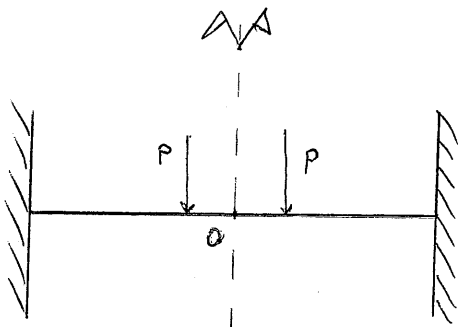
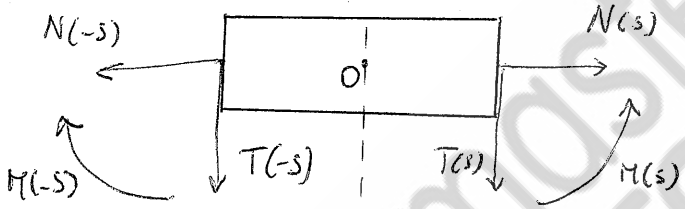
SIMMETRIA



STRUTTURA ASSIAL-SIMMETRICA
caricata simmetricamente

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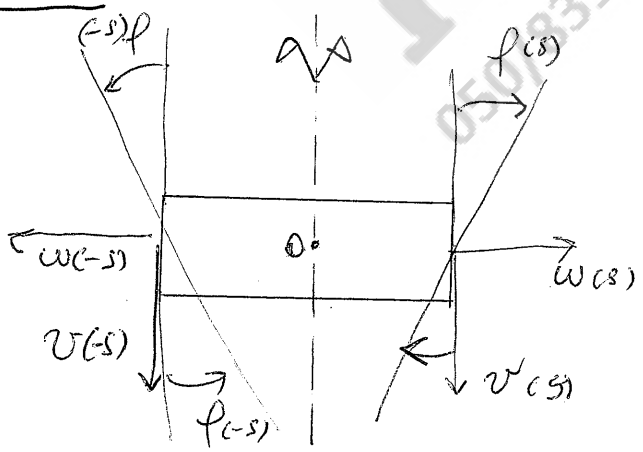
CdS



Ribalto specularmente così la parte destra coincide con la sinistra

$$\begin{cases} N(s) = N(-s) \\ T(s) = -T(-s) \\ M(s) = M(-s) \end{cases} \qquad \begin{cases} N = N \\ T = -T \\ M = M \end{cases}$$

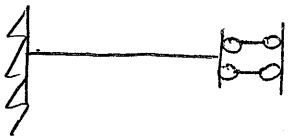
Spostamenti

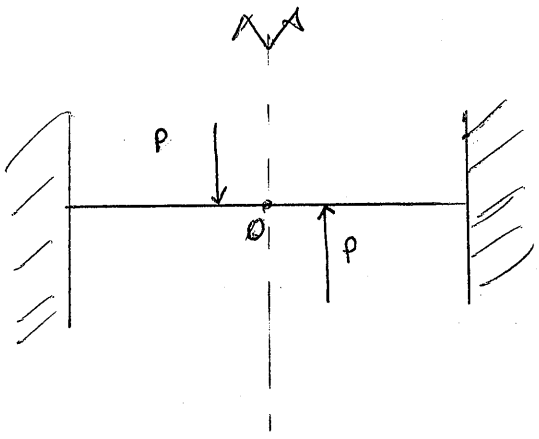


$$\begin{cases} \rho(s) = -\rho(-s) \rightarrow 2\rho = 0 \\ \omega(s) = -\omega(-s) \rightarrow 2\omega = 0 \\ v(s) = v(-s) \rightarrow 0 = 0 \end{cases}$$

Spostamenti luogo di concorso

Risultato:

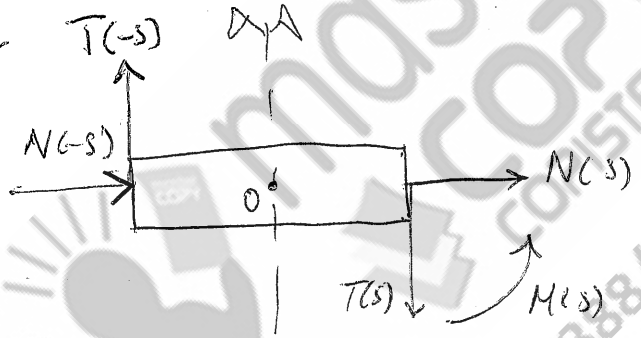




Struttura assialsimmetrica
caricata antisimmetricamente

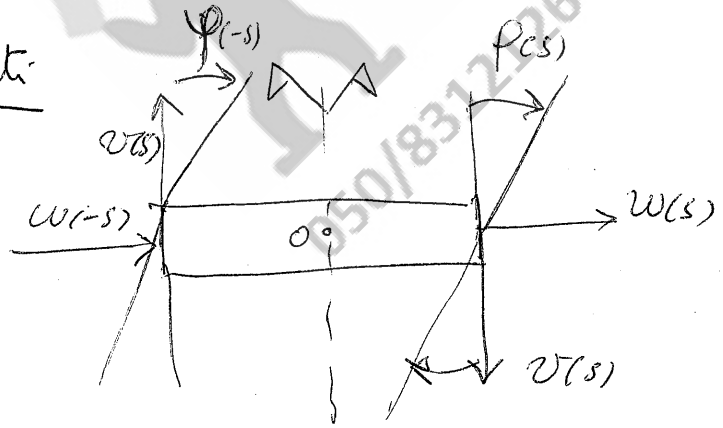
Ricondursi alla stessa condizione geometrica poi se:
carico symm = OK
Carico antisymm ⇒ cambio verso

