$$(H-\epsilon)\Delta\psi = \Delta V \psi$$

$$\Delta V = \Delta V^b + v \Delta\rho$$

$\hookrightarrow \psi^* \Delta\psi$

$$\Delta V = \sum_{|G|<G^{\Delta V}_{max}} e^{iGr} \Delta V(G)$$

$$\psi = \sum_{|G|<G^{\psi}_{max}} e^{iGr} \psi(G)$$

$$\Delta V \psi = \sum_{|G|< G^{\psi}_{max} + G^{\Delta V}_{max}} e^{iGr} (\Delta V \psi)(G)$$

$$(H-\epsilon)\Delta\psi = \sum_{|G|< G^{H}_{max} + G^{\Delta\psi}_{max}} e^{iGr} (\quad)(G)$$

Consistency:

$$G^{H}_{max} + G^{\Delta\psi}_{max} = G^{\Delta V}_{max} + G^{\psi}_{max}$$

$$\max\left\{ G^{\Delta V_b}_{max} , \; G^{\psi}_{max} + G^{\Delta\psi}_{max} \right\}$$

$$\boxed{G^{H}_{max}} + G^{\Delta\psi}_{max} = \boxed{2 G^{\psi}_{max}} + G^{\Delta\psi}_{max}$$

always consistent...

to have ΔV in ngms, we need to cut down G^{ψ}_{max} and $G^{\Delta\psi}_{max}$ → and correspondingly G^{H}_{max}

→ the entire problem must be solved with a smaller cutoff