Contents

0.1. Measurements

von Neumann measurements: $\sum_i P_i = \mathbb{I}$, $P_i P_j = \delta_{ij} P_i$. Then when measuring ρ_A, it collapses to $\frac{1}{\operatorname{tr}(P_i \rho_A)} P_i \rho_A P_i$. If we measure system C on the state $U_{AC}(|0\rangle\langle 0| \otimes \rho_A)U_{AC}^\dagger$ gives $\operatorname{tr}_C\left(\left(P_i^{(C)} \otimes \mathbb{I}\right) U_{AC}(|0\rangle\langle 0| \otimes \rho_A)U_{AC}^\dagger \left(P_i^{(c)} \otimes \mathbb{I}\right)\right)$

Let $A_0 = \sqrt{\mathbb{I} - \mathrm{d}t \sum_i L_i^\dagger L_i}$, $\{L_i\}$ are Limdblod operators, $A_i = \sqrt{\mathrm{d}t} L_i$. This gives

$$\frac{\mathrm{d}\rho}{\mathrm{d}t} = i[H, \rho] + \sum_i L_i \rho L_i^\dagger - \frac{1}{2} \sum_i \left(L_i^\dagger L_i \rho + \rho L_i^\dagger L_i\right).$$