

$$\begin{aligned}
(\mathbf{f}_1 \otimes \mathbf{g}_1)(\langle \mathbf{a}, \mathbf{c} \rangle^*, \langle \mathbf{b}, \mathbf{d} \rangle) &= \mathbf{f}_1(\mathbf{a}^*, \mathbf{b}) \wedge \mathbf{g}_1(\mathbf{c}^*, \mathbf{d}) \\
&\leq_{\mathbf{DP}} \mathbf{f}_2(\mathbf{a}^*, \mathbf{b}) \wedge \mathbf{g}_2(\mathbf{c}^*, \mathbf{d}) \\
&= (\mathbf{f}_2 \otimes \mathbf{g}_2)(\langle \mathbf{a}, \mathbf{c} \rangle^*, \langle \mathbf{b}, \mathbf{d} \rangle)
\end{aligned}$$