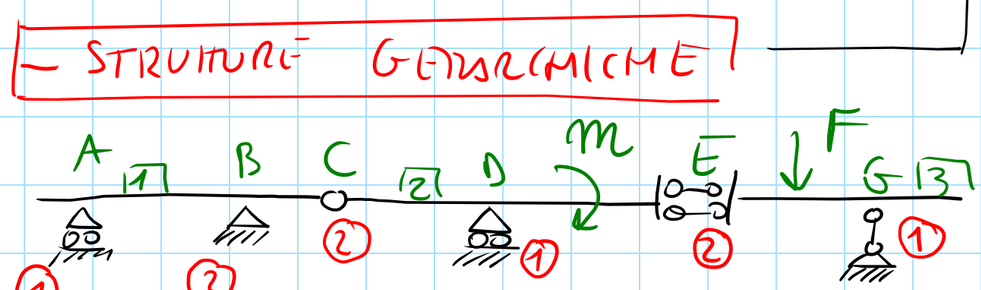
INVECE DELL'ANALISI CON IL METODO GENERALE, È POSSIBILE SEGUIRE UNA PROCEDURA CHE DIPENDE DAL TIPO DI STRUTTURA ISOSTATICA DA RISOLVERE. INDIVIDUIAMO 3 TIPI:

5/11/25

- STRUTTURE GERARCHICHE
- ARCO GENERALIZZATO A "3 CERNIERE"
- STRUTTURE CHIUSE

- STRUTTURE GERARCHICHE



1 È STR ISOST.

SI AGGANCIA ISOST. A 1

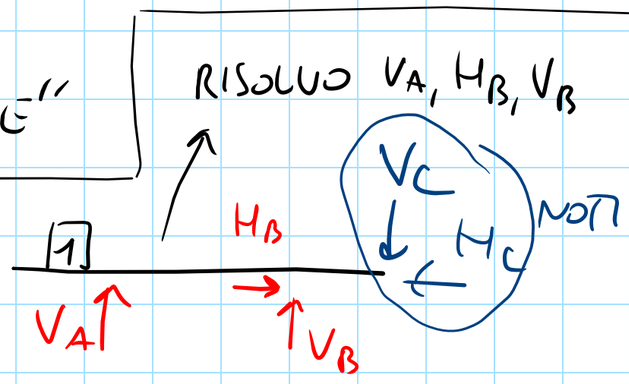
SI AGGANCIA ISOST. A 2

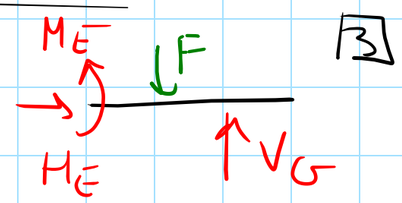
$g = 9$

$v = 9$

GERARCHISMO + IMPORT

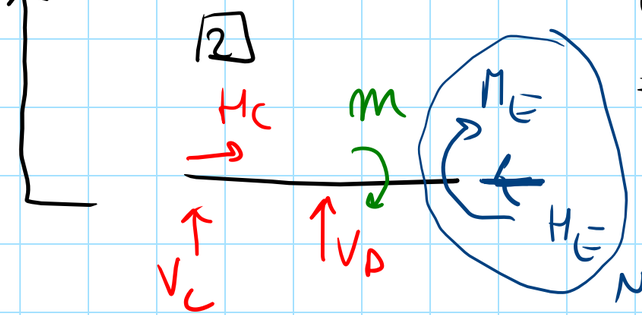
STR + "DEBOLE"





