

## GammaLib - Bug #1239

### GModelSpatialEllipticalDisk Integration

07/01/2014 02:56 PM - Buehler Rolf

<b>Status:</b>	Closed	<b>Start date:</b>	07/01/2014
<b>Priority:</b>	Normal	<b>Due date:</b>	
<b>Assigned To:</b>	Buehler Rolf	<b>% Done:</b>	100%
<b>Category:</b>		<b>Estimated time:</b>	0.00 hour
<b>Target version:</b>	00-09-00		
<b>Description</b>			
When generating a model map or fitting a GModelSpatialEllipticalDisk object the following warning appears many times:  +++ WARNING in GIntegral::romb(-0.512902, 0.512902, 5): Integration uncertainty 6519.05 exceeds tolerance of 1073.84 after 21 iterations. Result 1.07384e+08 is inaccurate.  And the model map/fit appears to never to finish/converge.  This does not happen when exchanging the spatial model to GModelSpatialRadialDisk or GModelSpatialRadialGauss. For them the the model map/fit is done within 1-2 mins, while for the GModelSpatialEllipticalDisk after ~two hours there is still only warnings and no conversion.  I attach a script which reproduces the error (the DESY caldb response is also attached and assumed to be in the same folder as the script)			
<b>Related issues:</b>			
Related to GammaLib - Action # 1291: Finish implementation of stacked cube an...		<b>Closed</b>	<b>07/23/2014</b>
Related to GammaLib - Bug # 1299: Fitting problems with radial disk model		<b>Closed</b>	<b>07/25/2014</b>

#### History

##### #1 - 07/20/2014 11:15 PM - Knödseder Jürgen

- Project changed from ctools to GammaLib

##### #2 - 07/25/2014 01:35 AM - Knödseder Jürgen

- Status changed from New to In Progress

- Assigned To set to Buehler Rolf

- Target version set to 00-09-00

- % Done changed from 0 to 50

I guess this works now (see #1291), but we still need to check that the problem is indeed solved. Rolf, can you pull out the latest code from devel and check whether the problem is now fixed?

##### #3 - 07/25/2014 10:01 AM - Buehler Rolf

- File crabextent.py added

I have checked out the newest devel branch of ctools and gamma-lib but it still does not work (25th of July). I attach the script I use (it requires the caldb files linked above). For an Gaussian model the fit converges in ~6 mins. For the elliptical model it has still not converged after ~35 mins (I will let it run some more and post here in case it converges at the end). Also, I still get a long list of warnings:

```
+++ WARNING in GIntegral::romb(0, 6.28319, 5): Integration uncertainty 3.9496e+11 exceeds absolute tolerance of 1.68813e+11 after 21 iterations. Result 1.68813e+16 is inaccurate.
```

**#4 - 10/30/2014 11:27 AM - Knödseder Jürgen**

- File *crabextent.py* added
- File *ctlake.log* added
- Status changed from *In Progress* to *Feedback*
- % Done changed from 50 to 100

I think this is now solved (see code in devel). After slightly adapting your script to my environment (see attachment:crabextent.py) I get the following output:

```
$ time ./crabextent.py
Deleting directory: ellipdisk
ellipdisk: Starting. Obstime is 1800.0 s
ellipdisk: (elapsed: 2.14576721191e-06 s)

ellipdisk: Simulated..
ellipdisk: (elapsed: 5.43468785286 s)

ellipdisk: Created counts map..
ellipdisk: (elapsed: 0.861178159714 s)

ellipdisk: Created model map..
ellipdisk: (elapsed: 9.28993296623 s)

ellipdisk: Fitted..
ellipdisk: (elapsed: 115.408593893 s)

TS is 13012.9857907

real 2m11.373s
user 2m9.717s
sys 0m1.064s
```

hence the job is done on my Mac within 2 minutes. I also attach the *ctlake* log file that I got: attachment:ctlake.log

I put the issue now on feedback. If I won't hear back from you I will consider it closed for the next release.

**#5 - 11/11/2014 11:19 PM - Knödseder Jürgen**

- Status changed from *Feedback* to *Closed*

Close that now.

## Files

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ellipse_example.py	1.94 KB	07/01/2014	Buehler Rolf
caldb.zip	76 KB	07/01/2014	Buehler Rolf
crabextent.py	6.43 KB	07/25/2014	Buehler Rolf
crabextent.py	6.4 KB	10/30/2014	Knödseder Jürgen
ctlake.log	13 KB	10/30/2014	Knödseder Jürgen