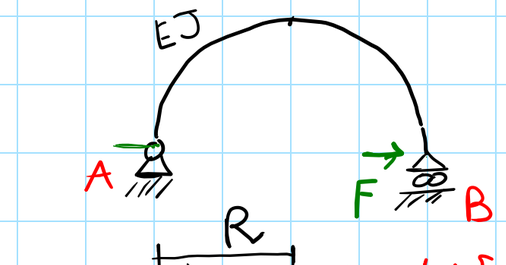
ES: TRASCURARE LA DEF. ASSIALE $(EA \to \infty)$ 10/12/25

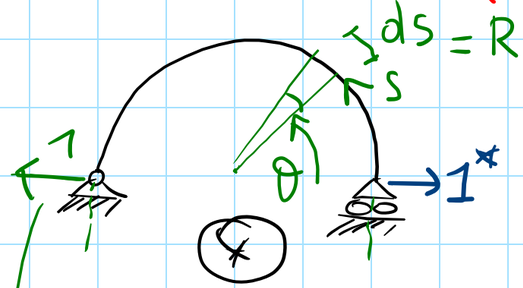


$\chi(s) = \frac{M(s)}{EJ}$; $\bar{\varepsilon} = \frac{N}{EA}$

STR. REALE

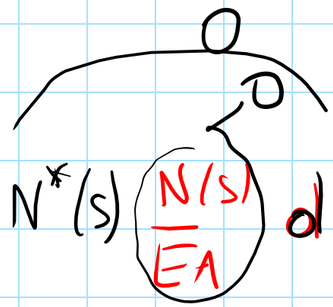
SIST. CINEM. AMM.

$\hookrightarrow \delta_B$?



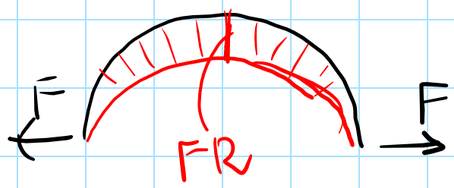
SIST. FITTIZIO (*)

SIST. STAT. AMM.

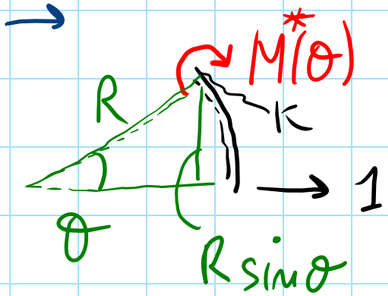


$$L_{ve} = L_{vi} \; ; \quad 1^* \cdot \delta_B + 1 \cdot 0 = \int_{STR} M^*(s)\,\chi(s) + N^*(s)\,\bar{\varepsilon}(s)\,ds$$

$$\delta_B = \int_{STR} M^*(s)\,\frac{M(s)}{EJ} + N^*(s)\,\frac{N(s)}{EA}\,ds$$



$M(\vartheta) = F\,M^*(\vartheta)$



$$\delta_B = \int_{STR} M^*(s)\,\frac{M(s)}{EJ}\,ds \quad \Rightarrow \quad \delta_B = \int_{STR} M^*(\vartheta)\,\frac{M(\vartheta)}{EJ}\,R\,d\vartheta$$

$K\circlearrowleft^+$: $-M^*(\vartheta) + 1 \cdot R \sin\vartheta = 0$

$M^*(\vartheta) = R \sin\vartheta \qquad \vartheta \in [0, \pi]$

$[M^*] = [L]$

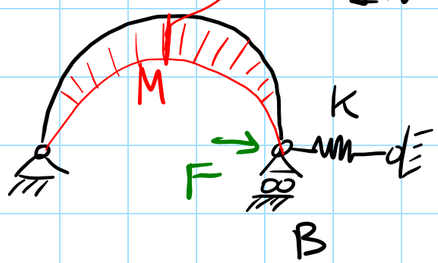
$$\delta_B = \int_0^{\pi} R\sin\vartheta \cdot \frac{FR\sin\vartheta}{EJ} R\,d\vartheta \;; \quad \delta_B = \frac{R^3 F}{EJ}\int_0^{\pi}\sin^2\vartheta\,d\vartheta = \frac{FR^3}{EJ}\left[\frac{\vartheta}{2} - \frac{\sin 2\vartheta}{4}\right]_0^{\pi}$$