3 EQ. IN 3 INCOGNITE (SI RISOLVE)

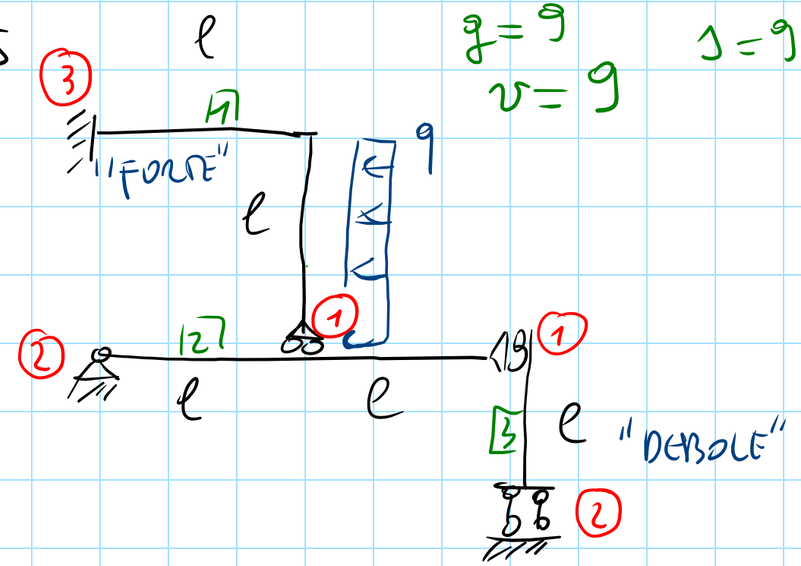
$\Rightarrow H_E, M_E, V_G$ NOTE



3 EQ. IN 3 INC., RISOLVO

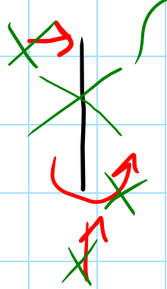
$\Rightarrow H_C, V_C, V_D$ NOTE

LES



$g = 9$ $\quad \upsilon = 9$ $\quad \jmath = 9$

RISOLVO [3]:



ECS [3]: 3 EQ. IN 3 INCOGNITE

$\Rightarrow$ SOLUZ.: NULLA

NON CI SONO TERMINI NON NEL SISTEMA

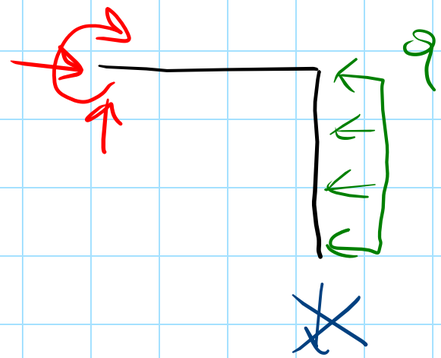
RISOLVO [2]

SISTEMA 3 EQ. IN 3 INCOGNITE

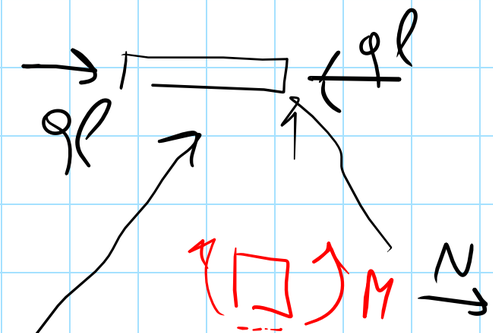
$\Rightarrow$ SOLUZ. NULLA

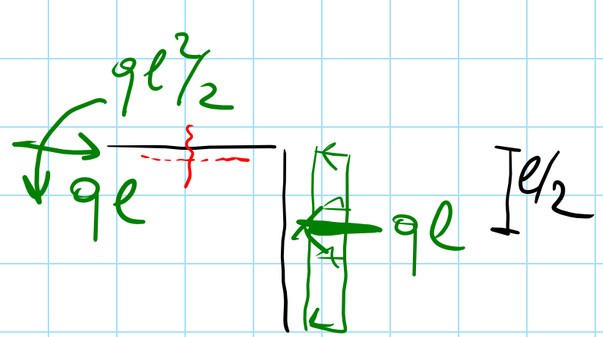
$\Rightarrow$ [2] "SCARICA"

RISOLVO [1]

