SPAMM – Spectral Properties of AGN Modeled through MCMC

Spectral Components

Nuclear Continuum

$$F_{\lambda,\mathrm{PL}} = F_{\mathrm{PL},0}\ (\frac{\lambda}{\lambda_0})^{\alpha} \tag{1}$$

where $F_{\mathrm{PL},0}$ is the power-law normalization, α is the power-law slope and λ_0 is the median wavelength of the data wavelength range.

Priors

Balmer Continuum

If we assume gas clouds with uniform temperature $\mathrm{T_e}$, that are partially optically thick, for wavelengths bluer than the Balmer edge ($\lambda_{\mathrm{BE}} = 3646$ Å, rest frame), the Balmer spectrum can be parameterized as (Grandi et al., 1982):

$$F_{\lambda,\mathrm{BC}} = F_{\mathrm{BE}}\ B_{\lambda}(\mathrm{T_e})\ (1 - \mathrm{e}^{-\tau_{\mathrm{BE}}(\frac{\lambda}{\lambda_{\mathrm{BE}}})^3}),\ \lambda < \lambda_{\mathrm{BE}} \tag{2}$$

where $B_{\lambda}(\mathrm{T_e})$ is the Planck function at the electron temperature $\mathrm{T_e}$, τ_{BE} is the optical depth at the Balmer edge, and F_{BE} is the normalized flux density at the Balmer edge.

Priors

FeII & FeIII

Linear combination of N broadened and scaled iron templates:

$$F_{\lambda,\mathrm{Fe}} = \sum_{\mathrm{i}=1,..\mathrm{N}} F_{\mathrm{Fe},0,\mathrm{i}}\ \mathrm{FeTempl}_{\lambda,\mathrm{i}}(\sigma_i) \tag{3}$$

where $\mathrm{FeTempl}_{\lambda,\mathrm{i}}$ is the iron template, $F_{\mathrm{Fe},0,\mathrm{i}}$ is the template normalization, and σ_i is the width of the broadening kernel.

Priors

Host Galaxy

Linear combination of N galaxy templates:

$$F_{\lambda,\mathrm{Host}} = \sum_{\mathrm{i}=1,..\mathrm{N}} F_{\mathrm{Host},0,\mathrm{i}}\ \mathrm{HostTempl}_{\lambda,\mathrm{i}} \tag{4}$$

where $\mathrm{HostTempl}_{\lambda,\mathrm{i}}$ is the host galaxy template, and $F_{\mathrm{Host},0,\mathrm{i}}$ is the template normalization.

Priors

Host Galaxy Reddening

Priors

Nuclear Reddening

Priors

Emission lines

Priors