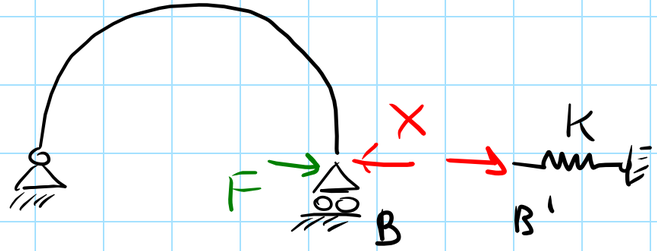
$$\delta_B = \frac{FR^3}{EJ}\left(\frac{\pi}{2} - 0\right) = \frac{\pi}{2}\frac{FR^3}{EJ}$$

+ SPOST CONCORDE ALLA FORZA 1*

APPLICA 2 · $(F-X)R$

1 V IPERST

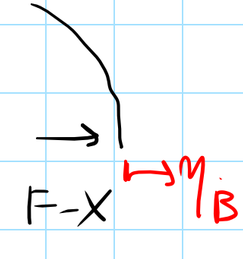




η + $\frac{X}{K}$

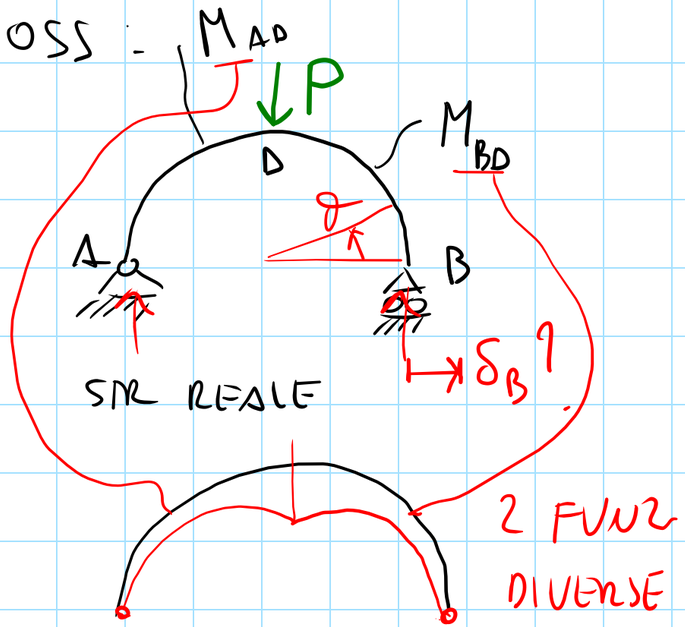
$\boxed{\eta_B = \eta_{B'}}$

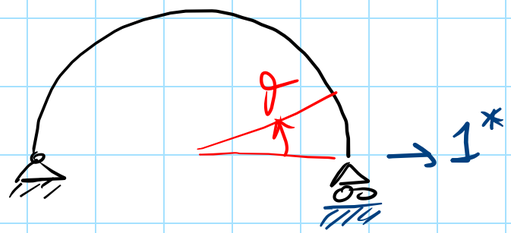
EQ. DI CONGR.



$$M_B(F-X) = +\frac{\pi}{2}\frac{(F-X)R^3}{EJ} \quad ; \quad (F-X)R^3\frac{\pi}{2EJ} = +\frac{X}{K} \rightsquigarrow X = f(F, EJ, K)$$

OSS. M_{AD}

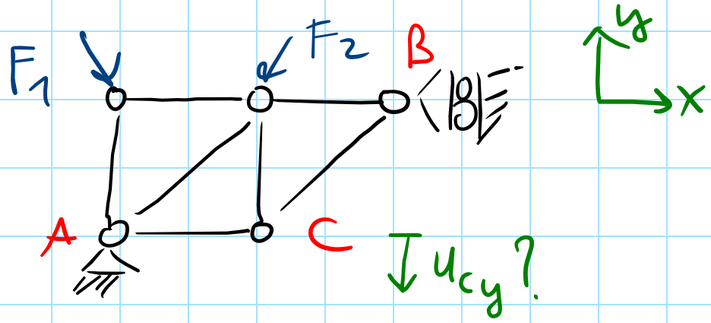




$$1^* \cdot \delta_B = \int_{STR} M^*(s) \frac{M(s)}{EJ} ds$$

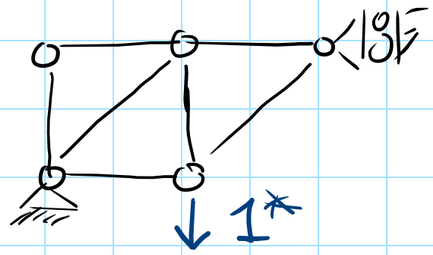
$$\delta_B = \int_{BD} M^*(\theta) \frac{M_{BD}(\theta)}{EJ} R d\theta + \int_{DA} M^*(\theta) \frac{M_{DA}(\theta)}{EJ} R d\theta$$