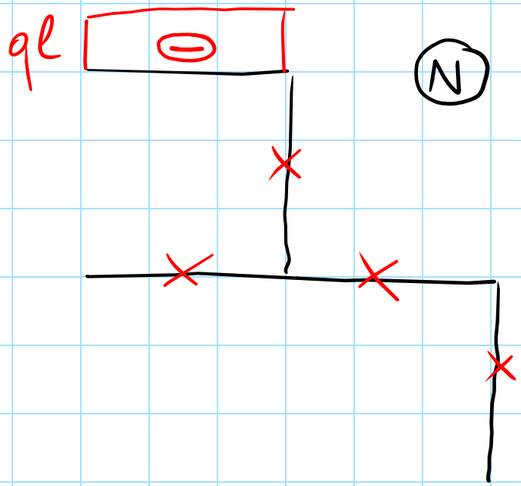


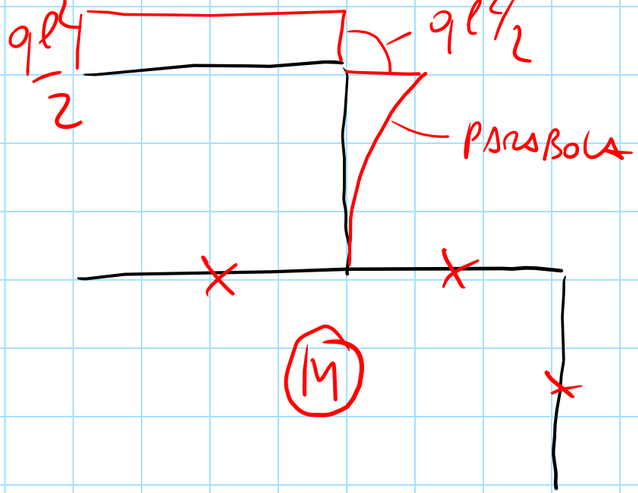
3 EQ. IN 3 INCOGNITE $\Rightarrow$ SOLUZ. NON BANALE

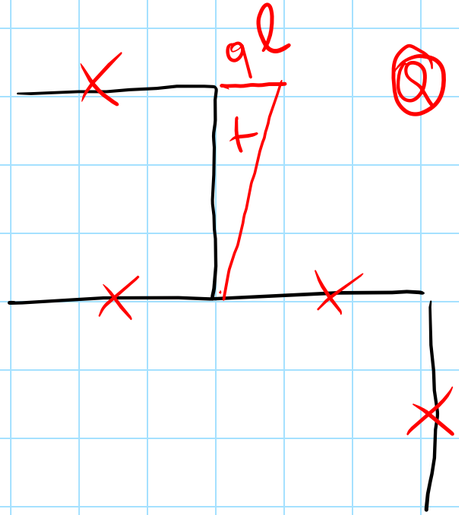


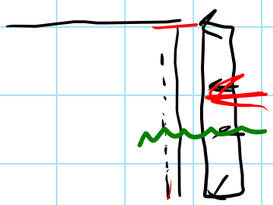


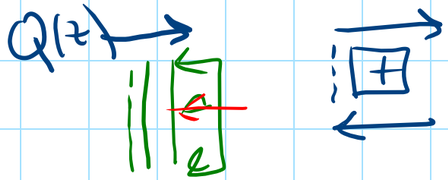
S.C.L. EQUIL


ql
N


ql²/2
ql²/2
PARABOLA
M

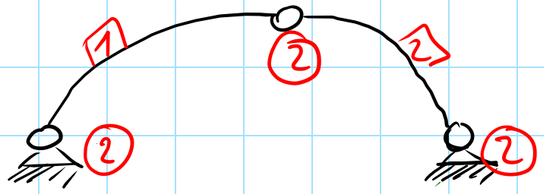

ql
+
Q




Q(z)
+

- ARCO GENERALIZZATO A "3 CERNIERE"

ARCO A 3 CERNIERE (2 CORPI e
2 CERN. A TERRA
+1 " INTERNA)



