stat=['b' 'b'] | N=[2 2] | J = 1 |M=6 | V_aa=0.00 | V_bb = 0.00 | U_ab = 1.00e+00 | pbc = 0

$$\hat{H}_\sigma = -J\sum_{i=0}^{M-1}(1-(-1)^{i+1}\Delta t)(a^\dagger_{\sigma,i}a_{\sigma,i+1}+h.c)+\frac{V_{\sigma\sigma}}{2}\sum_{i=0}^{M}\hat{n}_{\sigma,i}(\hat{n}_{\sigma,i}-1),\quad \hat{H}_{ab}=U_{ab}\sum_{i=0}^{M}\hat{n}_{a,i}\hat{n}_{b,i},\quad \sigma\in a,b$$

$$\hat{H}_{tot}=H_1+H_2+H_{ab},\quad \hat{H}_{total}|\lambda\rangle=E_\lambda|\lambda\rangle$$