Col 5 N(-s) T(-s)



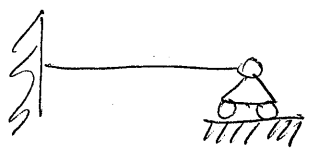
$$\begin{cases} N(s) = -N(-s) \\ T(s) = T(-s) \\ M(s) = -M(s) \end{cases} \qquad \begin{cases} N = -N \\ T = T \\ M = -M \end{cases}$$

Spostamenti



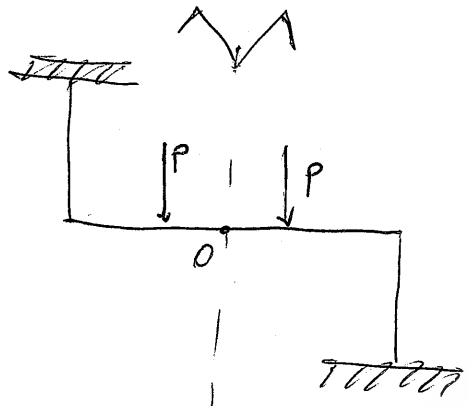
$$\begin{cases} \varphi(-s) = P(s) \\ v(s) = -v(-s) \\ w(s) = +w(-s) \end{cases} \qquad \begin{cases} 0 = 0 \\ 2v = 0 \\ 0 = 0 \end{cases}$$

Risultato
w, φ cancessi

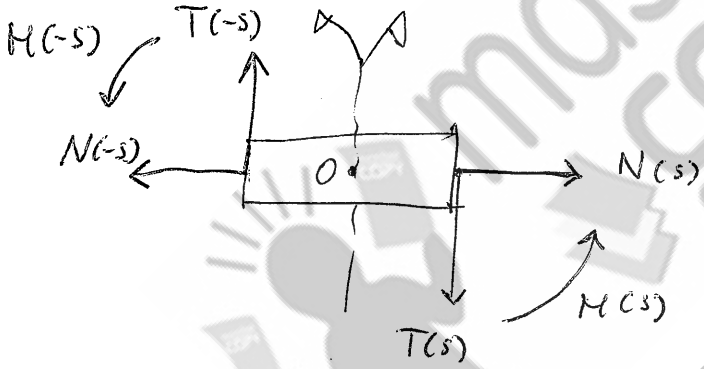


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STRUTTURA POLAR-SIMMETRICA
Caricata polar-simmetricamente

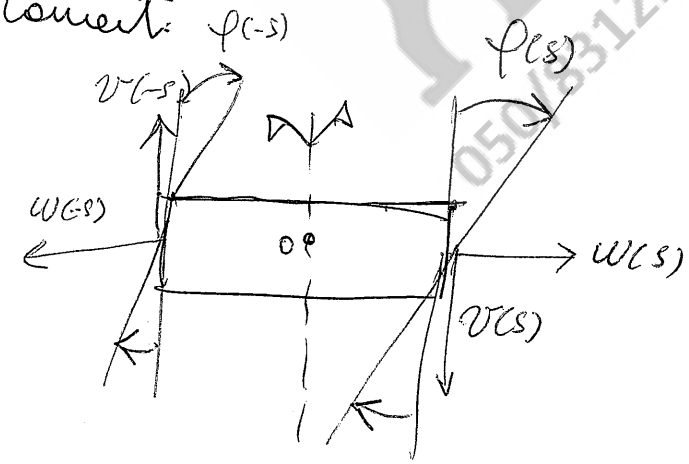


Col S



$$\begin{cases} N(S) = N(-S) \\ T(S) = T(-S) \\ M(S) = -M(S) \end{cases} \qquad \begin{cases} N = N \\ T = T \\ M = -M \end{cases}$$

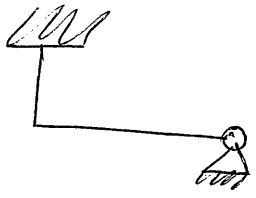
Spostamenti:



$$\begin{cases} w(-S) = -w(S) \\ v(S) = -v(S) \\ \varphi(S) = \varphi(-S) \end{cases} \qquad \begin{cases} \Sigma W = 0 \\ \Sigma V = 0 \\ 0 = 0 \end{cases}$$

Risultato:

