

meka, vmeka: emission, hot diffuse gas (Mewe-Gronenschild)

An emission spectrum from hot diffuse gas based on the model calculations of Mewe and Gronenschild (as amended by Kaastra). The model includes line emissions from several elements. Abundances are the number of nuclei per Hydrogen nucleus relative to the Solar abundances set by the **abund** command.

The **vmeka** variant allows the user to set the abundances for the model.

Parameters for the **meka** model are:

par1	plasma temperature in keV
par2	H density (cm^{-3})
par3	Metal abundances (He fixed at cosmic). The elements included are C, N, O, Ne, Na, Mg, Al, Si, S, Ar, Ca, Fe, Ni.
par4	redshift, z
norm	$\frac{10^{-14}}{4\pi[D_A(1+z)]^2} \int n_e n_H dV$ where D_A is the angular diameter distance to the source (cm), , and n_e , n_H (cm^{-3}) are the electron and hydrogen densities respectively.

Parameters for the **vmeka** model are:

par1	plasma temperature in keV
par2	H density (cm^{-3})
par3-par14	Abundances for He, C, N, O, Ne, Mg, Si, S, Ar, Ca, Fe, Ni wrt Solar (given by the Anders & Grevesse mixture)
par15	redshift, z
norm	$\frac{10^{-14}}{4\pi[D_A(1+z)]^2} \int n_e n_H dV$ where D_A is the angular diameter distance to the source (cm), and n_e , n_H (cm^{-3}) are the electron and hydrogen densities respectively.

The references for the MEKA model are as follows :

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)

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

Arnaud, M., and Rothenflug, M. 1985, A & AS, 60, 425

Arnaud, M., and Raymond, J. 1992, ApJ, 398, 394