

## ctools - Feature #2662

### ctlake/ctulimit tolerance

08/15/2018 05:02 PM - Sokolenko Anastasia

<b>Status:</b>	Closed	<b>Start date:</b>	08/15/2018
<b>Priority:</b>	Normal	<b>Due date:</b>	
<b>Assigned To:</b>	Knödseder Jürgen	<b>% Done:</b>	100%
<b>Category:</b>		<b>Estimated time:</b>	0.00 hour
<b>Target version:</b>	1.6.0		

#### Description

We noticed that for a weak dark matter signal above CR background, ctlake and ctulimit return results too good to be true in comparison with a simple signal/noise estimation for 500 hours of simulated data. Artificial reduction of time (to have no more than  $1e4$  photons in 10% broad energy bin) seems to solve the issue. Therefore, the issue connected to numerical accuracy.

It seems that in some cases, especially for the long observational time, default fitting/integration precision is not sufficient. It will be good to be able to control the fitting/integration tolerance with e.g. the additional hidden parameter for ctlake/ctulimit even by the price of a potentially significant increase of the computational time.

#### History

##### #1 - 09/07/2018 05:09 PM - Knödseder Jürgen

- Assigned To set to Knödseder Jürgen
- Target version set to 1.6.0

We can add the fit tolerance as a hidden parameter. It would be good if you could provide a specific test case that reproduces your problem to see whether fit tolerance is actually the issue.

##### #2 - 09/11/2018 11:29 AM - Knödseder Jürgen

- Status changed from New to Pull request
- % Done changed from 0 to 100

I added a like\_accuracy parameter to all tools and scripts that do maximum likelihood fitting. I will now merge the code into devel.

##### #3 - 09/11/2018 01:55 PM - Knödseder Jürgen

- Status changed from Pull request to Closed

Code is integrated in devel branch.