

Esercizio 3.12.

Calcolo le quantità legate alla sezione.

$$W_{xx} = W_{yy} = \frac{\pi}{32} \cdot l^3 \cdot \left[1 - \left(\frac{d}{l} \right)^4 \right] = \frac{\pi}{32} \cdot l^3 \cdot (1 - d^4)$$

$$W_P = \frac{\pi}{16} l^3 \cdot (1 - d^4)$$

$$A = \frac{\pi}{4} l^2 (1 - d^2)$$

Calcolo N e le varie σ_N .

$$N = F$$

$$\sigma_{NA} = \sigma_{NB} = \sigma_{NC} = \frac{F}{A} \quad (\text{positivo perché trattivo})$$

Calcolo M_{fxx} e M_{fyy} e le varie σ_f .

$$|M_{fxx}| = F \cdot \lambda l$$

$$|M_{fyy}| = F \cdot l$$

$$\sigma_{fA} = + \frac{F \cdot \lambda l}{W_{xx}}$$

$$\sigma_{fB} = + \frac{F \cdot l}{W_{yy}}$$

$$\sigma_{fC} = - \frac{F \cdot \lambda l}{W_{xx}}$$

Calcolo T e le varie τ_T

$|T| = |F|$ ho "un solo" taglio ; $|\tau_{TA}| = |\tau_{TC}| = 0$

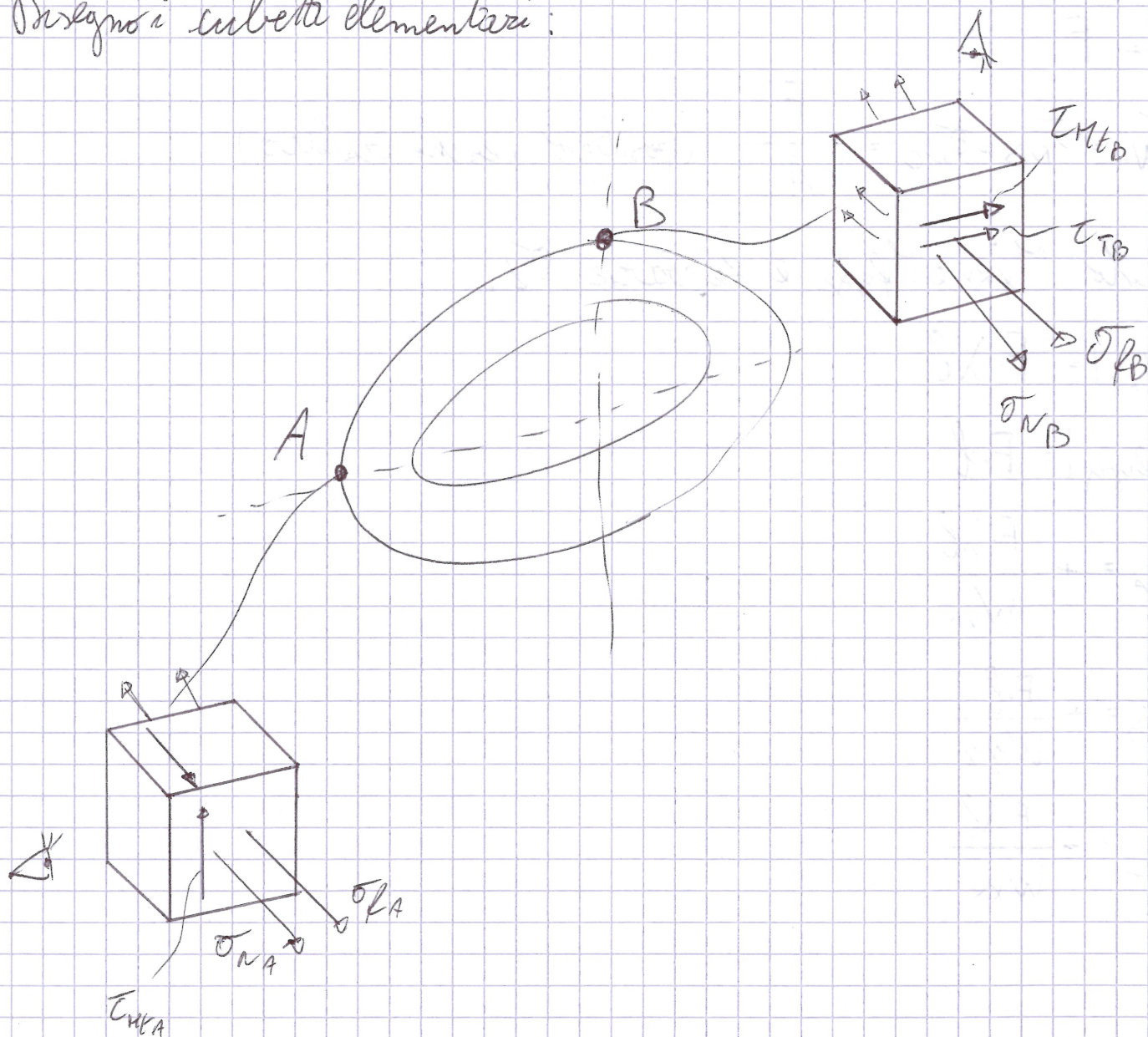
$$|\tau_{TB}| = \frac{F}{A} \cdot \frac{4}{3} \left(1 + \frac{1}{\alpha + \frac{1}{\alpha}} \right)$$

Calcolo M_t e le varie τ_{M_t}

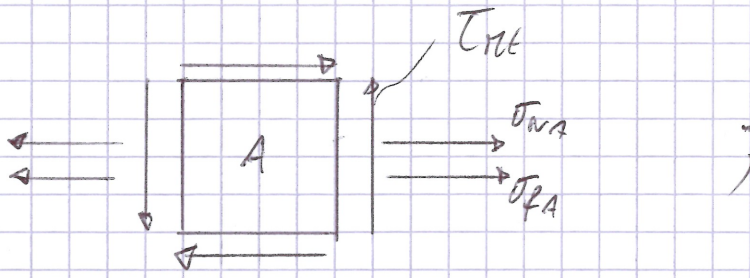
$$|M_t| = F(\beta l + l)$$

$$|\tau_{M_tA}| = |\tau_{M_tB}| = |\tau_{M_tC}| = \frac{F \cdot l (\beta + 1)}{W_p}$$

Disegnare i cubetti elementari:



$$\sigma_{1-2A} = \frac{(\sigma_{\varphi A} + \sigma_{NA})}{2} \pm \sqrt{\left(\frac{(\sigma_{\varphi A} + \sigma_{NA})}{2}\right)^2 + \tau_{MA}^2}$$



$$\sigma_{1-2B} = \frac{\sigma_{\varphi B} + \sigma_{NB}}{2} \pm \sqrt{\left(\frac{\sigma_{\varphi B} + \sigma_{NB}}{2}\right)^2 + (\tau_{MB} + \tau_{TB})^2}$$

