

## steppar: generate the statistic “surface” for 1 or more parameters

Perform a fit while stepping the value of a parameter through a given range. Useful for determining confidence ranges in situations where greater control is needed than given with the error command.

**Syntax:**        **steppar** <step spec> [ <step spec>...]

where

<step spec> ::= [<log | nolog>] [<current | best>]  
                  [<modelName>:]<param index> <low value> <high value> <# steps>

The parameter is stepped from <low value> to <high value> in <# steps> plus one trials. The stepping is either linear or log. Initially, the stepping is linear but it can be changed by the optional string log before the parameter index. nolog will force the stepping to be returned to the linear form. If more than one parameter is entered, then <# steps> must be entered for each one except the last.

To perform a steppar run on **gain** (or response) parameters, the optional [<modelName>:] specifier is replaced by an optional [<sourceNumber>:] specifier, and the letter ‘r’ needs to be attached as a prefix to the <parameter index>. For example:

```
steppar 2:r3 1.5 2. 10
```

will step the third response parameter belonging to source number 2.

The number of steps is set initially to 10. At each value, the parameter is frozen, a fit performed, and the resulting value of chi-squared given. If best is given as an argument then the non-stepped parameters are reset to the best-fit values at each grid point. Alternatively, if current is given as an argument then the non-stepped parameters are started at their values after the last grid point (the default).

If multiple <step spec> are given for different parameters, then a raster scan of the parameter ranges is performed. At the end of the set, the parameters and chi-squared are restored to the values they had initially.

If the model is in a best-fit state when a **steppar** run is started and a new best fit is found during the run, the user will be prompted at the end of the run to determine if they wish to accept the new best-fit values for their parameters. This prompting can be disabled by the setting of the **query** flag.

### **Examples:**

Assume that the current model has four parameters:

```
XSPEC12> steppar 3 1.5 2.5  
          //Step parameter 3 from 1.5 to 2.5 in steps of .1.  
XSPEC12> steppar log  
          //Repeat the above, only use multiplicative steps of 1.0524.  
XSPEC12> step nolog 2 -.2 .2 20  
          //Step parameter 2 linearly from -.2 to .2 in steps of 0.02.
```