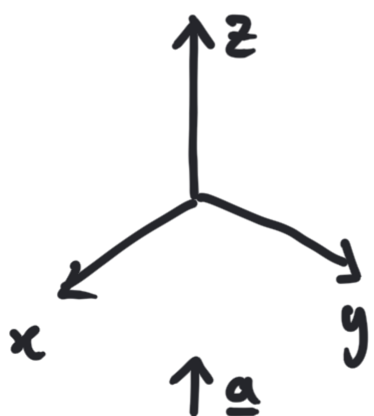
Stati di tensione piani.

Def: $\exists\, \underline{a}$ (versore) tale che

$$\underline{t}_{\underline{n}} \cdot \underline{a} = 0 \quad \text{per ogni } \underline{n}$$



Stati di tensione piani.

Def: $\exists\ \underline{a}$ (versore) tale che

$$\underline{t}_{\underline{n}} \cdot \underline{a} = 0 \qquad \text{per ogni } \underline{n}$$

$$\Updownarrow$$

$$\underline{T}\,\underline{n} \cdot \underline{a} = 0 \qquad \text{"}$$

$\underline{T} = \underline{T}^T$

$$\parallel$$

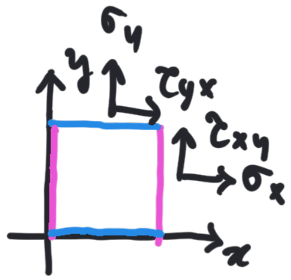
$$\underline{n} \cdot \underline{T}\,\underline{a} = 0 \qquad \text{"} \qquad \Rightarrow \quad \underline{T}\,\underline{a} = \underline{0}$$

$\uparrow$

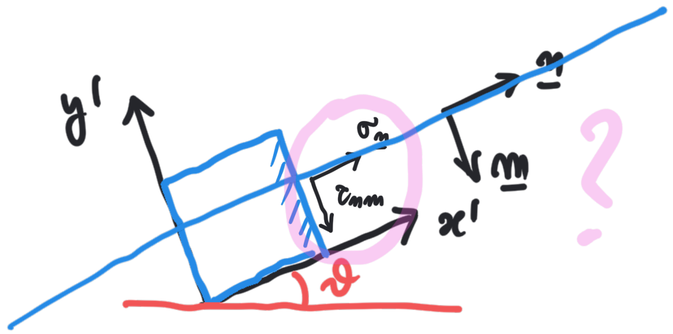
giacitura scarica

Costruzione di Mohr

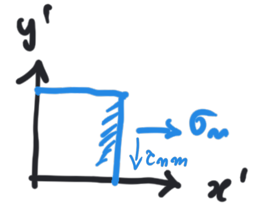
$$[\underline{T}] = \begin{bmatrix} \sigma_x & \tau_{yx} & 0 \\ \tau_{xy} & \sigma_y & 0 \\ 0 & 0 & 0 \end{bmatrix}$$



