

Here are the self-consistent equations:

$$f_i = -\log \sum_j \frac{\exp[-u_i(x_j)]}{\sum_k N_k \exp[f_k - u_k(x_j)]}$$

$$c_i = \sum_j \frac{q_i(x_j)}{\sum_k N_k c_k^{-1} q_k(x_j)}$$

Let

$$Q_{ij} = q_i(x_j)$$

and

$$R_{ij} = Q_{ij} N_i$$

Then

$$c_i = \sum_j \frac{Q_{ij}}{\sum_k R_{kj} c_k^{-1}}$$