

$$\begin{array}{ccc}
 \Omega_1 & \xrightarrow{\varphi_\omega} & G_\omega \backslash G \\
 \downarrow \psi & & \downarrow \pi_\omega \\
 \Omega_2 & \xrightarrow{\varphi_{\psi(\omega)}} & G_{\psi(\omega)} \backslash G
 \end{array}$$