In this case we can use a Jastrow factor (14)

$$\Psi(\bar{x}_1 \dots \bar{x}_N) = \prod_{ij} f(r_{ij}) \sum_i \Psi_i(\bar{x}_1^{(i)} \dots \bar{x}_N^{(i)})$$

$$\Psi_i(\bar{x}_1^{(i)} \dots \bar{x}_N^{(i)}) = \sum_\mu u_\mu(\rho) \mathcal{Y}_\mu(\Omega_i)$$

$$\Psi(\bar{x}_1 \dots \bar{x}_N) = \sum_\mu u_\mu(\rho) \sum_i \bar{\mathcal{Y}}_\mu(\rho, \Omega_i)$$

$$\bar{\mathcal{Y}}_\mu(\rho, \Omega_i) = \prod_{ij} f(r_{ij}) \mathcal{Y}_\mu(\Omega_i)$$

Example : trimer of ^4He atoms

For nucleon systems a pair correlation works

$$\bar{\mathcal{Y}}_\mu(\rho, \Omega_i) = f(x_N^{(i)}) \mathcal{Y}_\mu(\Omega_i)$$

$$K_M = 180 \longrightarrow 16$$

HH CHH