MCMC for LDA

$$p(\Phi, \Theta, Z|W) \sim \{Gibbs\ Sampling\}$$

Init: Φ^0, Θ^0, Z^0

For $\mathbf{k} = 1, 2, \ldots$

$$\phi_i^{\mathbf{k+1}} \sim p(\phi_i|\phi_1^{\mathbf{k+1}}, \ldots, \phi_{i-1}^{\mathbf{k+1}}, \phi_{i+1}^{\mathbf{k}}, \ldots, \Theta^{\mathbf{k}}, Z^{\mathbf{k}}, W)$$

$$\theta_i^{\mathbf{k+1}} \sim p(\theta_i|\Phi^{\mathbf{k+1}}, \theta_1^{\mathbf{k+1}}, \ldots, \theta_{i-1}^{\mathbf{k+1}}, \theta_{i+1}^{\mathbf{k}}, \ldots, Z^{\mathbf{k}}, W)$$

$$z_i^{\mathbf{k+1}} \sim p(z_i|\Phi^{\mathbf{k+1}}, \Theta^{\mathbf{k+1}}, z_1^{\mathbf{k+1}}, \ldots, z_{i-1}^{\mathbf{k+1}}, z_{i+1}^{\mathbf{k}}, \ldots, W)$$