

For each MCMC iteration $r = 1, 2, \dots$

1. Nodes $c_j \in \{1, \dots, M\}$, $j = 1, \dots, P$ run CSMC, the rest run SMC
2. Each node m returns a marginal likelihood estimate \hat{Z}_m and candidate retained particle $x'_{1:T,m}$
3. A loop of Gibbs updates is applied to the retained particle indices:

$$\mathbb{P}(c_j = m | c_{1:P \setminus j}) = \frac{\hat{Z}_m \mathbb{1}_{m \notin c_{1:P \setminus j}}}{\sum_{n=1}^M \hat{Z}_n \mathbb{1}_{n \notin c_{1:P \setminus j}}} \quad (3)$$

4. The retained particles for the next iteration are set $\mathbf{x}'_{1:T,j}[r] = x'_{1:T,c_j}$