

Lemma. $\langle \mathbf{Pos}_{\mathcal{U}}, \otimes, \mathbf{1} \rangle$ from ?? equipped with the braiding isomorphism $\mathbf{br}_{X,Y} : X \times Y \xrightarrow{\cong} Y \times X$, given by

$$\begin{aligned} \mathbf{br}_{X,Y}^{\star} : X \times Y &\rightarrow_{\mathbf{Pos}} \mathcal{U}(Y \times X) \\ \langle x, y \rangle &\mapsto \uparrow \{y\} \times \uparrow \{x\}, \end{aligned}$$

defined for all $X, Y \in \mathbf{Ob}_{\mathbf{Pos}_{\mathcal{U}}}$, forms a symmetric monoidal category.