

### **raymond, vraymond: emission, hot diffuse gas, Raymond-Smith**

An emission spectrum from hot, diffuse gas based on the model calculations of Raymond and Smith (ApJS 35, 419 and additions) including line emissions from several elements. This model interpolates on a grid of spectra for different temperatures. The grid is logarithmically spaced with 80 temperatures ranging from 0.008 to 80 keV.

The **vraymond** variant allows independent parameters to set the abundances. Abundances are the number of nuclei per Hydrogen nucleus relative to the Solar abundances as set by the **abund** command.

For **raymond** the parameters are:

par1	plasma temperature (keV)
par2	Metal abundances (He fixed at cosmic). The elements included are C, N, O, Ne, Mg, Si, S, Ar, Ca, Fe, Ni. Abundances are given by the Anders & Grevesse mixture.
par3	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 $n_e, n_H$ ( $\text{cm}^{-3}$ ) are the electron and hydrogen densities respectively.

For **vraymond** the parameters are:

par1	plasma temperature (keV)
par2-par13	Abundances for He, C, N, O, Ne, Mg, Si, S, Ar, Ca, Fe, Ni wrt Solar (defined by the <b>abund</b> command)
par14	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 $n_e, n_H$ ( $\text{cm}^{-3}$ ) are the electron and hydrogen densities respectively.