

$$oldsymbol{\delta} = \left[oldsymbol{H}oldsymbol{K}^{-1}oldsymbol{H}^T + oldsymbol{J}_c\left(rac{oldsymbol{A}}{\Delta t^2}
ight)^{-1}oldsymbol{J}_c^T
ight]oldsymbol{f} + oldsymbol{\delta}_{free} \ \cdots (a)$$

$$\boldsymbol{\delta}_{free} = \Delta t^2 \boldsymbol{a}_0 + \Delta t \boldsymbol{v}_0 - \boldsymbol{d}$$
  $\cdots (b)$