

$$\begin{array}{ccc}
 M \times N & \xrightarrow{(x,y) \mapsto (y,x)} & N \times M \\
 \downarrow & & \downarrow \\
 R \oplus (M \times N) & \xrightarrow{\cong} & R \oplus (N \times M)
 \end{array}$$