$(\tau_{yx} = \tau_{xy})$

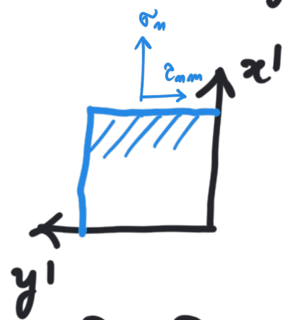


$\vartheta = 0$



$\sigma_n = \sigma_x$

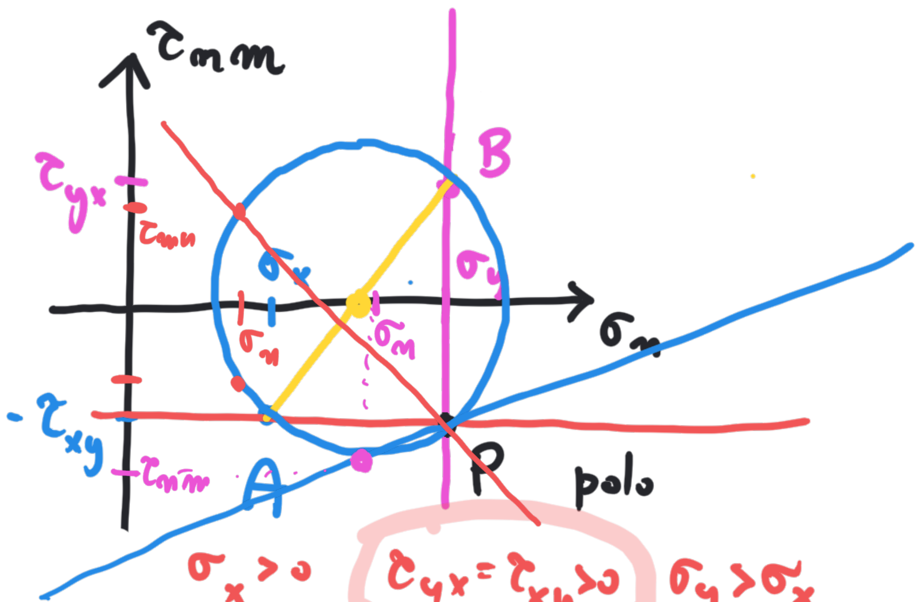
$\tau_{nm} = -\tau_{xy}$



$\vartheta = \frac{\pi}{2}$

$\sigma_n = \sigma_y$

$\tau_{nm} = \tau_{yx}$

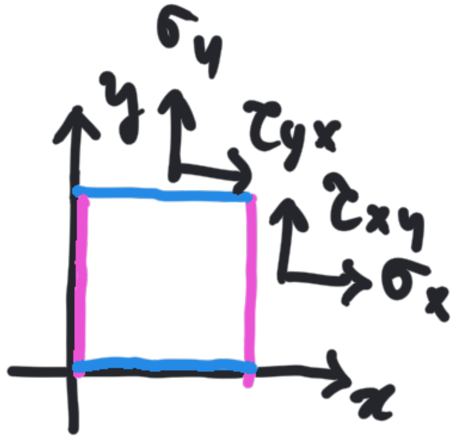


$\sigma_x > 0$ $\tau_{yx} = \tau_{xy} > 0$ $\sigma_y > \sigma_x$

disegno circonf. diam max

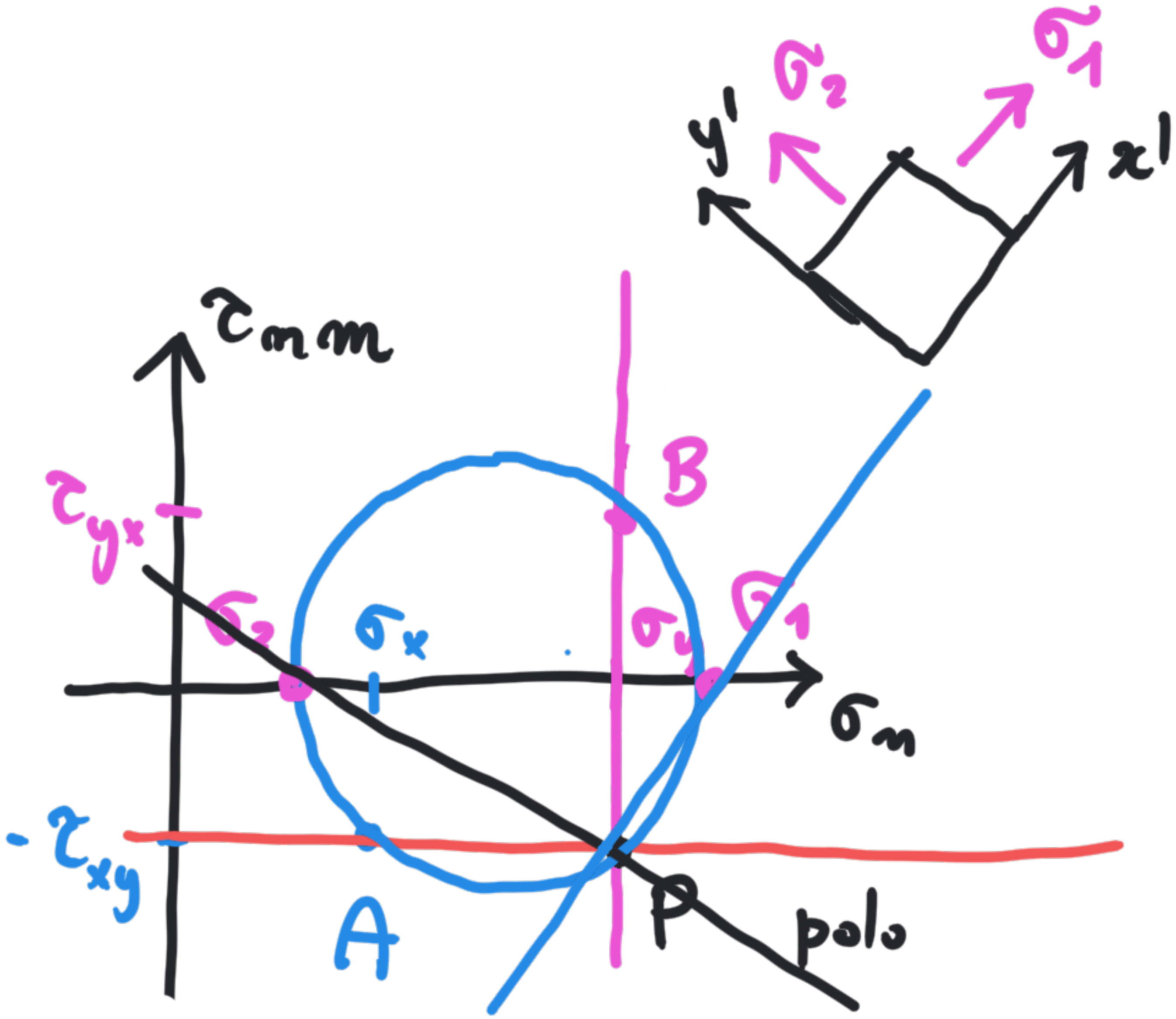
Costruzione di Mohr

$$[\underline{T}] = \begin{bmatrix} \sigma_x & \tau_{yx} & 0 \\ \tau_{xy} & \sigma_y & 0 \\ 0 & 0 & 0 \end{bmatrix}$$



