

- **zdust: extinction by dust grains**

Extinction by dust grains from Pei (1992, ApJ 395, 130), suitable for IR, optical and UV energy bands, including the full energy ranges of the Swift UVOT and XMM-Newton OM detectors. Three models are included which characterize the extinction curves of (1) the Milky Way, (2) the LMC and (3) the SMC. The models can be modified by redshift and can therefore be applied to extragalactic sources. The transmission is set to unity shortward of 912 Angstroms in the rest frame of the dust. This is incorrect physically but does allow the model to be used in combination with an X-ray photoelectric absorption model such as phabs. Parameter 1 (method) describes which extinction curve (MW, LMC or SMC) will be constructed and should never be allowed to float during a fit. The extinction at V, $A(V) = E(B-V) \times R_v$. R_v should typically remain frozen for a fit. Standard values for R_v are MW = 3.08, LMC = 3.16 and SMC = 2.93 (from table 2 of Pei 1992), although these may not be applicable to more distant dusty sources.

par1	method: 1 = Milky Way, 2 = LMC, 3 = SMC
par2	$E(B-V)$: color excess
par3	R_v : ratio of total to selective extinction
par4	z: redshift