Chandra X-ray Center

AHELP for CIAO 3.4　　**get_photon_wave_axes**　　Context: sherpa

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Synopsis

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

Syntax

```
{Struct_Type | Array_Type} get_photon_wave_axes([Integer_Type])
{Struct_Type | Array_Type} get_photon_wave_baxes([Integer_Type])
{Struct_Type | Array_Type} get_full_photon_wave_axes([Integer_Type])
{Struct_Type | Array_Type} get_full_photon_wave_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 $y = f(x_0, x_1,...,x_{(N-1)})$). Simple examples include the CHANNELS array in PHA datasets and the pixel numbers along each axis of FITS images.

The get_photon_wave_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). Regardless of the current Sherpa ANALYSIS setting, this function returns the dataspace in units of wavelength (A). However, the dataspace is also translated into ``photon space''. The get_wave_axes() function returns the dataspace in ``wavelength 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 A (quantities assigned, e.g., by the ENERG_LO and ENERG_HI columns of the ARF). But if one is working in energy−space or channel−space, the bin boundaries returned are still in A. These boundaries generally do not match the boundaries that would be returned by get_wave_[b]axes().

(The function get_photon_wave_baxes() acts as get_photon_wave_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 LPLOT 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_axes, get_photon_energy_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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