Caveat: PSF Library

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Please visit the Chandra Ray Tracer (ChaRT) web pages for the most up−to−date information on creating PSFs.

3/8/01

Standard PSF Library files

The usage of the current PSFs libraries for a detailed spatial/spectral analysis has limitations mainly due to the coarse energy and spatial grids (see also the psf CAL documents).

The standard PSF library files consist of two dimensional simulated monochromatic PSF images ``postage stamps'' (energies ranging from 0.277 keV to 8.6 keV), stored in multi−dimensional FITS images (hypercubes) with azimuth and elevation steps (in telescope fixed system) of either 1 arcminute or 5 arcminutes (see the summary of the standard Chandra PSF libraries in the CIAO dictionary). The user can extract a PSF model image from a library file by interpolating within the energy and off−axis angle grids, using the CIAO tool mkpsf (as described in the Create a PSF thread).

The PSFs in the standard PSF library files are not derived directly from calibration data, but rather through a ray−tracing routine, with inputs specifying the current Chandra HRMA model. This model seems to replicate the low−energy core and wings of the on−axis PSF well. High energy (greater than 2keV) comparisons of the wings are not yet sufficiently mature enough to draw conclusions.

Also, the detailed comparisons of the simulated off axis PSF to observations are not complete; we believe that in general the PSF matches, but specifics are not yet available. At this time the current standard library files do not contain the error information due to uncertainties in the parameters of the models used to produce the PSF images.

For best results, we suggest library file No. 1 ("f1") if the off−axis angle of the source is within the library field of view. For larger off−axis angles please use library file "f2". As said before, use with caution.