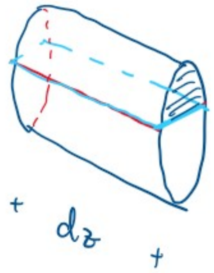
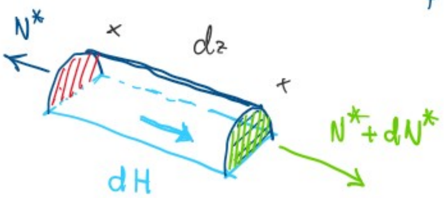
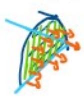




$$\cancel{N^*} + dN^* - \cancel{N^*} + dH = 0 \Rightarrow \boxed{\underline{\underline{dN^*}} + dH = 0}$$

$$N^* = \int_{A^*} \sigma_z \, dA \Rightarrow dN^* = \int_{A^*} d\sigma_z \, dA = \int_{A^*} \frac{\partial \sigma_z}{\partial z} dA \, dz = \int_{A^*} \frac{T_y}{I_x} y \, dA \, dz$$



$$d\sigma_z = \frac{\partial \sigma_z}{\partial z} dz$$

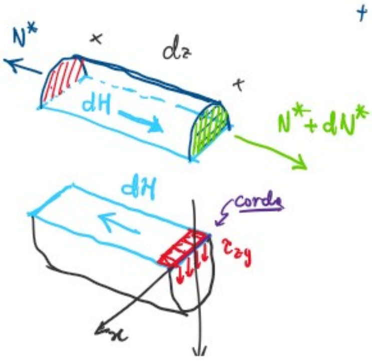
$$\frac{\partial \sigma_z}{\partial z} = \frac{T_y}{I_x} y$$

$$= \frac{T_y}{I_x} \underbrace{\left(\int_{A^*} y \, dA \right)}_{S_x^*(t)} dz$$

$$\Rightarrow \boxed{dN = \frac{T_y}{I_x} S_x^* \, dz}$$

$$dH = \left(\int_{corda} \tau_{zy} \, dx \right) dz$$

$$= \left(\int_{-s/2}^{+s/2} \tau_{zy} \, dx \right) dz$$



Ricordiamo:

Def:

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

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

$-s/2$

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

$$\Rightarrow \boxed{dH = s(t)\,\tau_m(t)\,dz}$$

$$s(t)\,\tau_m(t)\,dz + \frac{T_y}{I_x} S_x^* \,dz = 0$$

$$\Downarrow$$

$$s(t)\,\tau_m(t) + \frac{T_y}{I_x} S_x^*(t) = 0$$

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