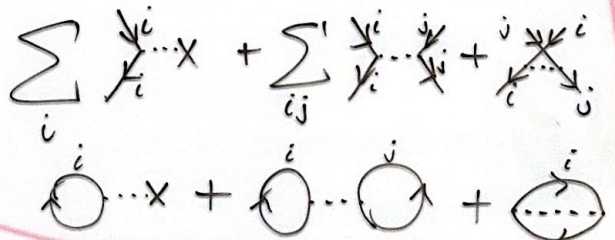
1. $\langle C | H | \Phi_i^a \rangle = \langle i | f | a \rangle$

$$\langle \Phi_i^a | H | \Phi_j^b \rangle = \delta_{ij}\delta_{ab}\,\mathcal{E}_0^{Ref} + \langle a|f|b\rangle\delta_{ij} - \langle j|f|i\rangle\delta_{ab} + \langle aj||ib\rangle_{AS}$$

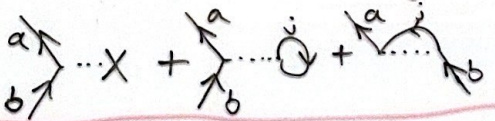
$\mathcal{E}_0^{Ref}$: $\sum_i^{'}\langle i|h_0|i\rangle + \frac{1}{2}\sum_{ij}^{'}\langle ij||ij\rangle_{AS}$

2.



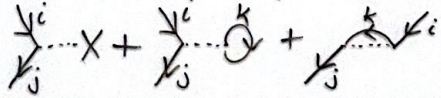
$\langle a|f|b\rangle$: $\langle a|h_0|b\rangle + \sum_j \langle aj||bj\rangle_{AS}$

3.



$\langle j|f|i\rangle$: $\langle j|h_0|i\rangle + \sum_k \langle jk||ik\rangle_{AS}$

4.



$\langle aj||ib\rangle_{AS}$: 5.