

$$\epsilon_{ij} = \begin{pmatrix} 2 & -1 & 0 \\ -1 & 3 & 0 \\ 0 & 0 & 0 \end{pmatrix} \cdot 10^{-4}$$

$$\overline{AB} = 80 \text{ mm}$$

$$\overline{AD} = 60 \text{ mm}$$

minus

$$\Delta \overline{AC} = ?$$

$$\Delta d = ?$$

$$\text{tg } \phi_{AC} = \frac{60}{80}$$

$$\phi_{AC} = 36,87^\circ$$

in invarca $\epsilon_{xx} = \frac{\partial u}{\partial x}$ vidimo, da lahko razpisemo tudi: $\epsilon_{m_{AC}} = \frac{\Delta \overline{AC}}{\overline{AC}}$

$$\epsilon_m = \frac{\epsilon_{xx} + \epsilon_{yy}}{2} + \frac{\epsilon_{xx} - \epsilon_{yy}}{2} \cdot \cos 2\phi + \epsilon_{xy} \cdot \sin 2\phi$$

$$\epsilon_{m_{AC}} = \frac{\epsilon_{xx} + \epsilon_{yy}}{2} + \frac{\epsilon_{xx} - \epsilon_{yy}}{2} \cdot \cos 2\phi_{AC} + \epsilon_{xy} \cdot \sin 2\phi_{AC}$$

$$\epsilon_{m_{AC}} = \frac{1}{2} \cdot (2+3) \cdot 10^{-4} + \frac{1}{2} \cdot (2-3) \cdot 10^{-4} \cdot \cos(2 \cdot 36,87) - 1 \cdot 10^{-4} \cdot \sin(2 \cdot 36,87)$$

$$\epsilon_{m_{AC}} = 0,00014 \Rightarrow \Delta \overline{AC} = \epsilon_{m_{AC}} \cdot \overline{AC} = 0,00014 \cdot 100 = \underline{0,014 \text{ mm}}$$

$\Delta \overline{AB} = ? \Rightarrow \epsilon_{m_{AB}} = \frac{\Delta \overline{AB}}{\overline{AB}} \Rightarrow \Delta \overline{AB} = \epsilon_{m_{AB}} \cdot \overline{AB} : \phi_{AB} = 0$ ← kot

$$\epsilon_{m_{AB}} = \frac{1}{2} (2+3) \cdot 10^{-4} + \frac{1}{2} (2-3) \cdot 10^{-4} \cdot \cos(2 \cdot 0) - 1 \cdot 10^{-4} \cdot \sin(2 \cdot 0)$$

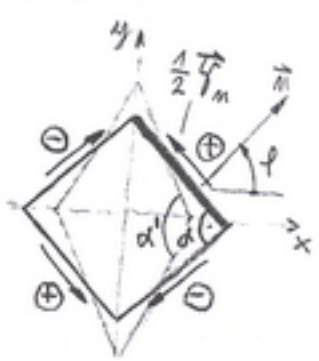
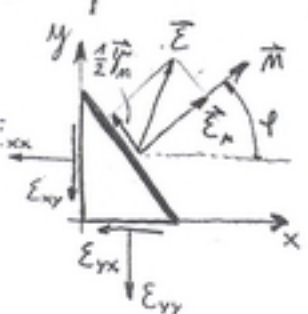
$$\epsilon_{m_{AB}} = 0,0002 = \epsilon_{xx} \quad \Delta \overline{AB} = 0,0002 \cdot 80 = \underline{0,016 \text{ mm}}$$

$$\Delta \overline{BD} = ? \Rightarrow \epsilon_{m_{BD}} = \frac{\Delta \overline{BD}}{\overline{BD}} \Rightarrow \Delta \overline{BD} = \epsilon_{m_{BD}} \cdot \overline{BD} : \phi_{BD} = 143,13^\circ$$

$$\epsilon_{m_{BD}} = \frac{1}{2} (2+3) \cdot 10^{-4} + \frac{1}{2} (2-3) \cdot 10^{-4} \cdot \cos(2 \cdot 143,13) - 1 \cdot 10^{-4} \cdot \sin(2 \cdot 143,13)$$

$$\epsilon_{m_{BD}} = 0,000332 \quad \Delta \overline{BD} = 0,000332 \cdot 100 = \underline{0,0332 \text{ mm}}$$

in sprememba pravega kota d:



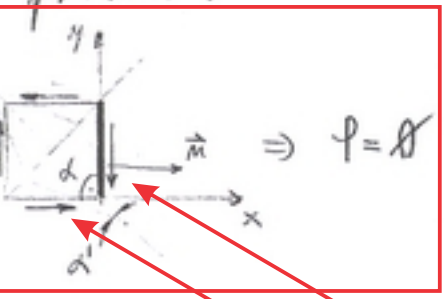
$$\Delta d = d' - d$$

γ_m je sprememba pravega kota d v radijanih (Δd)

če je $\gamma_m > 0 \Rightarrow \Delta d > 0$ - to velja na odelbeljini ravni.

$\vec{\epsilon}$ -vektor specifičnih deformacij

pri max:



$$\frac{1}{2} \gamma_m = \frac{\epsilon_{yy} - \epsilon_{xx}}{2} \sin 2\phi + \epsilon_{xy} \cdot \cos 2\phi$$

$$\frac{1}{2} \gamma_m = \frac{1}{2} (3-2) \cdot 10^{-4} \cdot \sin(2 \cdot 0) - 1 \cdot 10^{-4} \cdot \cos(2 \cdot 0)$$

$$\frac{1}{2} \gamma_m = -1 \cdot 10^{-4} \Rightarrow \gamma_m = -2 \cdot 10^{-4}$$

$\Delta d = d' - d$
 $\Delta d < 0$ smer (zaradi minusa zgoraj)

$$\gamma_m < 0 \Rightarrow \Delta d < 0 \Rightarrow \Delta d = -2 \cdot 10^{-4} \text{ rad} = -0,01146^\circ$$