

$$\begin{aligned}
 & \int dt' \left[ \frac{\delta}{\delta \eta(t')} \right]^2 \eta(t) \\
 &= \int dt' \frac{\delta}{\delta \eta(t')} \left[ \frac{\delta \eta(t)}{\delta \eta(t')} + \eta(t) \frac{\delta}{\delta \eta(t')} \right] \\
 &= \int dt' \left\{ \frac{\delta^2 \eta(t)}{\delta \eta(t') \delta \eta(t')} + \frac{\delta \eta(t)}{\delta \eta(t')} \frac{\delta}{\delta \eta(t')} \right. \\
 &\quad \left. + \frac{\delta \eta(t)}{\delta \eta(t')} \frac{\delta}{\delta \eta(t')} + \eta(t) \left[ \frac{\delta}{\delta \eta(t')} \right]^2 \right\} \\
 &\quad \left[ \begin{aligned} \frac{\delta \eta(t)}{\delta \eta(t')} &= \lim_{\varepsilon \rightarrow 0} \frac{[\eta(t) + \varepsilon \delta(t-t')] - \eta(t)}{\varepsilon} \\ &= \delta(t-t') \\ \frac{\delta^2 \eta(t)}{\delta \eta(t') \delta \eta(t')} &= \frac{\delta \delta(t-t')}{\delta \eta(t')} = 0 \end{aligned} \right. \\
 &\quad \left. \right] \\
 &= 2 \frac{\delta}{\delta \eta(t)} + \int dt' \eta(t) \left[ \frac{\delta}{\delta \eta(t')} \right]^2
 \end{aligned}$$

$$= \frac{-i \hbar}{m \alpha} \int D\eta \overline{\Phi[\eta]} \frac{\delta}{\delta \eta(t)} \Phi[\eta]$$