

$$S(N, V, E) = k \ln \Omega(N, V, E) = k \ln \left[ \sum'_{\{n_i\}} W\{n_i\} \right]$$

$$S(N, V, E) \approx k \ln W\{n_i^*\}$$

$\{n_i^*\}$  max



$$\delta \ln W\{n_i\} - \left[ \alpha \sum_i \delta n_i + \beta \sum_i \epsilon_i \delta n_i \right]$$

$$\begin{aligned} \ln W\{n_i\} &= \sum_i \ln w_i \\ &\approx \sum_i \left[ n_i \ln \left( \frac{g_i}{n_i} - a \right) - \frac{g_i}{a} \ln \left( 1 - a \frac{n_i}{g_i} \right) \right] \end{aligned}$$

$$\sum_i \left[ \ln \left( \frac{g_i}{n_i} - a \right) - \alpha - \beta \epsilon_i \right]_{n_i=n_i^*} \delta n_i = 0$$

$$\ln \left( \frac{g_i}{n_i^*} - a \right) - \alpha - \beta \epsilon_i = 0$$

\*

$$a = \begin{cases} -1 & \text{B.E.} \\ 0 & \text{M.B.} \\ 1 & \text{F.D.} \end{cases}$$