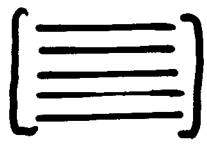
Algorithm: $\hat{K}_h := \mathbb{0}$

FOR $r := 1$ **STEP** 1 **UNTIL** R_h **DO** (loop over all elements)
    FOR $\alpha := 1$ **STEP** 1 **UNTIL** 3 **DO**
        FOR $\beta := 1$ **STEP** 1 **UNTIL** 3 **DO**
            BEGIN
                * compute $K^{(r)}_{\alpha\beta} := \{\ldots\} |J_{\delta_{r0}}| \frac{1}{2}$ for the model probl.
                * determine $i := i(r, \alpha)$ $r : \alpha \longleftrightarrow i$
                                   $j := j(r, \beta)$ $r : \beta \longleftrightarrow j$
                * update $K_{ij} := K_{ij} + K^{(r)}_{\alpha\beta}$
            END
        ENDFOR
    ENDFOR
ENDFOR

Theoretical representation of $\hat{K}_h$ using the connectivity matrices C_r:

$$\hat{K}_h = [K_{ij}]_{i,j \in \overline{\omega}_h} =$$



$$_{\bar{N}_h \times \bar{N}_h} =$$

$$\bar{N}_h = N_h + \partial N_h$$

$$= \sum_{r \in \mathbb{R}_h} C_r K^{(r)} C_r^T$$

with $P_r = C_r : \mathbb{R}^3 \longrightarrow \mathbb{R}^{\bar{N}_h}$
$\qquad R_r = C_r^T : \mathbb{R}^{\bar{N}_h} \longrightarrow \mathbb{R}^3$

$$\boxed{r : \alpha \longleftrightarrow i}$$