Esercizio 3.15:

Calcolo le quantità legate alla sezione.

$$W_{xx} = W_{yy} = \frac{\pi}{32} \ell^3 (1-\alpha^4)$$

$$W_P = \frac{\pi}{16} \ell^3 (1-\alpha^4)$$

$$A = \frac{\pi}{4} \ell^2 (1-\alpha^2)$$

Calcolo N e le σ_N.

$$N = F$$

$$\sigma_{NA} = \sigma_{NB} = \sigma_{NC} = \frac{F}{A}$$

Calcolo M_f e σ_f.

$$M_{fxx} = 0 \quad ; \quad M_{fyy} = |F \cdot \beta\ell - F \cdot \lambda\ell|$$

$$\sigma_{fA} = 0 \; ; \quad \sigma_{fB} = + \frac{F \cdot \lambda\ell - F \cdot \beta\ell}{W_{yy}} \; ; \quad \sigma_{fC} = 0$$

Calcolo T e τ_T.

$$T = F$$

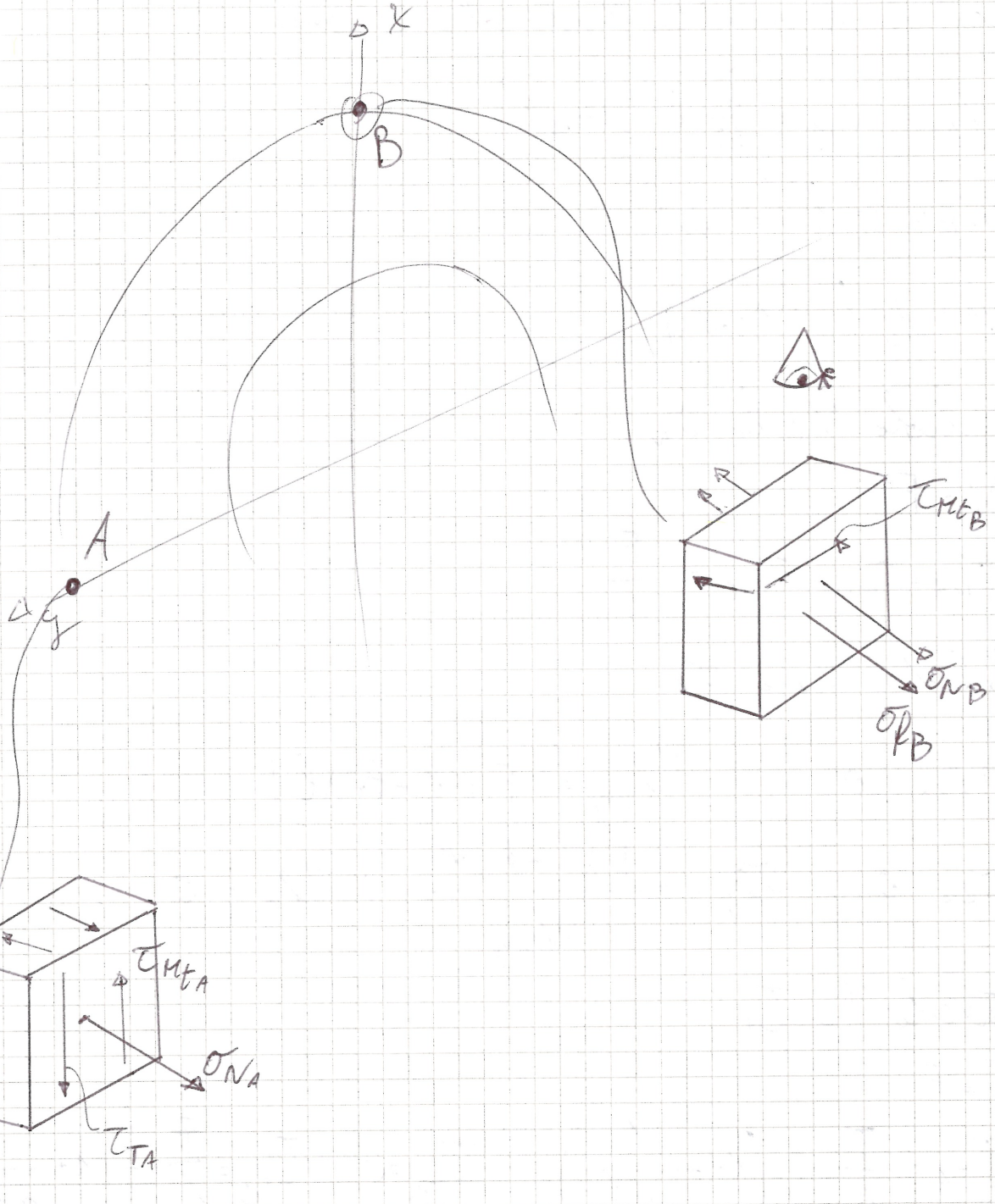
$$\tau_{TA} = \frac{F}{A} \cdot \frac{4}{3} \left(1 + \frac{1}{\alpha + \frac{1}{\alpha}}\right) \; ; \quad \tau_{TB} = 0 \; ; \quad \tau_{TC} = \frac{F}{A} \cdot \frac{4}{3} \left(1 + \frac{1}{\alpha + \frac{1}{\alpha}}\right)$$

Calcolo M_t e τ_{Mt}

$$M_t = F \cdot \ell$$

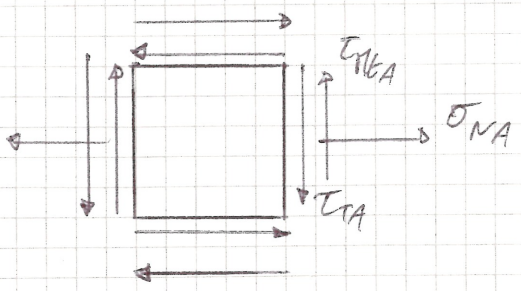
$$\tau_{Mt_A} = \tau_{Mt_B} = \tau_{Mt_C} = \frac{F \cdot \ell}{W_P}$$

Rappresento i cubetti elementari nel punto A e B.



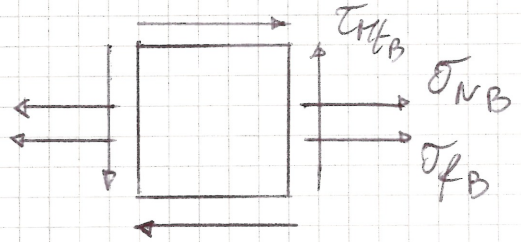
Rappresento i cubetti in 2D guardandoli da una faccia già ruotata rispetto alla mia direzione principale.

• A



$$\sigma_{1-2_A} = \frac{\sigma_{NA}}{2} \pm \sqrt{\frac{\sigma_N^2}{4} + (\tau_{MtA} - \tau_{TA})^2}$$

• B



$$\sigma_{1-2_B} = \frac{\sigma_{N_B} + \sigma_{fB}}{2} \pm \sqrt{\frac{(\sigma_{N_B} + \sigma_{fB})^2}{4} + \tau_{MtB}^2}$$