




---

 AHELP for CIAO 3.4

## xsmekal

Context: [sherpa](#)

*Jump to:* [Description](#) [Bugs](#) [See Also](#)

---

## Synopsis

Mewe–Kaastra–Liedahl thermal plasma (1995). XSpec model.

## Description

An emission spectrum from hot diffuse gas based on the model calculations of Mewe and Kaastra with Fe L calculations by Liedahl. The model includes line emissions from several elements. The switch parameter determines whether the mekal code will be run to calculate the model spectrum for each temperature, or whether the model spectrum will be interpolated from a pre-calculated table; the former is slower but more accurate.

### xsmekal Parameters

Number	Name	Description
1	kT	plasma temperature in keV
2	nH	hydrogen density in cm <sup>-3</sup>
3	Abund	metal abundances (He fixed at cosmic). The elements included are C, N, O, Ne, Na, Mg, Al, Si, S, Ar, Ca, Fe, Ni. Abundances are set by the xspecabundan command.
4	Redshift	redshift, z
5	Switch	0 = calculate, 1 = interpolate
6	norm	$10^{-14} / (4 \pi (D_A * (1+z))^2) \int n_e n_H dV$ , where $D_A$ is the angular size distance to the source (cm), $n_e$ is the electron density (cm <sup>-3</sup> ), and $n_H$ is the hydrogen density (cm <sup>-3</sup> )

The references for this model are:

- Mewe, R., Gronenschild, E.H.B.M., and van den Oord, G.H.J. 1985, A&AS, 62, 197
- Mewe, R., Lemen, J.R., and van den Oord, G.H.J. 1986, A&AS, 65, 511
- Kaastra, J.S. 1992, An X-Ray Spectral Code for Optically Thin Plasmas (Internal SRON–Leiden Report, updated version 2.0)
- Liedahl, D.A., Osterheld, A.L., and Goldstein, W.H. 1995, ApJL, 438, 115

Similar credit may also be given for the adopted ionization balance:

