Inverse R^{-1} of matrix R:

$$R = \begin{bmatrix} \sigma_c^2 & 0 & \cdots & 0 \\ 0 & \sigma_c^2 & \cdots & 0 \\ \vdots & & \ddots & \\ 0 & \cdots & & \sigma_c^2 \end{bmatrix} = I \cdot \sigma_c^2$$

identity matrix: $I = \begin{bmatrix} 1 & 0 & 0 & \cdots & 0 \\ 0 & 1 & 0 & \cdots & 0 \\ \vdots & & & \ddots & \\ 0 & & & & 1 \end{bmatrix}$

$$R^{-1} = \begin{bmatrix} 1/\sigma_c^2 & 0 & \cdots & 0 \\ 0 & 1/\sigma_c^2 & \cdots & 0 \\ \vdots & & \ddots & \\ & \cdots & & 1/\sigma_c^2 \end{bmatrix} = I \cdot \sigma_c^{-2}$$

$\sigma_c^2 \cdot 1/\sigma_c^2 = 1$

$$R^{-1} = \begin{bmatrix} \boxed{1/\sigma_c^2} & 0 & \cdots & 0 \\ \boxed{0} & 1/\sigma_c^2 & \cdots & 0 \\ \vdots & & \ddots & \vdots \\ \boxed{0} & & & 1/\sigma_c^2 \end{bmatrix}$$

$$R = \begin{bmatrix} \boxed{\sigma_c^2} & \boxed{0} & \cdots & \boxed{0} \\ 0 & \sigma_c^2 & \cdots & 0 \\ \vdots & & \ddots & \\ 0 & & & \sigma_c^2 \end{bmatrix} \quad \begin{bmatrix} \boxed{1} & \boxed{0} & 0 & \cdots & 0 \\ \boxed{0} & 1 & 0 & \cdots & 0 \\ 0 & & \ddots & & 0 \\ \vdots & & & \ddots & \vdots \\ & & & & 1 \end{bmatrix} = I$$

$+ \ast$ $\ast 0$ 0 $\cdots$ $\ast 0$