FE-System:

- Symmetric and indefinite formulation:

$$\begin{bmatrix} A_h & B_h^T \\ B_h & -t^2 C_h \end{bmatrix}\begin{bmatrix} \underline{u}_h \\ \underline{p}_h \end{bmatrix} = \begin{bmatrix} \underline{f}_h \\ \underline{0} \end{bmatrix}$$ with C_h - mass matrix,

see Subsection 2.4 for iterative solvers!

- Two Schur-Complements are possible:

1. p-Schur-Complement: $\underline{u}_h = -A_h^{-1} B_h \underline{p}_h + A_h^{-1} \underline{f}_h$

$$(B_h A_h^{-1} B_h + t^2 C_h)\, \underline{p}_h = -A_h^{-1} \underline{f}_h$$

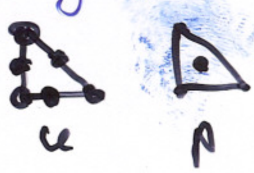
2. u-Schur-Complement: $\underline{p}_h = t^{-2} C_h^{-1} B_h \underline{u}_h$

$$(A_h + \lambda B_h^T C_h^{-1} B_h)\, \underline{u}_h = \underline{f}_h$$

$\Downarrow$ ← maybe, mass lumping!

$$(A_h + \lambda B_h^T \tilde{C}_h^{-1} B_h)\, \underline{u}_h = \underline{f}_h$$

$\Downarrow$ ← $\exists$ element pairs: yes



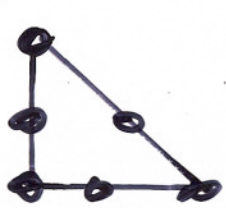
K_h

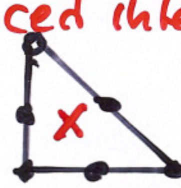
i.e.

$$((A_h + \lambda B_h^T \tilde{C}_h^{-1} B_h)\, \underline{u}_h, \underline{v}_h) =$$

$$= 2\mu\, (\varepsilon(u_h), \varepsilon(v_h))_0 + \lambda\, (\operatorname{div} u_h, \operatorname{div} v_h)_{0,h}$$

reduced integration





$x = (\frac{1}{3}, \frac{1}{3})$

$\forall\, \underline{u}_h, \underline{v}_h \in \mathbb{R}^{N_h}: \underline{u}_h, \underline{v}_h \longleftrightarrow u_h, v_h \in X_h = \underset{\text{PVE}}{V_{0h}}$