- **Mixed FE-Approximation:**

  The results of Theorem 2.6 (= discrete version of Brezzi's theorem) and of Theorem 2.7 (= convergence theorem) for some conforme mixed FE-Approximation

$$X_h := \operatorname{span}\{p^{(i)} : i \in \omega_{X_h}\} \subset X$$

$$\Lambda_h := \operatorname{span}\{q^{(j)} : j \in \omega_{\Lambda_h}\} \subset \Lambda$$

to the PMF (14) are valid provided that the discrete LBB-condition holds, i.e.:

$$(16) \quad \sup_{\tau_h \in X_h} \frac{(\tau_h, \varepsilon(v_h))_0}{\|\tau_h\|_0} \geq \frac{\|\varepsilon(v_h)\|_0^2}{\|\varepsilon(v_h)\|_0} = \|\varepsilon(v_h)\|_0 \geq \underbrace{c_K}_{\tilde{\beta}_1 = \beta_1} \|v_h\|_1 \quad \forall v_h \in \Lambda_h \subset \Lambda$$

$$\boxed{\varepsilon(\Lambda_h) \subset X_h} \; !$$

Let us remark that the V_{0h}-ellipticity holds since $a(\cdot,\cdot)$ is elliptic on $X_h \subset X$!

- **Exercise 3.10:**

  Discuss the condition

$$\varepsilon(\Lambda_h) := \{[\varepsilon_{ij}(v_h)] : v_h \in \Lambda_h\} \subset X_h$$

also in comparison with the PVF (2)!