URL: http://cxc.harvard.edu/ciao3.4/psffromfile.html
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AHELP for CIAO 3.4

fpsf

Context: sherpa

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Synopsis

A 2−D file−based PSF instrument model.

Description

FPSF is a file−based PSF model that represents the point−spread function, a redistribution function that maps photon spatial locations to image bins.

The input PSF FITS image is used to convolve (fold) a given source model. This convolution can be performed using either Fast Fourier Transforms (FFTs, the default), or the sliding cell technique (see the parameter fft). If the length of one axis is N and the length of the kernel axis is M (= 2 * xsize + 1), then the computation time for the sliding cell goes as N * M, i.e., for large kernels the best choice is using the FFT. A rough rule−of−thumb for 2−D fits is to use the FFT if M_1 * M_2 > 100.

Note that the PSF is automatically renormalized upon entry. Renormalization is done by summing over all image pixels, regardless of the setting of xsize and ysize.

The following example will serve to clarify the meanings of the remaining parameters.

Assume that the PSF is provided in a FITS image (file) of size N_x * N_y. N_x and N_y may be much larger than the PSF size in bins. An optimally sized sub−image of size (xsize * ysize can be extracted and used in the PSF convolution process.

If xoff = yoff = 0, the kernel sub−image is extracted from the center of the original image contained in file. The user may find that changing xoff and/or yoff can result in his or her being able to extract a smaller optimally sized sub−image if, say, the PSF is too asymmetric to be fit easily into a centered rectangle. Note that actual PSF image may be outside the default extracted PSF image.

Note that the kernel centroid must always be at the center of the extracted sub−image! Otherwise, systematic shifts will occur in best−fit positions of point sources, etc.

See the documentation on the INSTRUMENT command.

FPSF Parameters

Number	Name	Description
1	file	input FITS file name
2	xsize	x−width of the subset region of kernel PSF file to use in convolution
3	ysize	y−width of the subset region of kernel PSF file to use in convolution
4	xoff	x−direction offset
5	yoff	y−direction offset
6	fft	convolution type: 1 = FFT / 0 = sliding cell

Bugs

See the Sherpa bug pages online for an up−to−date listing of known bugs.

See Also

sherpa

atten, bbody, bbodyfreq, beta1d, beta2d, box1d, box2d, bpl1d, const1d, const2d, cos, delta1d, delta2d, dered, devaucouleurs, edge, erf, erfc, farf, farf2d, fpsf1d, frmf, gauss1d, gauss2d, gridmodel, hubble, jdpileup, linebroad, lorentz1d, lorentz2d, models, nbeta, ngauss1d, poisson, polynom1d, polynom2d, powlaw1d, ptsrc1d, ptsrc2d, rsp, rsp2d, schechter, shexp, shexp10, shlog10, shloge, sin, sqrt, stephi1d, steplo1d, tan, tpsf, tpsf1d, usermodel, xs, xsabsori, xsacisabs, xsapec, xsbapec, xsbbody, xsbbodyrad, xsbexrav, xsbexriv, xsbknpower, xsbmc, xsbremss, xsbvapec, xsc6mekl, xsc6pmekl, xsc6pvmkl, xsc6vmekl, xscabs, xscemekl, xscevmkl, xscflow, xscompbb, xscompls, xscompst, xscomptt, xsconstant, xscutoffpl, xscyclabs, xsdisk, xsdiskbb, xsdiskline, xsdiskm, xsdisko, xsdiskpn, xsdust, xsedge, xsequil, xsexpabs, xsexpdec, xsexpfac, xsgabs, xsgaussian, xsgnei, xsgrad, xsgrbm, xshighecut, xshrefl, xslaor, xslorentz, xsmeka, xsmekal, xsmkcflow, xsnei, xsnotch, xsnpshock, xsnsa, xsnteea, xspcfabs, xspegpwrlw, xspexrav, xspexriv, xsphabs, xsplabs, xsplcabs, xsposm, xspowerlaw, xspshock, xspwab, xsraymond, xsredden, xsredge, xsrefsch, xssedov, xssmedge, xsspline, xssrcut, xssresc, xssssice, xsstep, xstbabs, xstbgrain, xstbvarabs, xsuvred, xsvapec, xsvarabs, xsvbremss, xsvequil, xsvgnei, xsvmcflow, xsvmeka, xsvmekal, xsvnei, xsvnpshock, xsvphabs, xsvpshock, xsvraymond, xsvsedov, xswabs, xswndabs, xsxion, xszbbody, xszbremss, xszedge, xszgauss, xszhighect, xszpcfabs, xszphabs, xszpowerlw, xsztbabs, xszvarabs, xszvfeabs, xszvphabs, xszwabs, xszwndabs

slang

usermodel

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