CALCOLO SPOST. NODALI IN STR. RETICOLARI ISOSTATICHE



STR REALE
SIST. CINEM. AMM
$(u, \bar{\varepsilon} \dots)$

m_a: N° ASTE



STR FITTIZIA $(^*)$
SIST - STAT AMM.
(N^*)

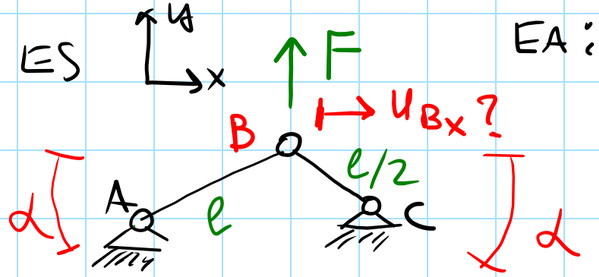
T.L.V.

LAVORO FORZE (MOMENTI) CONCENTRATI NEL SIST. FITTIZIO $= \int_{str} N^* \bar{\varepsilon}\, ds$

$L_{ve} = L_{vi}$

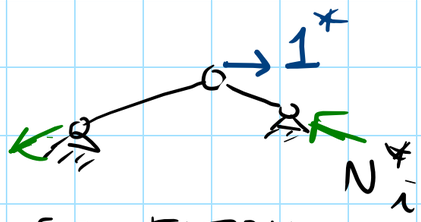
elabora $L_{vi} = \int_{str} N^*(s) \frac{N(s)}{EA} ds = \boxed{\sum_{i=1}^{m_a} N_i^* \frac{N_i}{(EA)_i} \ell_i}$

ES



EA : COST

STR REALE
SIST. CINEM. AMM



STR FITTIZIA
SIST. STAT. AMM.

$$\left.\begin{aligned} +\uparrow:\ & +F - N_{AB}\sin\alpha - N_{BC}\sin\alpha \\ +\rightarrow:\ & -N_{AB}\cos\alpha + N_{BC}\cos\alpha = 0 \end{aligned}\right\}$$

$$\boxed{N_{AB} = N_{BC} = +\frac{F}{2\sin\alpha}}$$

TRAZIONE NELLE ASTE

$$+\uparrow:\ -N_{AB}^*\sin\alpha - N_{BC}^*\sin\alpha = 0$$

$$+\rightarrow:\ 1 - N_{AB}^*\cos\alpha + N_{BC}^*\cos\alpha = 0$$

$$\boxed{\begin{aligned} N_{AB}^* &= +\frac{1}{2\cos\alpha} \quad \text{TRAZ.} \\ N_{BC}^* &= -\frac{1}{2\cos\alpha} \end{aligned}}$$

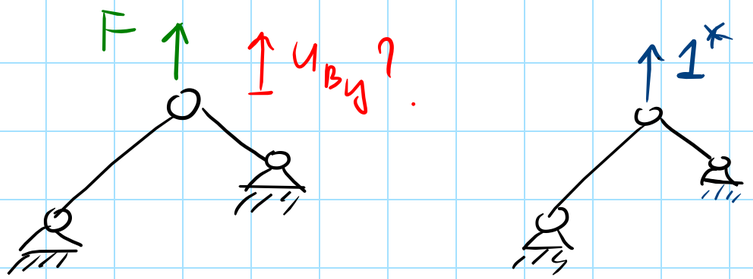
BC PUNTONE

$$1\cdot u_{Bx} = N_{AB}^*\frac{N_{AB}}{EA}\underbrace{\ell}_{\ell_{AB}} + N_{BC}^*\frac{N_{BC}}{EA}\underbrace{\frac{\ell}{2}}_{\ell_{BC}}$$

$C : \cos\alpha$
$S : \sin\alpha$

$$u_{Bx} = \frac{\ell}{EA}\left(\frac{1}{2C}\frac{F}{2S} + \left(-\frac{1}{2C}\right)\frac{F}{2S}\frac{1}{2}\right) = +\frac{F\ell}{8CSEA}$$

