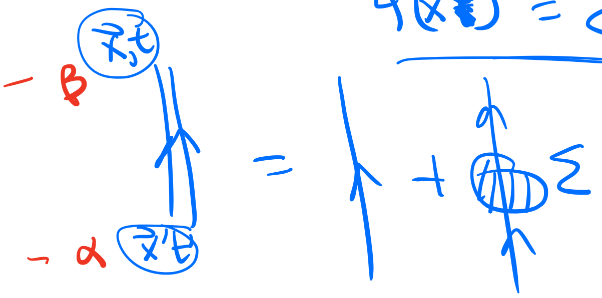
Green's function $\Rightarrow \langle \Psi_0 | T[\psi(\vec{x}t)\psi^\dagger(\vec{x}'t')] | \Psi_0 \rangle$

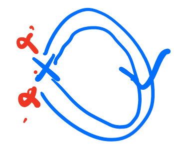
$\psi(\vec{x}t) = \sum \varphi_\alpha(\vec{x})$



β $\vec{x},t$

α $\vec{x}'t'$

$= \; + \; \Sigma \; \Longrightarrow$



HF

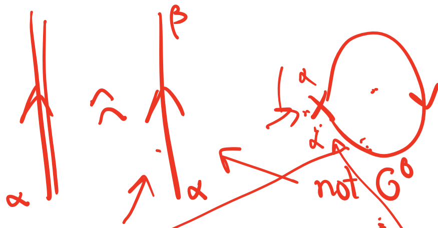
$\hat{O}_\alpha = \sum C_{\alpha\beta'} g_{\alpha\beta'}$

not summed over α

~~high resolution~~

$C_{\alpha'\beta'} = \delta_{\alpha\alpha'}\delta_{\beta\beta'}$

low resolution

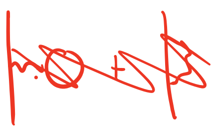


$\simeq \; \rightarrow 1 \quad \sum_{\alpha\beta} \varphi_\alpha(\vec{x})\varphi^\dagger_\alpha(\vec{x}')$

$\left[e^{i\varepsilon_\alpha(t-t')}\theta(t-t')\,\theta(F-\alpha) - e^{i\varepsilon_\alpha(t-t')}\theta(t'-t)\,\theta(\alpha-F)\right]$

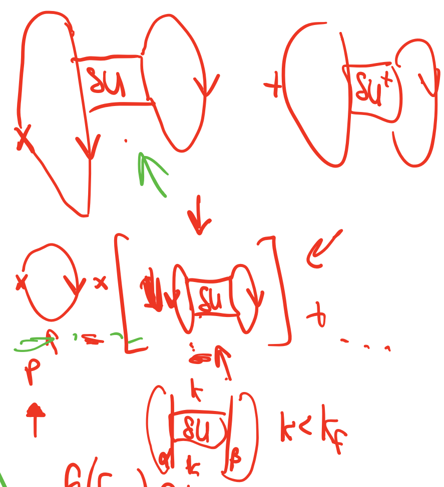
not G^0 but G^{HF}

$a^\dagger_\alpha a_\alpha$



$U \rightarrow 1 + \boxed{\delta U}$

$U^\dagger \rightarrow 1 + \boxed{\delta U^\dagger}$



$U^\dagger U = 1 + \delta U + \delta U^\dagger + \delta U \delta U^\dagger$

$\vec{p} - 2\vec{k} = (\vec{p}-\vec{k}) - \vec{k}$

$\theta(k_F - |\vec{k}|)$

justify?

OPE?

matrix element of soft operator × coefficient function

$k < k_F$

$\theta(F-\alpha)\,\theta(F-\beta)$

$\delta U(k, k')\,\theta(k_F - |k|)$

Hi-res

high momentum pair

$k \rightarrow \delta U \delta U^\dagger \leftarrow k$

high q

How to average $G(k_F - |\vec{p} - 2\vec{k}|)$ to get $G(k_F - |\vec{k}|)$?

$\int d\vec{p} \int d\vec{k} \quad \langle \vec{p} - \vec{k} - \vec{k} \rangle$

$\to -\vec{k}$