

*AHELP for CIAO 3.4*

## get\_photon\_axes

Context: [sherpa](#)*Jump to:* [Description](#) [Bugs](#) [See Also](#)

## Synopsis

Module functions to retrieve photon-space grids over which models are evaluated.

## Syntax

```
{Struct_Type | Array_Type} get_photon_axes([Integer_Type])
{Struct_Type | Array_Type} get_photon_baxes([Integer_Type])
```

Error Return Value: NULL

Arguments:

(1) data set number (default 1)

## Description

In Sherpa parlance, a "dataspace" is an N-dimensional grid defined by the independent variables of the dataset (i.e.,  $x_i$  in the expression  $y = f(x_0, x_1, \dots, x_{(N-1)})$ ). Simple examples include the CHANNELS array in PHA datasets and the pixel numbers along each axis of FITS images.

The `get_photon_axes()` function retrieves the dataspace, or filtered data set axes of the appropriate data set (if no argument is given, the axes for data set 1 are retrieved). The units of the axes are those appropriate for the current Sherpa ANALYSIS setting. However, the dataspace is also translated into "photon space". The `get_axes()` function returns the dataspace in "channel space". In essence, "photon space" is what one would see if one could undo the redistribution of energies by the detector. (One can't really "deconvolve" the data in this manner with any confidence, but for the purposes of visualization only, the data from the appropriate RMF and ARF files are used to estimate what the data would look like after a "deconvolution".)

Thus, for example, if one is working with filtered PHA data in energy-space, what is returned are the low and high bin boundaries in keV (quantities assigned, e.g., by the ENERG\_LO and ENERG\_HI columns of the ARF). These boundaries generally do not match the boundaries that would be returned by `get_[b]axes()`.

(The function `get_photon_baxes()` acts as `get_photon_axes()`, save that it retrieves the dataspace for the background associated with the appropriate data set.)

One may display photon-space model amplitudes et al. on the same grid output by `get_photon_axes` using the Sherpa plotting commands `L PLOT SOURCE` et al.

## Bugs

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

## See Also

*chandra*

[guide](#)

*sherpa*

[get analysis](#), [get arf axes](#), [get axes](#), [get coord](#), [get data](#), [get energy axes](#), [get errors](#), [get filter](#),  
[get filter expr](#), [get fit](#), [get fluxed spectrum](#), [get ftest](#), [get metadata](#), [get photon energy axes](#),  
[get photon wave axes](#), [get qvalue](#), [get raw axes](#), [get record](#), [get source](#), [get statistic](#), [get stats](#),  
[get syserrors](#), [get wave axes](#), [get weights](#), [record](#), [save](#), [write](#)

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URL:  
[http://cxc.harvard.edu/ciao3.4/get\\_photon\\_axes.html](http://cxc.harvard.edu/ciao3.4/get_photon_axes.html)  
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