

$$\begin{array}{ccc}
 X_1 \otimes X_2 & \xrightarrow{f_1 \otimes f_2} & Y_1 \otimes Y_2 \\
 \text{br}_{X_1, X_2} \downarrow & & \downarrow \text{br}_{Y_1, Y_2} \\
 X_2 \otimes X_1 & \xrightarrow{f_2 \otimes f_1} & Y_2 \otimes Y_1
 \end{array}$$