Model definition

$$\text{Let} \qquad x = \frac{\alpha}{Fe}, \qquad y = \frac{Fe}{H}$$

Given m mixture components, we propose that the density from which observations are generated is

$$f(x, y) = \sum_{j=1}^{m} \pi_j \, f_j(x, y) \tag{1}$$

- Mixing proportion
- Mixture component j

$$\text{where} \qquad \sum_{j=1}^{m} \pi_j = 1, \qquad \pi_j \geq 0, \qquad j = 1, \ldots, m$$