



AHELP for CIAO 3.4

## dcounts

Context: [sherpa](#)

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## Synopsis

Calculates the sum of observed counts data for source or background datasets.

## Syntax

```
sherpa> [B]DCOUNTS [# [ID]] [{(<value>) | (<min>:<max>) | (<region
descriptor>)} ]
```

DCOUNTS is used for summing source data counts, while BDCOUNTS is used for summing background data counts.

# specifies the dataset over which the source model is evaluated. The ID modifier is used only for summing background counts, and then if and only if the Sherpa state object variable multiback is set to 1, i.e., if more than one background dataset is to be associated with a single source dataset. The ID modifier may be any unreserved string (e.g., A, foo, etc.), i.e., a string that is not a parsable command.

The default is to do summations for all datasets. The summation may be computed at one energy/wavelength, over a range of energies/wavelengths, or within a 2-D region, with the default being to compute the flux the total available range.

## Description

For 1-D data, if

- one energy (or wavelength or bin number) <value> is given, then the data counts is returned for the bin associated with that value.
- an energy or wavelength range is given with the <min> and <max> arguments, then the total summed data counts for the given range is returned.
- no value or range is specified, then the total summed data counts for the full range of the dataset is returned.

For 2-D data, if a region descriptor is given, then the summation of data counts within that region is returned; otherwise, the summation is carried out over the entire input image.

Tip: To perform background subtraction in Sherpa, the command SUBTRACT must be issued; this is in contrast to XSPEC, which performs background subtraction automatically.

The summation of data counts may be done using the Sherpa/S–Lang module functions `get_dcounts_sum` and `get_bdcunts_sum`.

## Example 1

Calculate the summation of data counts over the full energy range:

```
sherpa> DCOUNTS
Observed counts for source dataset 1: 1688 counts
```

## Example 2

Calculate the summation of background data counts over the range 2 to 10 keV. If the areas of the source and background extraction regions are different (as manifested by differences in, e.g., the BACKSCAL keywords in the headers of the source and background data files), then the number of expected background counts in the source region will also be shown.

```
sherpa> BDCOUNTS (2.0:10.0)
Observed counts for background dataset 1: 775 counts
...scaled to source region: 238.779 counts
```

## Example 3

Calculate the summation of data counts at a single energy (2.0 keV):

```
sherpa> DCOUNTS 1 (2.0)
Observed counts for source dataset 1: 23 counts
```

## Example 4

Calculate the summation of data counts over the energy range 2.0 to 4.0 keV:

```
sherpa> DCOUNTS 1 (2:4)
Observed counts for source dataset 1: 328 counts
```

## Example 5

Calculate the total flux within circles of radius 5 and 10 in a 2–D image (note, the quotes are necessary):

```
sherpa> DCOUNTS 1 "CIRCLE(247,257,5)"
Observed counts for source dataset 1: 1331 counts
sherpa> DCOUNTS 1 "CIRCLE(247,257,10)"
Observed counts for source dataset 1: 3068 counts
```

## Bugs

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

## See Also

*chandra*

[guide](#)

*sherpa*

[bye](#), [calc kcorr](#), [dataspace](#), [dollarsign](#), [echo](#), [eflux](#), [eqwidth](#), [erase](#), [flux](#), [get](#), [get dcounts sum](#), [get dir](#), [get eflux](#), [get eqwidth](#), [get filename](#), [get flux2d](#), [get flux str](#), [get lfactorial](#),

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get mcounts sum, get pflux, get source components, get verbose, groupbycounts, guess, is, journal, list, list par, mcounts, numbersign, paramest, plot eprof, plot rprof, prompt, reset, run, set, set analysis, set axes, set coord, set dataspace, set dir, set verbose, setplot, sherpa-module, sherpa\_plotfns, sherpa\_utils, show, simspec, use, version

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URL:  
<http://cxc.harvard.edu/ciao3.4/dcounts.html>  
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