Upper bounds on the quantum capacity for non-Gaussian channels

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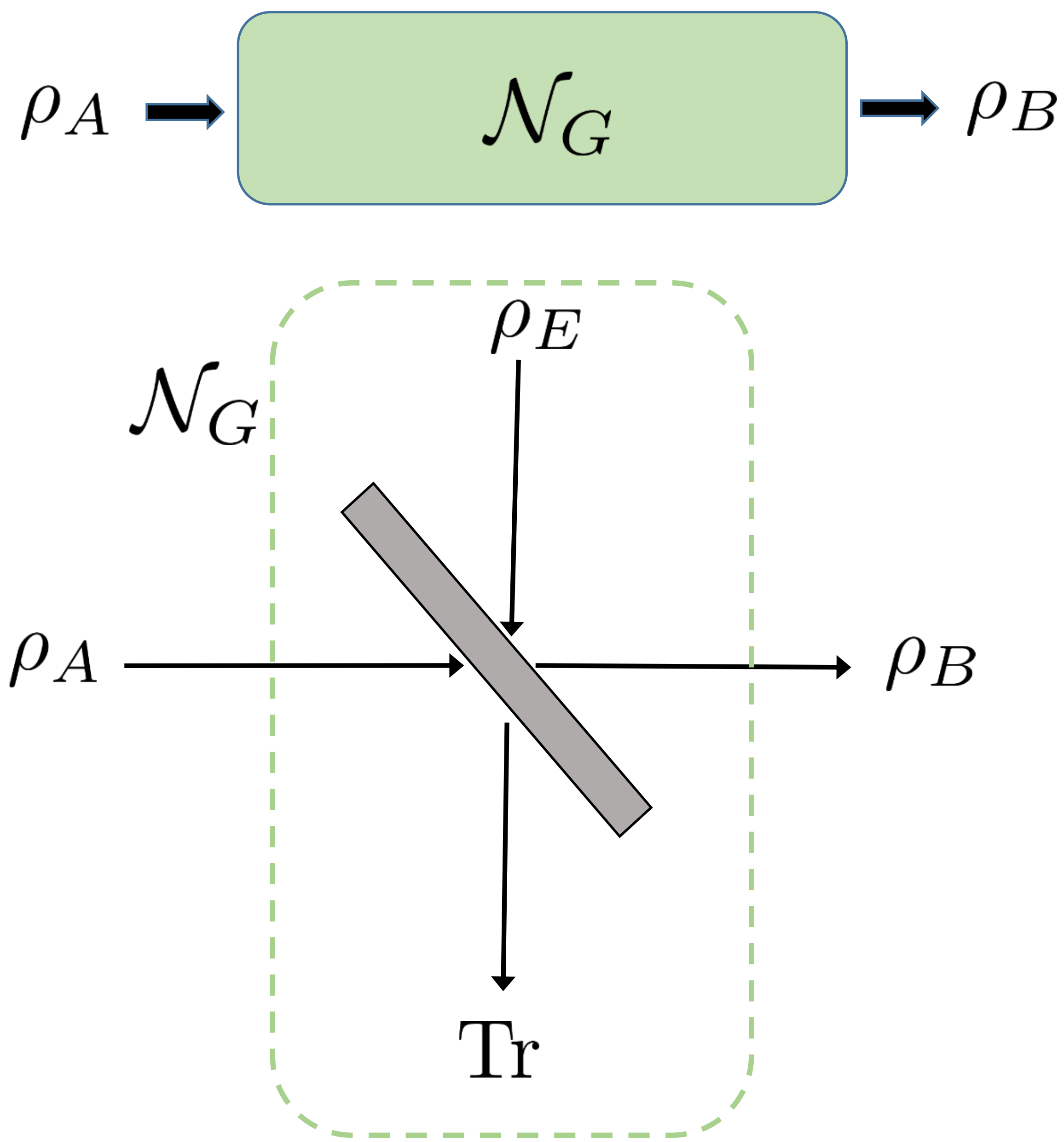

