

$$\begin{aligned}
\mathrm{Tr}_{A,B}^C(f_1)(a^*, b) &= \bigvee_{c \in C} f_1(\langle c, a \rangle^*, \langle c, b \rangle) \\
&\leq_{\mathbf{DP}} \bigvee_{c \in C} f_2(\langle c, a \rangle^*, \langle c, b \rangle) \\
&= \mathrm{Tr}_{A,B}^C(f_2)(a^*, b).
\end{aligned}$$