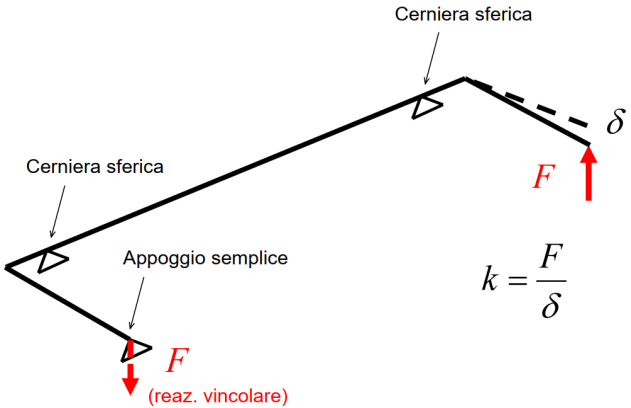
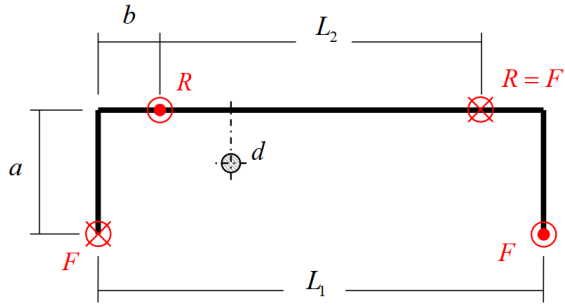
Spostamento remoto

