

Bemerkung 4.34: Elementweise Assemblierung (III)

$$\begin{aligned}\tilde{A}_{ij}^{(m)} &= \int_{\hat{K}} C \nabla_{\hat{x}} N_j(\hat{x}) \cdot \nabla_{\hat{x}} N_i(\hat{x}) |\det B| d\hat{x} \\ &= \gamma_1 \int_{\hat{K}} \partial_{\hat{x}_1} N_j \cdot \partial_{\hat{x}_1} N_i d\hat{x} + \gamma_3 \int_{\hat{K}} \partial_{\hat{x}_2} N_j \cdot \partial_{\hat{x}_2} N_i d\hat{x} + \\ &\quad + \gamma_2 \int_{\hat{K}} \partial_{\hat{x}_1} N_j \cdot \partial_{\hat{x}_2} N_i + \partial_{\hat{x}_2} N_j \cdot \partial_{\hat{x}_1} N_i d\hat{x}\end{aligned}$$

mit

$$\gamma_1 := c_{11} |\det B| = \frac{1}{|\det B|} (a^{(3)} - a^{(1)}) \cdot (a^{(3)} - a^{(1)}),$$

$$\gamma_2 := c_{12} |\det B| = -\frac{1}{|\det B|} (a^{(2)} - a^{(1)}) \cdot (a^{(3)} - a^{(1)}),$$

$$\gamma_3 := c_{22} |\det B| = \frac{1}{|\det B|} (a^{(2)} - a^{(1)}) \cdot (a^{(2)} - a^{(1)}).$$

Ergebnis: $\tilde{A}^{(m)} = \gamma_1 S_1 + \gamma_2 S_2 + \gamma_3 S_3$.

