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

xshrefl

Context: sherpa

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Synopsis

Simple reflection model good up to 15 keV. XSpec model.

Description

A simple multiplicative reflection model due to Tahir Yaqoob.

xshrefl Parameters

Number	Name	Description
1	thetamin	minimum angle (degrees) between source photons incident on the slab and the slab normal (=arctan(Ri/H)
2	thetamax	maximum angle (degrees) between source photons incident on the slab and the slab normal (=arctan(Ro/H).
3	thetaobs	angle (degrees) between the observer's line of sight and the slab normal.
4	Feabun	iron abundance relative to Solar
5	FeKedge	iron K−edge energy
6	Escfrac	fraction of the direct flux seen by the observer
7	covfac	normalization of the reflected continuum
8	Redshift	redshift, z

This model gives the reflected X−ray spectrum from a cold, optically thick, circular slab with inner and outer radii Ri and Ro respectively, illuminated by a point source a height H above the centre of the slab. The main difference between this and other reflection models is that analytic approximations are used for the Chandrasekar H functions (and their integrals) and ELASTIC SCATTERING is assumed (see Basko 1978, ApJ, 223, 268). The elastic scattering approximation means that the model is ONLY VALID UP TO ~ 15 keV in the source frame. Future enhancements will include fudge factors which will allow extension up to 100 keV. The fact that no integration is involved at any point makes the routine very fast and particularly suitable for generating error contours, especially when fitting a large number of data channels.The model is multiplicative so can be used with ANY incident continuum.

Suppose the incident photon spectrum is N(E) photons/cm/cm/s/keV and that the incident continuum is steady in time and further that the reflected continuum from the slab is R(E). When you multiply the incident spectrum with HREFL, what you actually get is

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model(E) = Escfrac * N(E) + covfac * R(E)
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Thus, the actual physical situation described above corresponds to Escfrac=1.0 and covfac=1.0. You may

decide to float Escfrac and/or covfac. In that case, you must decide for your particular case what the best−fitting values of these parameters mean physically. It may imply time−lags between the direct and reflected components, different source and/or disk geometries to those assumed or something else.

This information is taken from the XSpec User's Guide. Version 11.3.1 of the XSpec models is supplied with CIAO 3.2.

Bugs

For a list of known bugs and issues with the XSPEC models, please visit the XSPEC bugs page.

See Also

sherpa

atten, bbody, bbodyfreq, beta1d, beta2d, box1d, box2d, bpl1d, const1d, const2d, cos, delta1d, delta2d, dered, devaucouleurs, edge, erf, erfc, farf, farf2d, fpsf, 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, 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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