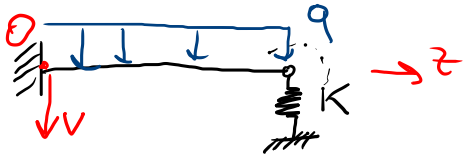
MADS, 4/10/23

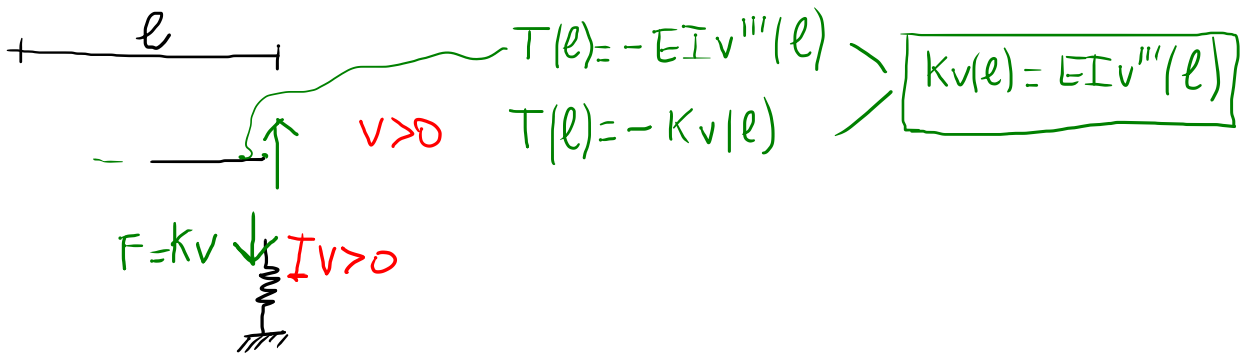
C.AI LIMITI QUANDO SONO APPLICATI VINCOLI CEDEVOLI ELASTICAMENTE



$[K] = [FL^{-1}]$; N/m

$F = K\Delta x$

MOLLA LINEARE



$T(\ell) = -EIv'''(\ell)$

$T(\ell) = -Kv(\ell)$

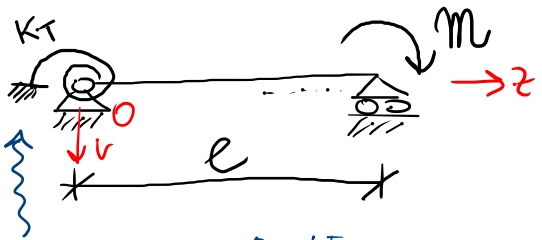
$\Rightarrow \boxed{Kv(\ell) = EIv'''(\ell)}$

$$\begin{cases} EI\,v^{IV}(z) = q \\ v(0) = 0 \\ v'(0) = 0 \\ v''(\ell) = 0 \\ Kv(\ell) = EI\,v'''(\ell) \end{cases}$$

$\Rightarrow$ INCASTRO

$\Rightarrow$ MOLLA LINEARE

MOLLA ROTAZIONALE



INCASTRO CEDEVOLE

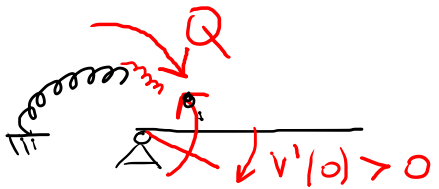
1 V. IPERST.

L. ELASTICA : $M = K_T \varphi$

$[K_T] = [FL]$; Nm

$M(\ell) = -\mathcal{M}$

$M(\ell) = -EIv''(\ell)$



$M(0) = -Q = -Kv'(0)$

$Q = Kv'(0)$

$M(0) = -EIv''(0)$

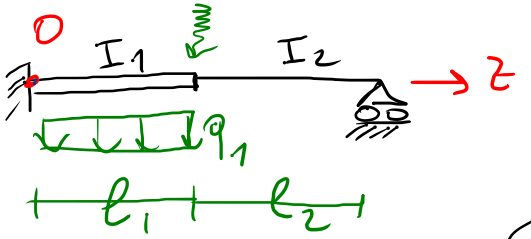
$-Kv'(0) = -EIv''(0)$

$$\begin{cases} v^{IV}(z) = 0 \\ v(\ell) = 0 \\ EIv''(\ell) = \mathcal{M} \\ v(0) = 0 \\ Kv'(0) = EIv''(0) \end{cases}$$

EQ. DIFF

ESERCIZIO DI GRUPPO

COSA SUCCEDE QUANDO HO PIÙ CAMPI DI INTEGRAZIONE



2 CAMPI DI INTEGR: ① $z \in [0, \ell_1[$ ② $z \in]\ell_1, \ell_1+\ell_2]$] 8 costanti

C_1, C_2, C_3, C_4

$$EI_1 v_1^{IV}(z) = q_1 \quad \text{①}$$

$$v_2^{IV}(z) = 0 \quad \text{②}$$

EQ DIFF

$\rightsquigarrow C_5, C_6, C_7, C_8$

4 CONDIZ. AI LIMITI

$$\begin{cases} v_1(0) = 0 \\ v_1'(0) = 0 \\ v_2(\ell_1+\ell_2) = 0 \\ v_2''(\ell_1+\ell_2) = 0 \end{cases}$$

4 " DI RACCORDO

$$\begin{cases} v_1(\ell_1) = v_2(\ell_1) \\ v_1'(\ell_1) = v_2'(\ell_1) \\ -EI_1 v_1''(\ell_1) = -EI_2 v_2''(\ell_1) \\ -EI_1 v_1'''(\ell_1) = -EI_2 v_2'''(\ell_1) \end{cases}$$

CONT. MOMENTO

" TAGLIO

$$M(z) = -EIv''(z)$$

$$T = -EIv'''(z)$$