

$$\dot{U}_t = H_t U_t$$

$$U_t \in \mathbf{U}|\mathbb{1}$$

$$\dot{U}_t^* = \overline{H_t^* U_t} = U_t^* H_t^* = -U_t^* H_t$$

$$\overline{U_t^* \dot{U}_t} = U_t^* \dot{U}_t + \dot{U}_t^* U_t = U_t^* H_t U_t - U_t^* H_t U_t = 0$$

$$\psi_t = U_t \psi_0$$

$$\dot{\psi}_t = H_t \psi_0$$

$$A_t = U_t A U_t^*$$

$$\dot{A}_t = H_t \times A_t$$

$$\dot{A}_t = \overline{U_t A U_t^*} = \dot{U}_t A U_t^* + U_t A \dot{U}_t^* = H_t U_t A U_t^* - U_t A U_t^* H_t = H_t A_t - A_t H_t = H_t \times A_t$$

$$\omega_t B = \text{tr } \psi_t \psi_t^* B = \psi_t \times \overline{B \psi_t}$$

$$\omega_t A_t = \omega A$$

$$\omega_t A_t = \psi_t \times \overline{U_t A U_t^* \psi_t} = \overline{U_t^* \psi_t} \times \overline{A U_t^* \psi_t} = \psi_0 \times \overline{A \psi_0}$$