

esercizio 3.7.

$$A = l^2 - d^2 l^2 = l^2(1 - d^2)$$

$$J_{yy} = J_{xx} = \frac{l \cdot l^3}{12} - \frac{d l \cdot d^3 l^3}{12} = \frac{l^4(1 - d^4)}{12}$$

$$W_{xx} = W_{yy} = \frac{l^4}{12} (1 - d^4) \cdot \frac{2}{l} = \frac{l^3}{6} (1 - d^4)$$

• sforzo normale

$$N_A = F$$

• momento flettente

$$M_A = F \cdot \lambda l$$

$$\sigma_A = \frac{F}{A} + \frac{F \cdot \lambda l}{W_{xx}} = \frac{F}{l^2} \left( \frac{1}{1 - d^2} + \frac{\lambda l}{1 - d^4} \right)$$

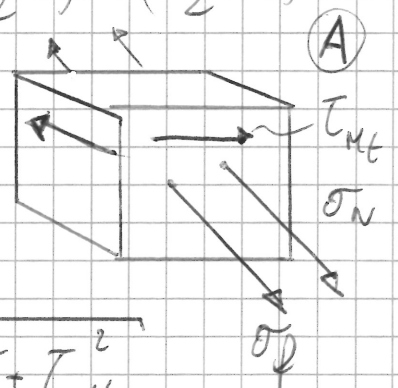
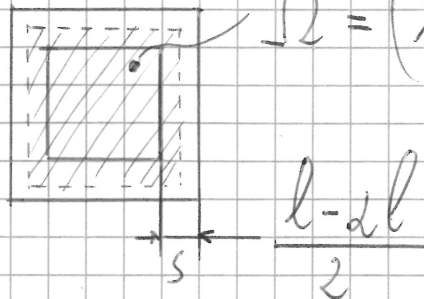
• taglio

→ in A la  $T$  di taglio è nulla

•  $T$  momento torcente con Bredt

$$T_{ME} = \frac{M_T}{2 \Omega s} = \frac{F \cdot \lambda l}{2 \cdot \left( \frac{l+d}{2} \right) \cdot \frac{l-d}{2}} = \frac{F \cdot \lambda l \cdot 4}{l^2(1+d)^2 \cdot l(1-d)} = \frac{F}{l^2} \left( \frac{4 \lambda}{(1+d)^2(1-d)} \right)$$

$$\Omega = \left( l - \frac{l-d}{2} \right) \cdot \left( \frac{l}{2} + \frac{d l}{2} \right) = \left( \frac{l+d}{2} \right)^2$$



$$\sigma_{1A} = \frac{\sigma_A}{2} + \sqrt{\left( \frac{\sigma_A}{2} \right)^2 + \tau_{ME}^2} ; \sigma_{2A} = \frac{\sigma_A}{2} - \sqrt{\left( \frac{\sigma_A}{2} \right)^2 + \tau_{ME}^2}$$