Barra di torsione caricata alle estremità



*Riferimento: http://people.unipi.it/static/ciro.santus/Didattica.html

Barra di torsione caricata alle estremità



$d = 25\,\mathrm{mm}$

$I = \pi / 64\, d^4 = 19175\,\mathrm{mm}$

$I_0 = 2I = 38350\,\mathrm{mm}$

$E = 205000\,\mathrm{MPa}$

$\nu = 0.3$

$G = \frac{E}{2(1+\nu)} = 78850\,\mathrm{MPa}$

$F = 100\,\mathrm{N}$

$a = 230\,\mathrm{mm}$

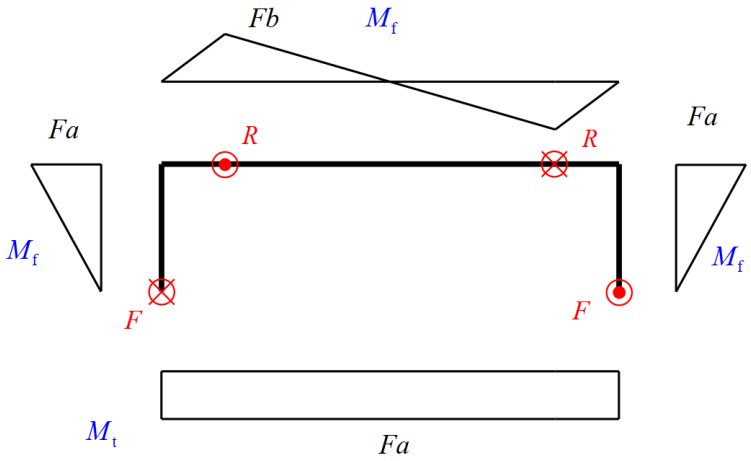
$b = 150\,\mathrm{mm}$

$L_1 = 940\,\mathrm{mm}$

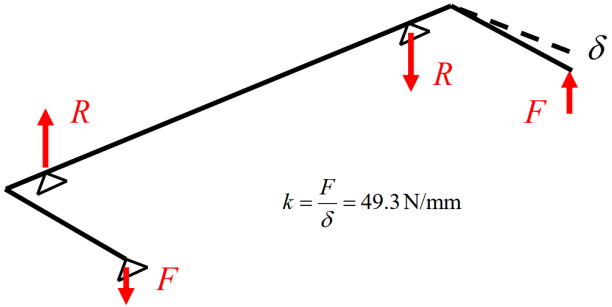
$L_2 = 640\,\mathrm{mm}$

*Riferimento: http://people.unipi.it/static/ciro.santus/Didattica.html

Modello di trave per il calcolo della rigidezza



*Riferimento: http://people.unipi.it/static/ciro.santus/Didattica.html



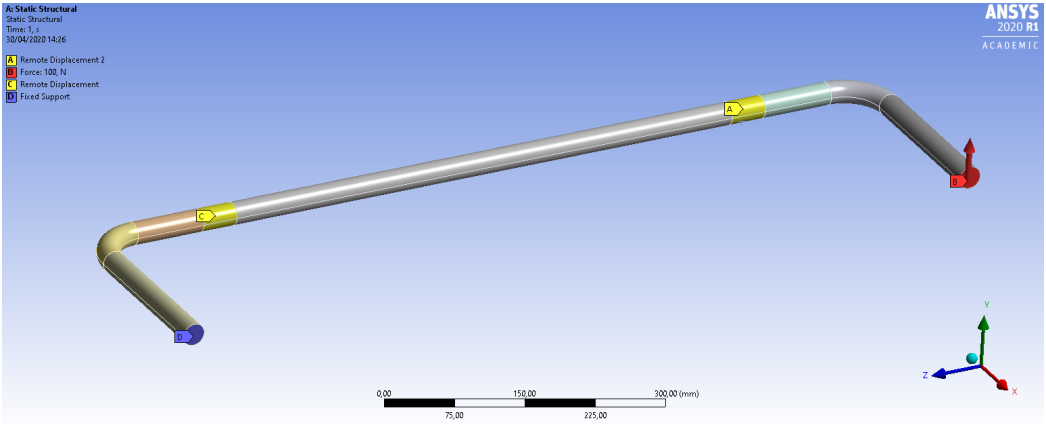
$$k = \frac{F}{\delta} = 49.3\,\mathrm{N/mm}$$

$$\delta = 2\int_0^a F\frac{x^2}{EI}\mathrm{d}x + 2\int_0^b F\frac{x^2}{EI}\mathrm{d}x + 2\int_0^{L_2/2} F\frac{x^2}{EI}\left(\frac{b}{L_2/2}\right)^2\mathrm{d}x + \int_0^{L_1} F\frac{a^2}{GI_0}\mathrm{d}x =$$

$$= 2\frac{F}{EI}\frac{a^3}{3} + 2\frac{F}{EI}\frac{b^3}{3} + 2(R-F)\frac{(L_2/2)^3}{3EI} + F\frac{a^3}{GI_0}L_1 = 2.030\,\mathrm{mm}$$

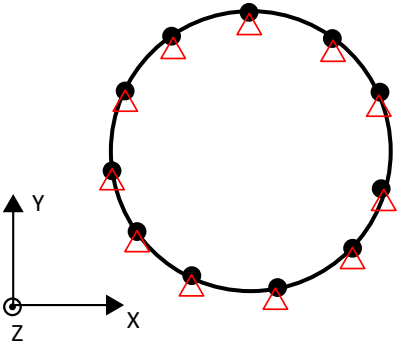
*Riferimento: http://people.unipi.it/static/ciro.santus/Didattica.html

Barra di torsione caricata alle estremità



Classic displacement

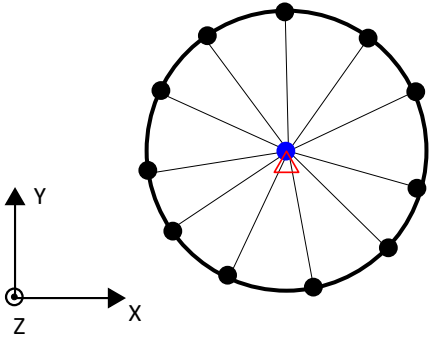
Vincolo di spostamento nullo in direzione Y
su tutti i punti della superficie cilindrica



La sezione non può ruotare attorno a Z

Remote displacement

Vincolo di spostamento nullo in direzione Y
solo nel nodo MASTER ●



La sezione può ruotare attorno a Z