ctools - Action #1257

Implement upperlimit calculation

07/09/2014 02:43 PM - Mayer Michael

Status:	Closed		**Start date:**	07/09/2014
Priority:	Normal		**Due date:**	
Assigned To:			**% Done:**	0%
Category:			**Estimated time:**	0.00 hour
Target version:				

Description

To calculate spectral points or analyse weak sources, it is necessary to compute upper limits to properly handle the lack of statistics. Since ctlike provides full access to the likelihood function, we can calculate upper limits for any parameter for any source in the xml model.

In general, the upper limit value can be derived by inspecting the likelihood function and find the parameter value at which the likelihood changes by a certain value. For 95% confidence level, this value is, e.g., 1.92 (see Minuit manual)

The question remains, wether this should be implemented as a ctlike option, which could also add the UL value to the final xml model, or if we want to have a separate tool for that.

I attach a first approach using scipy to compute the upper limit value in a cs-script.

Related issues:

Duplicated by ctools - Feature # 1363: Create ctulimit	**Closed**	**11/12/2014**

History

#1 - 07/09/2014 02:44 PM - Mayer Michael

The script test_csupperlimit.py simulates a Crab observation and computes the upper limit of the spectral prefactor of that source.

#2 - 04/17/2015 12:28 AM - Mayer Michael

done by related task #1363

#3 - 03/03/2016 11:21 PM - Knödlseder Jürgen

- Status changed from New to Closed

- Remaining (hours) set to 0.0

Files

csupperlimit.py	9.17 KB	07/09/2014		Mayer Michael
test_csupperlimit.py	554 Bytes	07/09/2014		Mayer Michael