

Lemma. Consider $\mathbf{d}, \mathbf{e} \in \text{Hom}_{\mathbf{DP}}(\mathbf{R} \times \mathbf{P}; \mathbf{R} \times \mathbf{Q})$. One has

$$\text{Tr}_{\mathbf{P}, \mathbf{Q}}^{\mathbf{R}}(\mathbf{d} \vee \mathbf{e}) = \text{Tr}_{\mathbf{P}, \mathbf{Q}}^{\mathbf{R}}(\mathbf{d}) \vee \text{Tr}_{\mathbf{P}, \mathbf{Q}}^{\mathbf{R}}(\mathbf{e})$$