

## bkn2pow: broken power law, 2 break energies

A three-segment broken power law (ie with two break energies).

$$\mathcal{A}(E) = \begin{cases} KE^{-\Gamma_1} & E \leq E_{\text{break},1} \\ KE_{\text{break},1}^{\Gamma_2 - \Gamma_1} (E/1\text{keV})^{-\Gamma_2} & E_{\text{break},1} \leq E \leq E_{\text{break},2} \\ KE_{\text{break},1}^{\Gamma_2 - \Gamma_1} E_{\text{break},2}^{\Gamma_3 - \Gamma_2} (E/1\text{keV})^{-\Gamma_3} & E_{\text{break},2} \leq E \end{cases}$$

where :

par1= $\Gamma_1$       power law photon index for  $E < E_{\text{break},1}$

par2= $E_{\text{break},1}$       first break point for the energy, keV

par3= $\Gamma_2$       power law photon index for  $E_{\text{break},1} < E < E_{\text{break},2}$

par4= $E_{\text{break},2}$       second break point for the energy, keV

par5= $\Gamma_3$       power law photon index for  $E > E_{\text{break},2}$

Norm =K      photons  $\text{keV}^{-1}\text{cm}^{-2}\text{s}^{-1}$  at 1 keV

If POW\_EMIN and POW\_EMAX have been defined by the **xset** command then the norm becomes the flux in units of  $10^{-12} \text{ ergs cm}^{-2} \text{ s}^{-1}$  over the energy range (POW\_EMIN, POW\_EMAX) keV unless POW\_EMIN = POW\_EMAX in which case the norm becomes the flux density in micro-Jansky at POW\_EMIN keV. In these cases it is important that POW\_EMIN and POW\_EMAX lie within the energy range on which the model is being evaluated.