ES

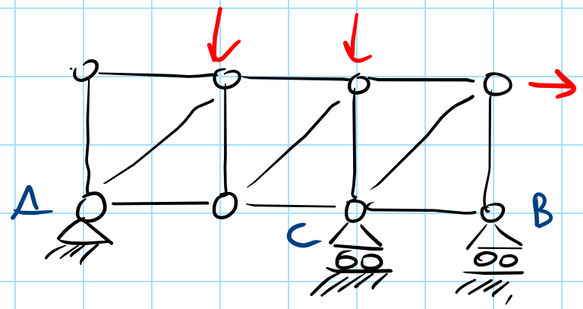


$$1 \cdot u_{By} = N^*_{AB} \frac{N_{AB}}{EA} \ell + N^*_{BC} \frac{N_{BC}}{EA} \frac{\ell}{2}$$

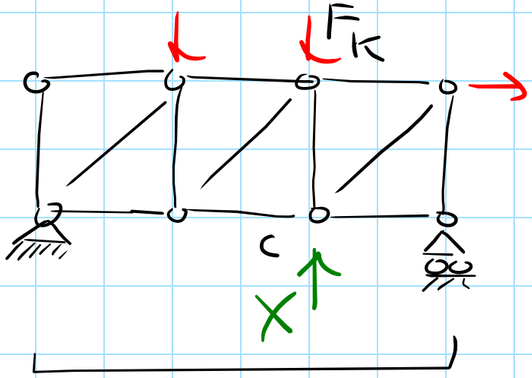
$$N_i = F N^*_i$$

$$u_{By} = \frac{\ell}{EA} \left(F N^{*2}_{AB} + \frac{1}{2} F N^{*2}_{BC} \right)$$

RETICOLARE IPERST.



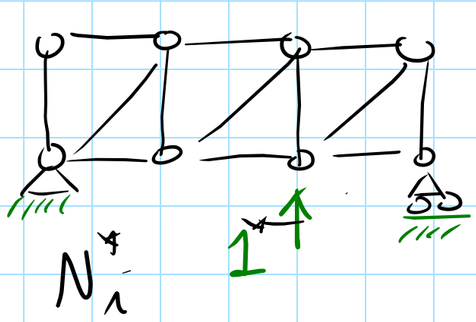
STR 1 V IPERST. → S.P.



$u_{cy} = 0$ ↑+

STR. STAT. DET. ⇒ POSSO CALCOLARE QUI $u_{cy}(F_K, X)$. COME?

PRENDENDO COME SCHEMA FITTIZIO



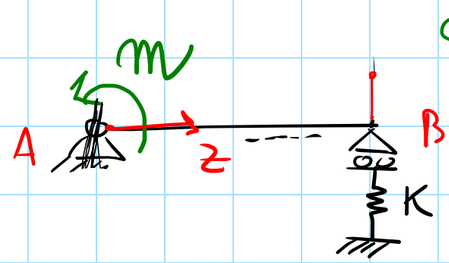
(*)

$$\Rightarrow \quad 1^* \cdot u_{cy} = \sum_{i=1}^{M_a} N_i^* \frac{N_i(F_K, X)}{EA_i} \ell_i$$

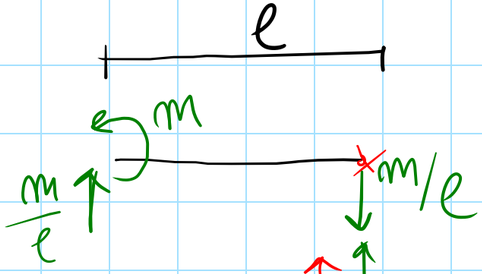
$u_{cy}(F_K, X)$

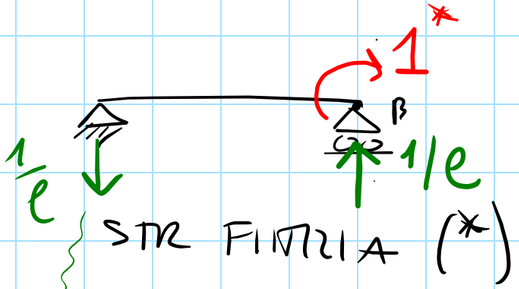
POI IMPONGO L'EQ. DI CONGR. $u_{cy} = 0 \Rightarrow X = f(F_K)$

LES



φ_B ?





STR FITTIZIA (*)

$\Delta e_B = \frac{m}{e}\frac{1}{K}$

$L_{ve} = L_{vi}$

$1^* \varphi_B + \frac{1}{e}\left(+\frac{m}{eK}\right) + \frac{1}{e}\cdot 0 = \int_0^e M^*(z)\,\frac{M(z)}{EJ}\,dz$

$\varphi_B + \frac{m}{e^2 K} = \int \qquad dz$

$M(z) = -m + \frac{m}{e} z$

$M^*(z) = -\frac{1}{e} z$