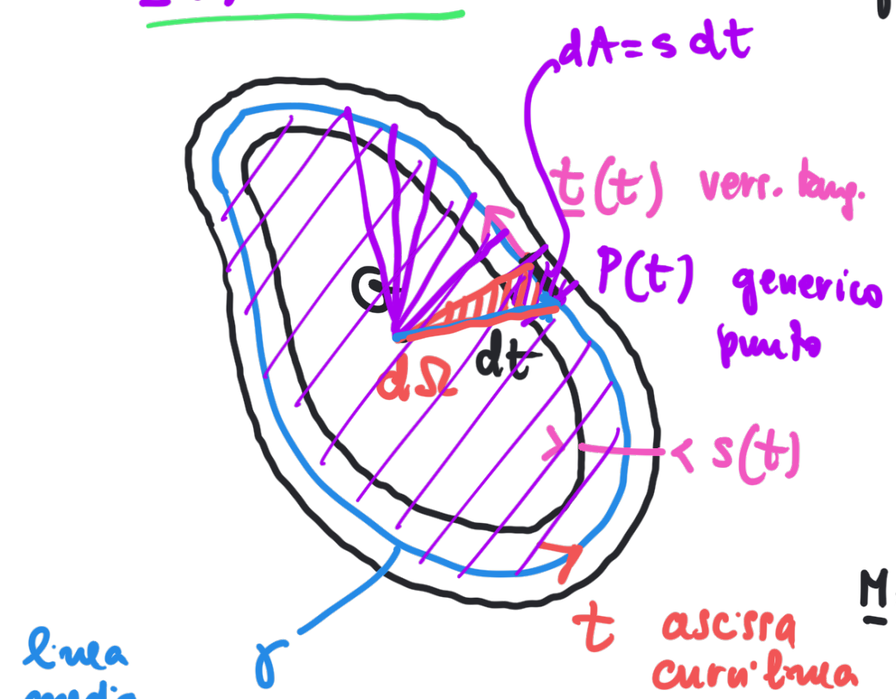
1ª formula di Bredt

$$\underline{\tau}(t) = \tau(t)\,\underline{t}(t)$$

$q := \tau(t)s(t) = \text{cost}$

flusso tens. tang.

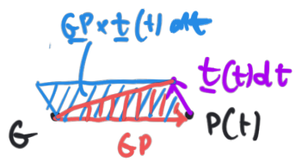


$$d\underline{f}(t) = \tau(t)s(t)dt\;\underline{t}(t) = q\,\underline{t}(t)dt$$

$$d\underline{M}(f) = \underline{GP}(t) \times d\underline{f}(t) = q\,\underline{GP}(t) \times \underline{t}(t)\,dt$$

$$\underline{M} = q \oint \underbrace{\underline{GP}(t) \times \underline{t}(t)\,dt}_{2\,d\Omega\,\underline{k}}$$

$s(t) \ll$ lungh. γ.



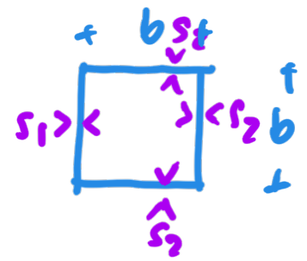
$$\underline{M} = 2q\Omega\,\underline{k} \qquad M_t = 2q\Omega = 2\tau(t)s(t)\Omega$$

area racchiusa da γ

$$\boxed{\tau(t) = \frac{M_t}{2\Omega s(t)}}$$

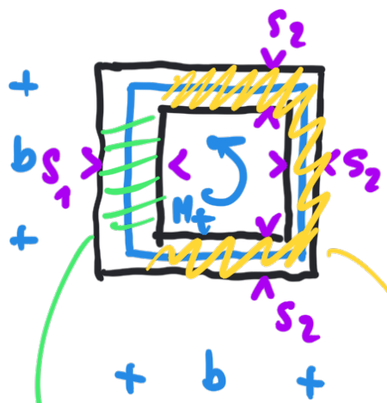
Seconda formula di Bredt

$$I_t = \frac{4\Omega^2}{\oint_\gamma \frac{dt}{s(t)}}$$



$$\oint_\gamma \frac{dt}{s(t)} = \frac{b}{s_1} + \frac{3b}{s_2} = \left(\frac{1}{s_1} + \frac{3}{s_2}\right) b$$

