

$$\begin{array}{c} A \\ | \\ \boxed{\rho} \\ | \\ A \end{array} = \sum_i p_i \begin{array}{c} | \\ \boxed{\psi} \\ \boxed{\psi} \\ | \end{array}$$

$$\begin{array}{cc} B & B^* \\ | & | \\ \boxed{\varepsilon} \\ | & | \\ A & A^* \end{array} = \sum_i \begin{array}{c} B \\ | \\ \boxed{\mathcal{K}} \\ | \\ A \end{array} \begin{array}{c} B^* \\ | \\ \boxed{\mathcal{K}^\dagger} \\ | \\ A^* \end{array}$$