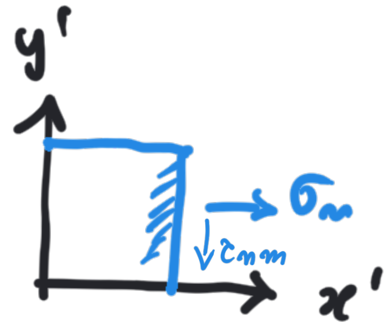
$(\tau_{yx} = \tau_{xy})$

Applic.: tensioni e direz. princ.



$\sigma_x > 0$ $\quad \tau_{yx} = \tau_{xy} > 0$ $\quad \sigma_y > \sigma_x$

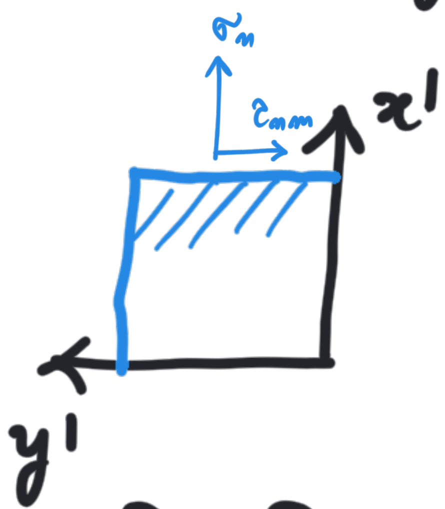
$\vartheta = 0$



$\sigma_n = \sigma_x$

$\tau_{nm} = -\tau_{xy}$

$\vartheta = \frac{\pi}{2}$

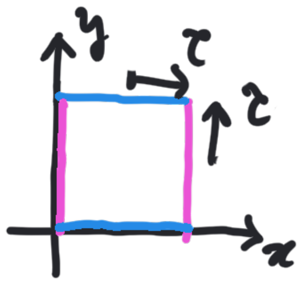


$\sigma_n = \sigma_y$

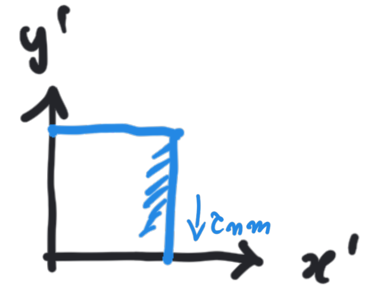
$\tau_{nm} = \tau_{yx}$

Esempio: taglio puro

$$[\underline{T}] = \begin{bmatrix} 0 & \tau & 0 \\ \tau & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

