



$$\delta = \left[\mathbf{H} \mathbf{K}^{-1} \mathbf{H}^T + \mathbf{J}_c \left(\frac{\mathbf{A}}{\Delta t^2} \right)^{-1} \mathbf{J}_c^T \right] \mathbf{f} + \delta_{free} \quad \dots (a)$$

$$\delta_{free} = \Delta t^2 \mathbf{a}_0 + \Delta t \mathbf{v}_0 - d \quad \dots (b)$$