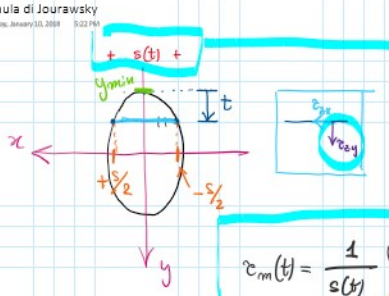
Formula di Jourawsky

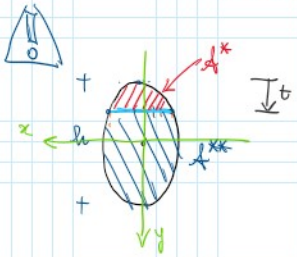
Wednesday, January 10, 2018 5:22 PM



$$\tau_m(t) = \frac{1}{s(t)} \int_{-s(t)/2}^{s(t)/2} \tau_{zy}\, dx$$

$\tau_{zy}(x, y_{min}+t)$

Tensione tangenziale media



Momento statico di $A^*(t)$ rispetto all'asse x

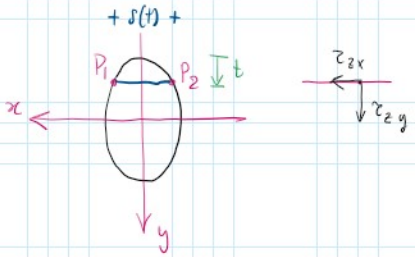
$$S_x^*(t) = \int_{A^*(t)} y\, dA$$

$S_x^*(0) = 0$

$S_x^*(t=h) = 0$ $\quad A^*(t=h) = A$ $\quad \int_A y\, dA = ?$

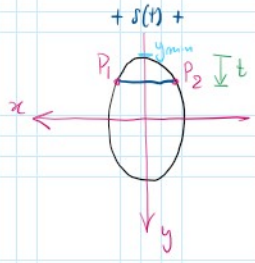
Formula di Jourawsky

$$\tau_m(t) = -\frac{T_y}{I_x} \frac{S_x^*(t)}{s(t)}$$

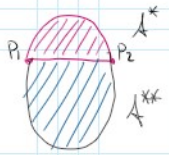


$$\tau_m(t) = \frac{1}{s(t)} \int_{-s(t)/2}^{+s(t)/2} \tau_{zy}\, dx$$

$\tau_{zy}(x, y_{min}+t)$



Dividiamo in due parti

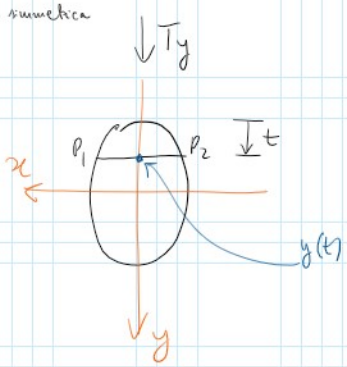


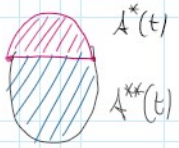
$$S_x^*(t) := \int_{A^*(t)} y \, dA$$

La formula di Jourawsky stabilisce che:

$$\tau_m(t) = - \frac{T_y}{I_x} \frac{S_x^*(t)}{s(t)}$$

Sez. simmetrica

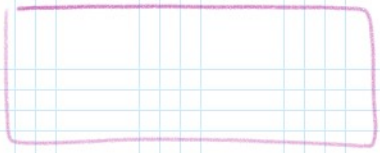




momento statico:
di A^* rispetto
all'asse x,

$$s(t)\,\tau_m(t) = - \frac{T_y}{I_x} S_x^*(t) = - \int_{A^*(t)} \frac{\partial \sigma_z}{\partial z} \, dA$$

⇓



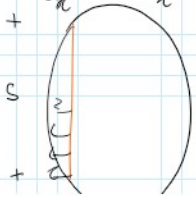
formula di J.

$$S_x = 0$$

$$S_x = S_x^* + S_x^{**}$$

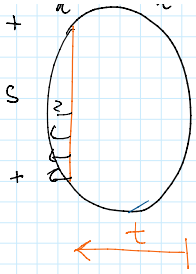
⇓

$$S_x^* = - S_x^{**}$$



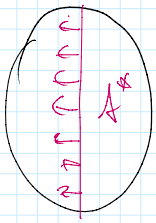
T_x

$$\tau_m = - \frac{T_x}{I_y} \frac{S_y^*}{s}$$



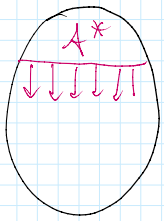
T_x

$$\tau_m = -\frac{T_x}{I_y}\frac{S_y^*}{s}$$



T_x

$$\tau_m = -\frac{T_x}{s I_y} S_y^*$$



T_x

$$\tau_m = 0$$