

ctools - Change request #814

Sensitivity of fit to initial values

03/29/2013 03:50 PM - Martin Pierrick

Status:	New	Start date:	03/29/2013
Priority:	Low	Due date:	
Assigned To:	Martin Pierrick	% Done:	0%
Category:		Estimated time:	0.00 hour
Target version:			
Description			
<p>When trying to make a joint fit to simulated LAT and CTA data, I found that the optimization process is rather sensitive to initial values of the parameters. In the only case tested so far, the source model is composed of the extragalactic isotropic diffuse emission (LAT only), the instrumental background (CTA only), and a point source at the position of the LMC (both instruments). When the intensity of the extragalactic diffuse is initially set at about 10 times its true value, the fit ends correctly but with incorrect estimates for the parameters of the point source and extragalactic diffuse. If the true value is used as initial guess, everything goes fine. This is illustrated in the two attached ctlike log files.</p> <p>Things to try or correct:</p> <ol style="list-style-type: none">1- What if we relax the boundaries on the parameters ? Maybe the way to the optimum when starting from too far needs to go through presently forbidden values...2- Could be an idea to implement some global rescaling of the parameters values before entering the iterative optimization process, in order to have Nobs ~ Nmodel.			

History

#1 - 03/29/2013 04:34 PM - Martin Pierrick

- File *ctlike-nobounds.log* added

I tested rapidly the idea of relaxing the boundaries on the parameters and it does not seem to help. Attached a new ctlike log file corresponding to a run where spectral prefactors and indices were allowed to wander over much larger parameter space.

#2 - 10/30/2014 12:28 PM - Knödseder Jürgen

- Priority changed from Normal to High

- Target version set to 1.0.0

We should investigate and settle this before getting version 1.0.0 out. In the worst case, things need to be documented to guide the user in how to deal with that problem.

#3 - 06/30/2015 11:48 AM - Knödseder Jürgen

- Assigned To set to Martin Pierrick

#4 - 10/30/2015 12:19 AM - Knödseder Jürgen

- Priority changed from High to Low

- Target version deleted (1.0.0)

There hasn't been any follow-up action on this since years, meaning that nobody feels really concerned about that. I propose to keep the action but remove this from the target 1.0 release so that it does not block the release.

Files

ctlike.log	19.1 KB	03/29/2013	Martin Pierrick
ctlike-egbx10.log	27.5 KB	03/29/2013	Martin Pierrick
ctlike-nobounds.log	22.1 KB	03/29/2013	Martin Pierrick