$$\frac{8}{7} b^3 s_2$$



$s_1 = 2s_2$

$$I_t = \frac{4b^{\cancel{4}3}}{\left(\frac{1}{s_1} + \frac{3}{s_2}\right)\cancel{b}} = \frac{4b^3}{\frac{1}{2s_2} + \frac{3}{s_2}} = \frac{4b^3 s_2}{7/2}$$

$$I_t = \frac{8}{7} b^3 s_2$$

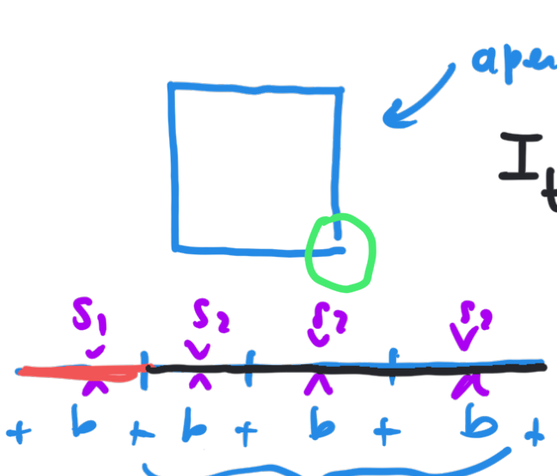
$\Omega = b^2$

$$\tau_1 = \frac{M_t}{2b^2 s_1}$$

$$\tau_2 = \frac{M_t}{2b^2 s_2}$$

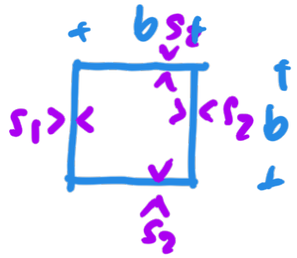
prima formula di Bredt

$$\tau(t) = \frac{M_t}{2\Omega s(t)}$$

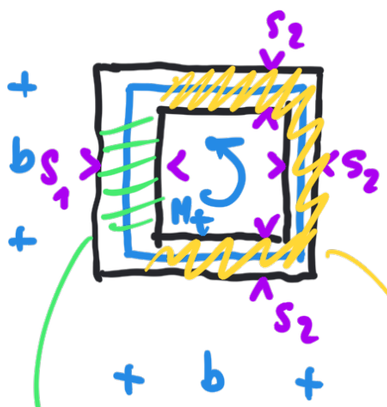


$$I_t = \frac{1}{3} b s_1^3 + \frac{1}{3} 3 b s_2^3 \qquad s_1 = 2 s_2 \;\Rightarrow\; 8 s_2^3$$

$$\left(\frac{8}{3} + 1\right) b s_2^3$$



$$I_t^A = \frac{11}{3} b s_2^3 \qquad \text{sezione aperta}$$



sezione chiusa

$$I_t^C = \frac{8}{7} b^3 s_2$$

$$\Omega = b^2$$

$$\tau_1 = \frac{M_t}{2 b^2 s_1} \qquad \tau_2 = \frac{M_t}{2 b^2 s_2}$$

$$\frac{I_t^C}{I_t^A} = \frac{\frac{8}{7} b^3 s_2}{\frac{11}{3} b s_2^3} = \frac{24}{77} \left(\frac{b}{s_2}\right)^2$$

$b \gg s_2 \Rightarrow I_t^C \gg I_t^A$!!

prima formula di Bredt

$$\tau(t) = \frac{M_t}{2 \Omega s(t)}$$