

*AHELP for CIAO 3.4*

## get\_paramestlim

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## Synopsis

Module functions to determine confidence intervals, and retrieve the parameter bounds.

## Syntax

```

Array_Type get_unc()
Array_Type get_proj()
Array_Type get_cov()

Error Return Value: NULL

```

## Description

These functions retrieve information from the most recent run of the UNCERTAINTY or run\_unc, PROJECTION or run\_proj, and COVARIANCE or run\_cov parameter estimation methods, respectively.

Each function returns an array of structures. The length of the array is determined by the number of thawed parameters examined in the most recent run of the parameter estimation method. Each structure has five fields:

- name: the name of the parameter;
- val: its best-fit value;
- vlo: the lower bound for its confidence interval;
- vhi: the upper bound for its confidence interval;
- sigma: the value of the sigma parameter used to calculate vlo and vhi.

## Example 1

Fit a dataset; run covariance and retrieve the results:

```

sherpa> DATA example.pha
sherpa> SUBTRACT
sherpa> PARAMPROMPT OFF
sherpa> SOURCE = POW[p]
sherpa> FIT
...
sherpa> COVARIANCE

```

```

Computed for covariance.sigma = 1
-----
Parameter Name      Best-Fit Lower Bound      Upper Bound
-----
      p.gamma         1.79469  -0.0811155  +0.0811155
      p.ampl          0.000191983  -1.11109e-05  +1.11109e-05

sherpa> cov = get_cov
sherpa> print(length(cov))
2
sherpa> print(cov[0])
name          = p.gamma
val           = 1.79469
vlo           = 1.71358
vhi           = 1.87581
sigma         = 1
    
```

## Example 2

Repeat the last example, but retrieve the uncertainty for one parameter:

```

sherpa> UNCERTAINTY p.ampl

Computed for uncertainty.sigma = 1
-----
Parameter Name      Best-Fit Lower Bound      Upper Bound
-----
      p.ampl          0.000191983  -9.38415e-06  +9.4647e-06

sherpa> unc = get_unc()
sherpa> print(unc[0])
name          = p.ampl
val           = 0.000191983
vlo           = 0.000182599
vhi           = 0.000201448
sigma         = 1
    
```

## CHANGES IN CIAO 3.1

The structures returned by these functions contain an additional field, `sigma`, which is described above.

## Bugs

See the [Sherpa bug pages](#) online for an up-to-date listing of known bugs.

## See Also

*sherpa*

[berrors](#), [bsyserrors](#), [compute errors](#), [compute statistic](#), [covariance](#), [errors](#), [ftest](#), [get paramest](#), [get paramestint](#), [get paramestreg](#), [goodness](#), [interval-projection](#), [interval-uncertainty](#), [list paramest](#), [mlr](#), [projection](#), [region-projection](#), [region-uncertainty](#), [restore paramest](#), [run paramest](#), [run paramestint](#), [run paramestlim](#), [run paramestreg](#), [set errors](#), [set syserrors](#), [staterrors](#), [syserrors](#), [uncertainty](#)



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