

## Example (continued)

Steps 2 & 3:

$$\begin{aligned} B &= \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} - \left( \frac{1}{\sqrt{2}} [1 \ 0 \ 1] \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} \right) \frac{1}{\sqrt{2}} \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix} \\ &= \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} - \frac{1}{2} \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix} = \frac{1}{2} \begin{bmatrix} 1 \\ 0 \\ -1 \end{bmatrix}, q_2 = \frac{1}{\sqrt{2}} \begin{bmatrix} 1 \\ 0 \\ -1 \end{bmatrix} \end{aligned}$$

Steps 4 & 5:

$$\begin{aligned} C &= \begin{bmatrix} 2 \\ 1 \\ 0 \end{bmatrix} - \left( \frac{1}{\sqrt{2}} [1 \ 0 \ 1] \begin{bmatrix} 2 \\ 1 \\ 0 \end{bmatrix} \right) \frac{1}{\sqrt{2}} \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix} \\ &\quad - \left( \frac{1}{\sqrt{2}} [1 \ 0 \ -1] \begin{bmatrix} 2 \\ 1 \\ 0 \end{bmatrix} \right) \frac{1}{\sqrt{2}} \begin{bmatrix} 1 \\ 0 \\ -1 \end{bmatrix} \end{aligned}$$