

Step 1

initialize $j = n\text{DOF} + 1$

Increment 1

Newton-Rhapson Iteration 1

solve extended equilibrium $\mathbf{g}_{\text{extended}}(\mathbf{V}) \rightarrow \delta\mathbf{V} = \dots$

update control component

set $\Delta\mathbf{V} = \delta\mathbf{V}_1$

j = signed index with biggest value of $|\Delta\mathbf{V}/\Delta\mathbf{V}_{\text{max}}|$

if j changed:

scale solution $\Delta\mathbf{V}$ to $\Delta\mathbf{V} / \max(|\Delta\mathbf{V}/\Delta\mathbf{V}_{\text{max}}|)$

else:

$\mathbf{V} = \mathbf{V} + \Delta\mathbf{V}$

if (NR-Iteration 1 did converge **and** $|\Delta\mathbf{V}/\Delta\mathbf{V}_{\text{max}}| < 1$):

evaluate $\mathbf{g}(\mathbf{V})$ and save state variables ζ

go to next increment

go to

Increment 2

Recycle Loops

Newton-Rhapson Iterations

solve extended equilibrium $\mathbf{g}_{\text{extended}}(\mathbf{V}) \rightarrow \Delta\mathbf{V} = \dots$

update control component

j = signed index with biggest value of $|\Delta\mathbf{V}/\Delta\mathbf{V}_{\text{max}}|$

if (j changed **and** NR-Iterations did converge):

recycle increment with new j

reset \mathbf{V} to beginning of Increment

if NR-Iterations did not converge:

Exit 1

if (NR-Iterations did converge **and** $|\Delta\mathbf{V}/\Delta\mathbf{V}_{\text{max}}| < 1$):

evaluate $\mathbf{g}(\mathbf{V})$ and save state variables ζ

go to next increment

go to

Increment 2

Increment 2

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