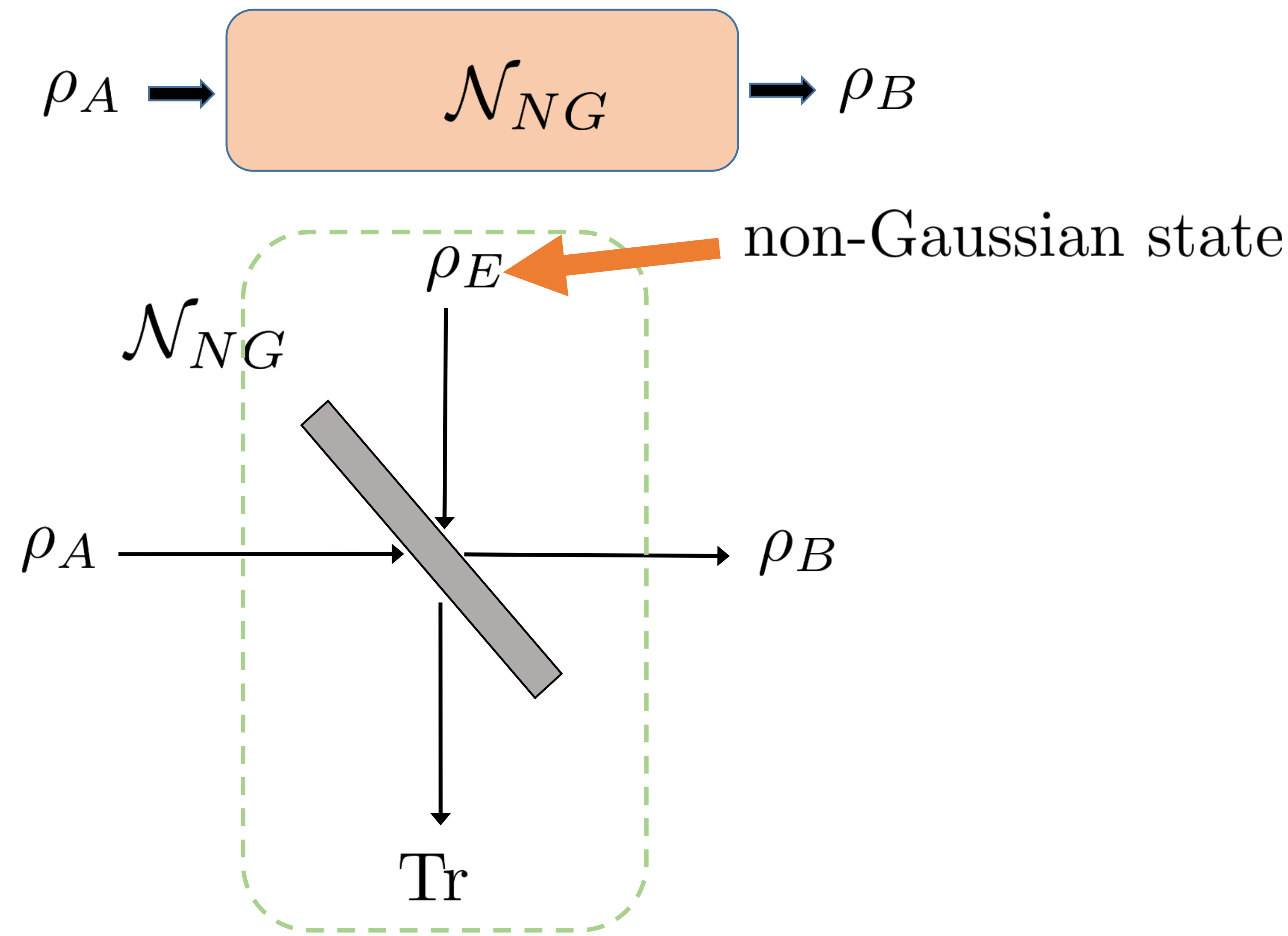

$$\mathcal{N}_G(\rho_A) = \mathrm{Tr}_E \left[U_{AE}(\rho_A \otimes \rho_E) U_{AE}^\dagger \right]$$

$$\mathcal{N}_G^c(\rho_A) = \mathrm{Tr}_B \left[U_{AE}(\rho_A \otimes \rho_E) U_{AE}^\dagger \right]$$

$$\mathcal{Q}(\mathcal{N}) = \lim_{n\to\infty} \sup_{\rho_n} \frac{I_c(\mathcal{N}^{\otimes n}, \rho_n)}{n},$$

where $I_c(\mathcal{N}, \rho) = H(\mathcal{N}(\rho)) - H(\mathcal{N}^c(\rho))$.

$$(\rho_X, \rho_Y) \mapsto \rho_{X \boxplus_\tau Y} = \mathcal{N}_\tau(\rho_X \otimes \rho_Y), \quad \text{where } \mathcal{N}_\tau(\rho) = \mathrm{Tr}_E U_\tau \rho U_\tau^\dagger$$

$$e^{S(\rho_{X_1} \boxplus_\tau \rho_{X_2})/n} \geq \tau e^{S(\rho_{X_1})/n} + (1-\tau) e^{S(\rho_{X_2})/n}$$