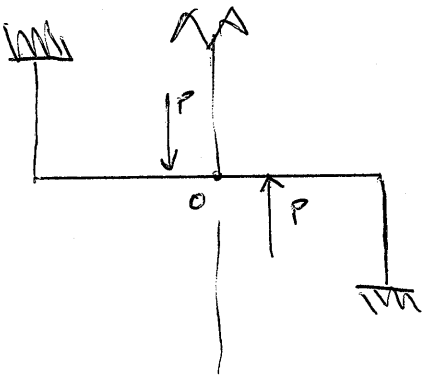
cerniera φ →

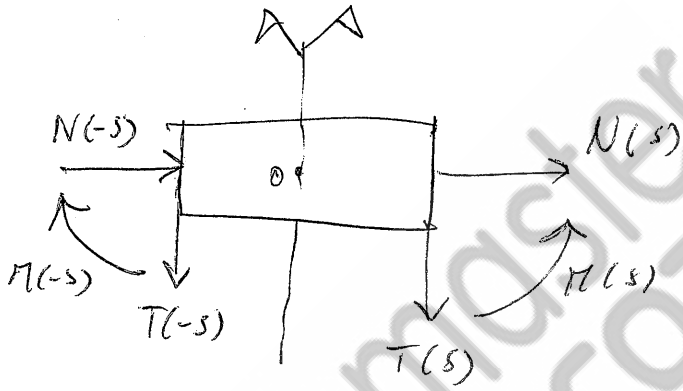


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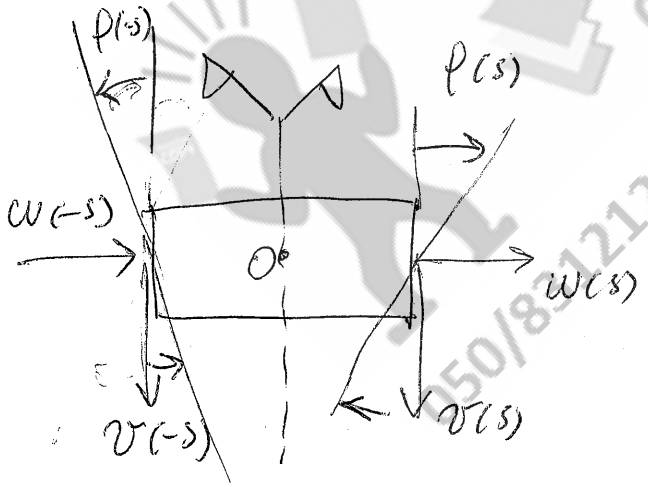
STRUTTURA POLAR SIMMETRICA

caricata polar antisimmetricamente





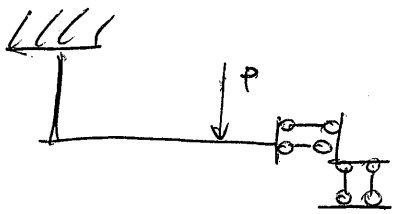
$$\begin{cases} N(s) = -N(-s) \\ T(s) = -T(-s) \\ M(s) = +M(-s) \end{cases}$$



$$\begin{cases} w(s) = w(-s) & \theta = 0 \\ v(s) = v(-s) & \theta = 0 \\ p(s) = -p(s) & 2p = 0 \end{cases}$$

Risultato:

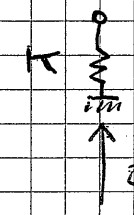
w, v cedevoli



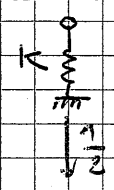
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Come definire il segno di lavoro $\mathcal{L}_v^{(e,\ t\to 0)}$ per quanto riguarda le molle

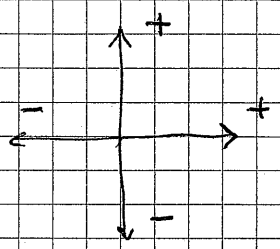
in F^0



in F^1



stabiliscio:



$$\mathcal{L}_v^{(1,0)} = F_1 \cdot S_0 \qquad \text{con} \quad F_1 = -\frac{1}{2}$$

$$S_0 = -\frac{F_0}{K} \qquad \text{con} \quad F_0 = 2P \qquad \text{che} \quad F = -K \cdot S$$

$$\rightarrow \quad S_0 = -\frac{2P}{K}$$

$$\mathcal{L}_v^{(1,\to 0)} = -\frac{1}{2} \cdot \left(-\frac{2P}{K}\right) = \frac{P}{K}$$

Esempio

$$\eta_{10} = -\frac{P}{K}$$

$$\mathcal{L}^{(1,1)} = F_1 \cdot S_1 \qquad \text{con} \quad F_1 = -\frac{1}{2}$$

$$S_1 = -\frac{F_1}{K} \qquad \text{con} \quad F_1 = -\frac{1}{2}$$

$$\rightarrow S_1 = \frac{1}{2K}$$

$$\mathcal{L}_v^{(1\to 1)} = -\frac{1}{2}\left(\frac{1}{2K}\right) = -\frac{1}{4K}$$

Esempio

$$\eta_{11} = \frac{1}{4K}$$

Master Ingegneria