

$$\begin{array}{ccccccc}
 P^i & \longrightarrow & 0 & \longrightarrow & \cdots \\
 \downarrow & & \downarrow & & \\
 P^{i+1} & \longrightarrow & P^{i+2} & \longrightarrow & \cdots
 \end{array}$$