

## GammaLib - Action #2178

### Add GModelSpectralNodes spectral model constructor

08/10/2017 05:45 PM - Knödlseider Jürgen

<b>Status:</b>	Closed	<b>Start date:</b>	08/10/2017
<b>Priority:</b>	High	<b>Due date:</b>	
<b>Assigned To:</b>	Knödlseider Jürgen	<b>% Done:</b>	100%
<b>Category:</b>		<b>Estimated time:</b>	0.00 hour
<b>Target version:</b>	1.5.0		

#### Description

Add a spectral model constructor to the GModelSpectralNodes class that transform any spectral model into a spectral node model. The format of the constructor should be

```
GModelSpectralNodes(const GModelSpectral& model, const GEnergies& energies);
```

where the energies argument specifies the energies for which the nodes should be set.

#### History

##### #1 - 08/10/2017 06:04 PM - Knödlseider Jürgen

- Status changed from New to In Progress

The following code works now:

```
>>> import gammalib
>>> m=gammalib.GModels('${CTOOLS}/share/models/crab.xml')
>>> e=gammalib.GEnergies(10,gammalib.GEnergy(0.1,'TeV'),gammalib.GEnergy(100.0,'TeV'))
>>> n=gammalib.GModelSpectralNodes(m[0].spectral(),e)
>>> print n
=== GModelSpectralNodes ===
Number of nodes .....: 10
Number of parameters .....: 20
Energy0 .....: 100000 MeV (fixed,scale=1)
Intensity0 .....: 8.69231722336369e-15 +/- 0 ph/cm2/s/MeV (free,scale=1,gradient)
Energy1 .....: 215443.469003188 MeV (fixed,scale=1)
Intensity1 .....: 1.29559391832094e-15 +/- 0 ph/cm2/s/MeV (free,scale=1,gradient)
Energy2 .....: 464158.883361278 MeV (fixed,scale=1)
Intensity2 .....: 1.93108875120027e-16 +/- 0 ph/cm2/s/MeV (free,scale=1,gradient)
Energy3 .....: 1000000 MeV (fixed,scale=1)
Intensity3 .....: 2.87829675045486e-17 +/- 0 ph/cm2/s/MeV (free,scale=1,gradient)
Energy4 .....: 2154434.69003188 MeV (fixed,scale=1)
Intensity4 .....: 4.29011467159638e-18 +/- 0 ph/cm2/s/MeV (free,scale=1,gradient)
Energy5 .....: 4641588.83361277 MeV (fixed,scale=1)
Intensity5 .....: 6.39443583867366e-19 +/- 0 ph/cm2/s/MeV (free,scale=1,gradient)
Energy6 .....: 10000000 MeV (fixed,scale=1)
Intensity6 .....: 9.53093630937816e-20 +/- 0 ph/cm2/s/MeV (free,scale=1,gradient)
Energy7 .....: 21544346.9003188 MeV (fixed,scale=1)
Intensity7 .....: 1.42059048249463e-20 +/- 0 ph/cm2/s/MeV (free,scale=1,gradient)
Energy8 .....: 46415888.3361277 MeV (fixed,scale=1)
Intensity8 .....: 2.11739671050848e-21 +/- 0 ph/cm2/s/MeV (free,scale=1,gradient)
Energy9 .....: 100000000 MeV (fixed,scale=1)
Intensity9 .....: 3.15598962890354e-22 +/- 0 ph/cm2/s/MeV (free,scale=1,gradient)
```

**#2 - 08/10/2017 11:05 PM - Knödseder Jürgen**

- *Status changed from In Progress to Closed*

- *% Done changed from 0 to 100*

I added a unit test and merged the new code into devel.