

$$\begin{array}{ccccc}
 P_j \oplus Q_j & \xrightarrow{(1,0)} & & & P_j \\
 \downarrow g_j & \searrow \psi_{j,i} & & \swarrow \varphi_{j,i} & \downarrow f_j \\
 & & P_i \oplus Q_i & \xrightarrow{(1,0)} & P_i \\
 & \nearrow g_i & & \searrow f_i & \\
 P & \xrightarrow{\pi} & & & F
 \end{array}$$