MENSOLA

$$M_m = -EI\,v''(x) \qquad M_m'(x) = T(x)$$
$$T_m = -EI\,v'''(x)$$

TELAIO

$$T_t = GA\,v'(x) \qquad T_t'(x) = -q(x)$$
$$GA\,v''(x) = -q(x)$$

EQUAZIONE DIFF.

$$EI\,v^{IV}(x) - GA\,v''(x) = w(x) \implies v^{IV}(x) - \alpha^2 v''(x) = \frac{w(x)}{EI}$$

C.C. $v(0)=0$, $v'(0)=0$, $EI\,v''(H)=0$, $-EI\,v'''(H)+GA\,v'(H)=0$

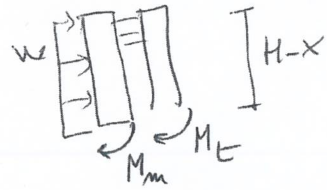
FORZA SCAMBIATA IN SOMMITA'
$$T_t(H) = GA\,v'(H) = Q_H$$
$$T_m(H) = -EI\,v'''(H) = -Q_H$$

FORZE DISTRIBUITE SCAMBIATE NEI VINCOLI INTERNI
$$GA\,v''(x) = -q(x)$$

CARICO COSTANTE $w(x)=w$
$$v(x) = C_1 + C_2 x + C_3 \cosh\alpha x + C_4 \sinh\alpha x - \frac{w x^2}{2EI\alpha^2}$$

ALCUNE FUNZIONI SOLUZIONE
$$M_m = -w\left[\frac{H}{\alpha}\left(\tanh\alpha H \cosh\alpha x - \sinh\alpha x\right) + \frac{1}{\alpha^2}\left(\frac{\cosh\alpha x}{\cosh\alpha H} - 1\right)\right]$$
$$T_m = w\left[H\left(\cosh\alpha x - \tanh\alpha H \sinh\alpha x\right) - \frac{1}{\alpha}\left(\frac{\sinh\alpha x}{\cosh\alpha H}\right)\right]$$

Si noti che
$$M_m + M_t = -w\frac{(H-x)^2}{2}$$
$$T_m + T_t = w(H-x)$$



$$v(x) = \frac{wH^4}{EI}\left[\frac{1}{(\alpha H)^4}\left[\frac{(\alpha H \sinh\alpha H + 1)}{\cosh\alpha H}(\cosh\alpha x - 1) - \alpha H \sinh\alpha x + (\alpha H)^2\left[\frac{x}{H} - \frac{1}{2}\left(\frac{x}{H}\right)^2\right]\right]\right]$$