



#### Graphical Model Legend

- $\mu$ : phase fraction (mean of gaussian RV)
- $\sigma$ : standard deviation for gaussian RV
- $Y$ : observed fitted normalized intensities
- $Z$ : latent mean normalized intensities for each sample
- Rectangle: indicates replication of size indicated in lower right-hand corner
- Shaded circle: indicates observed parameter/random variable
- Unshaded circle: indicates unobserved parameter/random variable

#### Mathematical Model:

$$\mu, \sigma_{sample}, \sigma_{exp} \sim \pi$$

$$Z_i \sim N(\mu, \sigma_{sample})$$

$$Y_{ij}|Z_i \sim N(Z_i, \sigma_{exp}^2 + \sigma_{count}^2 + \sigma_{fit}^2)$$