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

xsnsa

Context: sherpa

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Synopsis

Spectra in the X−ray range (0.05−10 keV) emitted from a hydrogen atmosphere of a neutron star. XSpec model.

Description

This model provides the spectra in the X−ray range (0.05−10 keV) emitted from a hydrogen atmosphere of a neutron star. There are three options:

- nonmagnetized (B < 1e8 − 1e9 G) with a uniform surface (effective) temperature in the range of log T_eff(K) = 5.0−7.0 ;
- a field B = 1e12 G with a uniform surface (effective) temperature in the range of log T_eff(K) = 5.5−6.8 ;
- a field B = 1e13 G with a uniform surface (effective) temperature in the range of log T_eff(K) = 5.5−6.8 .

The atmosphere is in radiative and hydrostatic equilibrium; sources of heat are well below the atmosphere. The Comptonization effects significant at T_eff > 3e6 K) are taken into account. The model spectra are provided as seen by a distant observer, with allowance for the GR effects. The user is advised to keep M_ns and R_ns fixed and fit the temperature and the normalization. MagField must be fixed at one of 0, 1e12, or 1e13 G.

The values of the effective temperature and radius as measured by a distant observer ("values at infinity") are

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T_eff^Inf = g_r*T_eff
R_ns^Inf = R_ns/g_r
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where

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g_r=(1−2.952*M_ns/R_ns)^0.5
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xsnsa Parameters

Number	Name	Description
1	LogT_eff	(unredshifted) effective temperature
2	M_ns	neutron star gravitational mass (in units of solar mass)
3	R_ns	neutron star radius (in km)

4	MagField	neutron star magnetic field (0, 1e12, or 1e13 G)
5	K	1/D^2, where D is the distance of the object in pc.

If you publish results obtained using this model, please reference Pavlov et al. (1992, MNRAS 253, 193) and Zavlin et al. (1996, A&A 315, 141).

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, xshrefl, xslaor, xslorentz, xsmeka, xsmekal, xsmkcflow, xsnei, xsnotch, xsnpshock, 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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