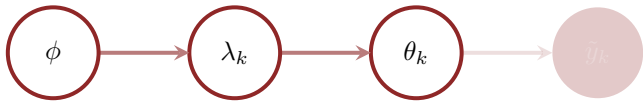$$\pi(\tilde{y}_k, \theta_k, \lambda_k, \phi) = \pi(\tilde{y}_k \mid \theta_k) \cdot \text{normal}(\theta_k \mid 0, \lambda_k) \cdot \pi(\lambda_k \mid \phi) \cdot \pi(\phi)$$