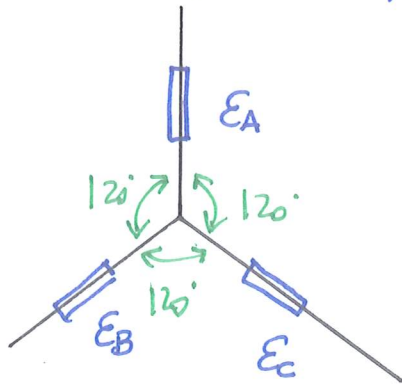


1.2.11 * GIVET:

- Fri obelastad yta har 3 t jningar m tts upp.



$$\epsilon_A = 5 \cdot 10^{-4}$$

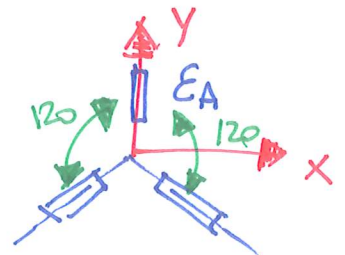
$$\epsilon_B = 3 \cdot 10^{-4}$$

$$\epsilon_C = -5 \cdot 10^{-4}$$

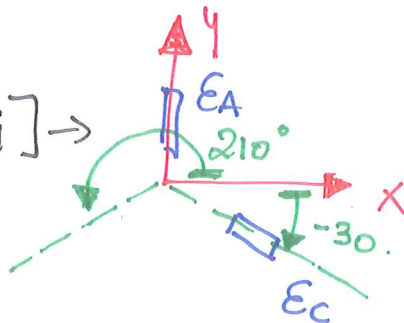
* S KT: Best m. $\left\{ \begin{array}{l} \text{huvudt jningar} \\ \text{huvudriktningar} \end{array} \right\}$ i ytans plan.

* L SNING:

1) Inf r ett globalt koordinatsystem.



2) - [F.S. s18-19] ->

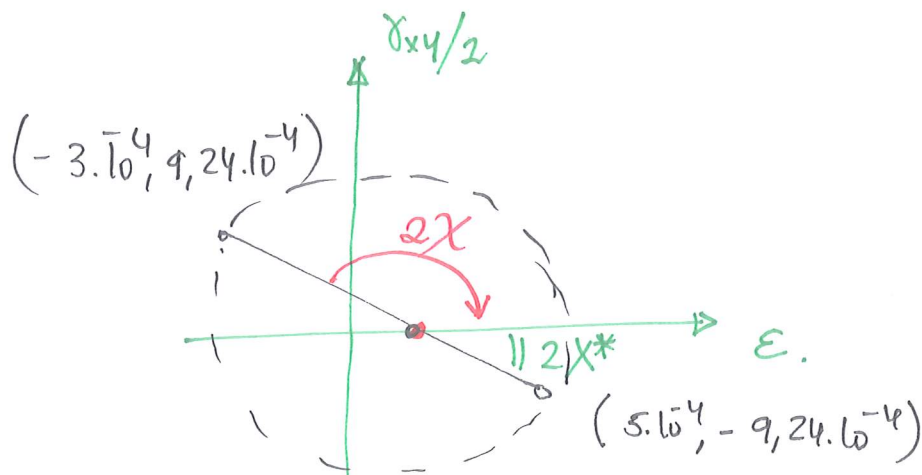


$$\left\{ \begin{array}{l} \epsilon_A = \epsilon_y \\ \epsilon_C = \epsilon(\psi = -30^\circ) \\ \epsilon_B = \epsilon(\psi = 210^\circ) \end{array} \right.$$

$$\left\{ \begin{array}{l} \epsilon_B = \epsilon(210^\circ) = \epsilon_x \cos^2(210) + \epsilon_A \sin^2(210) + \gamma_{xy} \cos(210) \sin(210) \\ \epsilon_C = \epsilon(-30^\circ) = \epsilon_x \cos^2(-30) + \epsilon_A \sin^2(-30) + \gamma_{xy} \cos(-30) \sin(-30) \end{array} \right.$$

2 ekv
2 obek $\Rightarrow \left\{ \begin{array}{l} \epsilon_x = -3 \cdot 10^{-4} \\ \gamma_{xy} = 9,24 \cdot 10^{-4} \end{array} \right.$

③.- Ritz töjningarna i Mohrs töjningscirkele.



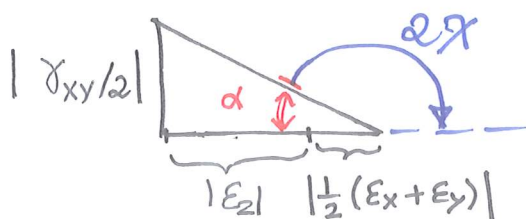
$$\varepsilon_{1,2} = \frac{1}{2} (\varepsilon_x + \varepsilon_y) \pm \left[\left(\frac{\varepsilon_x - \varepsilon_y}{2} \right)^2 + \left(\frac{\gamma_{xy}}{2} \right)^2 \right]^{1/2}$$

$$\begin{cases} \varepsilon_1 = 7,11 \cdot 10^{-4} \\ \varepsilon_2 = -5,11 \cdot 10^{-4} \end{cases}$$

$$2\chi^* = \text{atan} \cdot \left(\frac{\gamma_{xy}}{\varepsilon_x - \varepsilon_y} \right) = -49,11^\circ$$

$$2\chi = 2\chi^* + 180^\circ = 130,9^\circ \Rightarrow \boxed{\chi = 65,4^\circ}$$

om man räknar ut m.h.a. geometrin:



$$\alpha = \text{atan} \cdot \left(\frac{|\gamma_{xy}/2|}{|\varepsilon_2| + \frac{1}{2}(\varepsilon_x + \varepsilon_y)} \right) = 49,11^\circ$$

$$2\chi = 180 - \alpha = 130,9 \Rightarrow \underline{\underline{\chi = 65,4^\circ}}$$