GammaLib - Bug #1988

CTA event simulation for energy range with zero effective area throws an exception

04/05/2017 10:54 AM - Knödlseider Jürgen

Status:	Closed	Start date:	04/05/2017
Priority:	High	Due date:	
Assigned To:	Eschbach Stefan	% Done:	100%
Category:		Estimated time:	0.00 hour
Target version:	1.3.0		
Description			
If CTA events are simulated for an energy range where the effective area is zero the GModelSpectralNodes::append() method throws an exception.			
The reason is that the code in GCTAModelAeffBackground::mc			
<pre>GModelSpectralNodes spectral; for (int i = 0; i < spectral_ebounds.size(); ++i) { GEnergy energy = spectral_ebounds.elogmean(i); double intensity = aeff_integral(obs, energy.log10TeV()); double norm = m_spectral->eval(energy, events->tstart()); spectral.append(energy, norm * intensity); }</pre>			
does not check whether the product norm * intensity is positive, which leads to the exception. A test should be added that appends only positive nodes.			
The side effect is that the GModelSpectralNodes object may be empty, which later poses a problem in GModelSpectralNodes::flux that returns an exception if there are no nodes. Instead, the method should simply return zero.			

History

#1 - 04/06/2017 12:15 PM - Eschbach Stefan

- Status changed from New to Pull request
- % Done changed from 0 to 50

I implemented a statement to check if "norm*intensity>0" and only appends if this is true.
The missing aeff-entry leads to getting stuck in a do-loop later in the code, because the variable "value" will be zero then.
I fixed this by adding another statement that breaks the loop if there were 100 tries and value still stays zero.

I'm not a 100% sure if this leads to further problems in specific cases, in my case it seems to work now.

Changes are implemented in seschbach/gammlib 1988-Change-Effective-Area

#2 - 04/09/2017 12:18 AM - Knödlseider Jürgen

- Status changed from Pull request to Closed
- Assigned To set to Eschbach Stefan
- % Done changed from 50 to 100

Code merged into devel.