



$$[\hat{\psi}, \hat{A}] = \int [\hat{\psi}, \hat{\psi}^+(\underline{x}') A(\underline{x}', t) \psi(\underline{x}')] d\underline{x}'$$

$$= \int \hat{\psi} \hat{\psi}^+(\underline{x}') A(\underline{x}') \psi(\underline{x}') d\underline{x}' - \int \hat{\psi}^+(\underline{x}') A(\underline{x}') \psi(\underline{x}') \hat{\psi}(\underline{x}') d\underline{x}'$$

$$= \int \hat{\psi}^+(\underline{x}') \hat{\psi}(\underline{x}') A(\underline{x}') \psi(\underline{x}') d\underline{x}' + \int A(\underline{x}') \psi(\underline{x}') \delta(\underline{x} - \underline{x}') d\underline{x}' - \downarrow$$

$$= \int \hat{\psi}^+(\underline{x}') A(\underline{x}') \psi(\underline{x}') \underbrace{\psi(\underline{x})}_{\psi(\underline{x})} d\underline{x}' + A(\underline{x}) \psi(\underline{x}) - \downarrow = A(\underline{x}) \hat{\psi}(\underline{x})$$