$D(\rho_1,\rho_2) = \frac{1}{2}\|\rho_1-\rho_2\|_1 \equiv \max_P \mathrm{tr}(P(\rho_1-\rho_2))$ $\qquad$ P proiettori

$\rho_1-\rho_2 \equiv A - B$ $\quad$ come prima ... $\quad \begin{pmatrix} A & \\ & -B \end{pmatrix}$ $\qquad A \geq 0 \qquad B \geq 0$

Definisco $|\theta| \equiv \sqrt{\theta^\dagger \theta}$ $\Rightarrow$ $|\rho_1-\rho_2| = A+B$ $\qquad D(\rho_1,\rho_2) = \frac{1}{2}\mathrm{tr}(A+B)$

$\mathrm{tr}(\rho_1-\rho_2) = 0 = \mathrm{tr}(A) - \mathrm{tr}(B)$ $\qquad = \mathrm{tr}(A)$

$\mathrm{tr}(P(\rho_1-\rho_2)) = \overset{\geq 0}{\mathrm{tr}(PA)} - \overset{\geq 0}{\mathrm{tr}(PB)}$ $\qquad \mathrm{tr}(PA) \geq 0$

$\leq \mathrm{tr}(PA) \leq \mathrm{tr}(A) = D(\rho_1,\rho_2)$ $\qquad \mathrm{tr}(PB) = 0 \qquad \mathrm{tr}(PA) = \mathrm{tr}(A)$

Esiste P che satura? Mi concentro dove abbiamo usato disuguaglianze...

P_A = proiettore su supporto di A $\quad$ satura

$\Rightarrow D(\rho_1,\rho_2) = \max_P \mathrm{tr}(P(\rho_1-\rho_2))$