

$$\begin{array}{ccccccc}
 X & \xrightarrow{f} & Y & \xrightarrow{q(f)} & \overline{C}_f & \xrightarrow{q^2(f)} & \overline{C}_{q(f)} \\
 & & & & & \searrow g & \downarrow \cong \\
 & & & & & & \Sigma X
 \end{array}$$