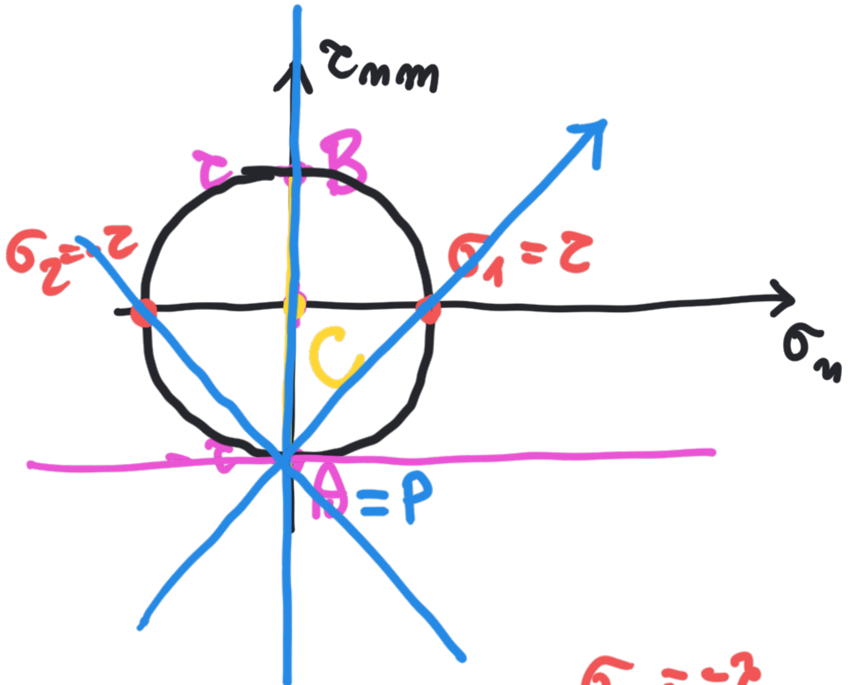


$\vartheta = 0$

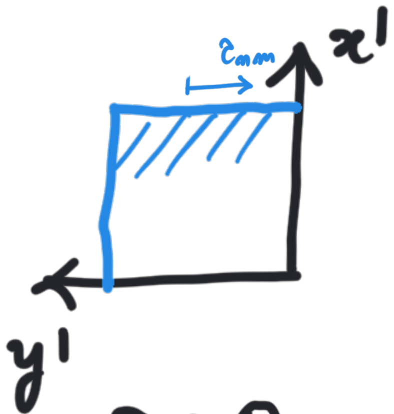


$\sigma_n = 0$

$\tau_{nm} = -\tau$

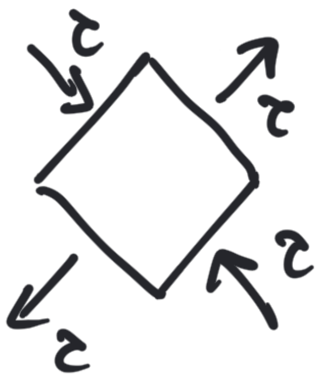


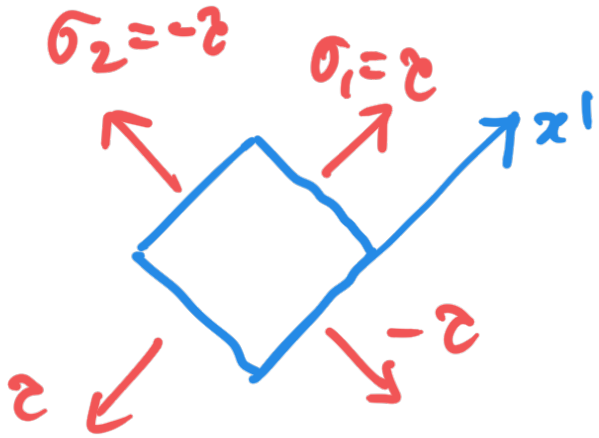
$\vartheta = \frac{\pi}{2}$



$\sigma_n = 0$

$\tau_{nm} = \tau$





$$[\underline{T}] = \begin{bmatrix} \sigma & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$