

Lemma. Consider $\mathbf{f}, \mathbf{g} \in \text{Hom}_{\mathbf{DP}} (\mathbf{C} \times \mathbf{A}; \mathbf{C} \times \mathbf{B})$. One has

$$\text{Tr}_{\mathbf{A}, \mathbf{B}}^{\mathbf{C}}(\mathbf{f} \vee \mathbf{g}) = \text{Tr}_{\mathbf{A}, \mathbf{B}}^{\mathbf{C}}(\mathbf{f}) \vee \text{Tr}_{\mathbf{A}, \mathbf{B}}^{\mathbf{C}}(\mathbf{g})$$