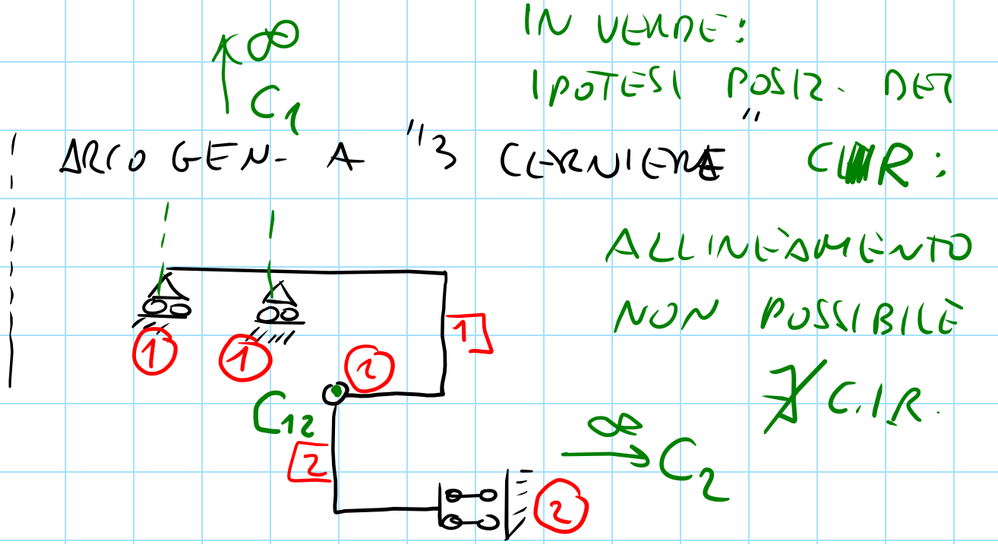
NESSUNO DEI 2 CORPI È SINGOLARM. ISOSTATICO

$g = 6$

$v = 6 \rightarrow \begin{cases} v_{int} = 2 \\ v_{est} = 4 \end{cases}$

$s = 6$ (CERNIERE NON SONO ALLINEATE)

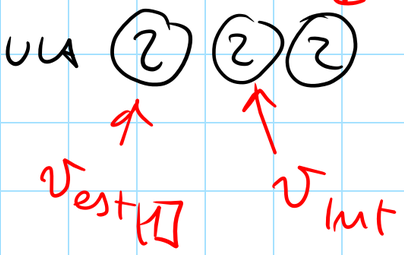
OBIETTIVO: SCRIVERE AL PIÙ UN SISTEMA DI 6 EQ. IN 6 INCOGNITE.

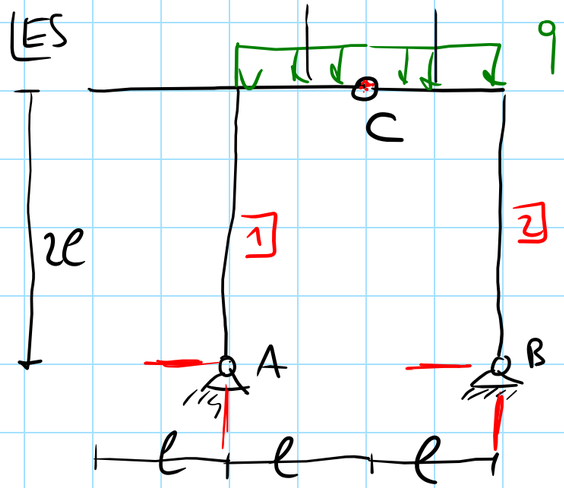


IN VERDE:
IPOTESI POSIZ. DEI "
CIR:
ALLINEAMENTO NON POSSIBILE
≠ C.I.R.

2 C.RIGIDI + VINCOLAMENTO

SECONDO LA FORMULA





ECS 1+2

$$\begin{cases} \rightarrow : H_A + H_B = 0 \\ +\uparrow : V_A + V_B - q\ell - q\ell = 0 \\ +\circlearrowleft (A) : +V_B \cdot 2\ell - q\ell \cdot \frac{\ell}{2} - q\ell \cdot \frac{3}{2}\ell = 0 \end{cases}$$

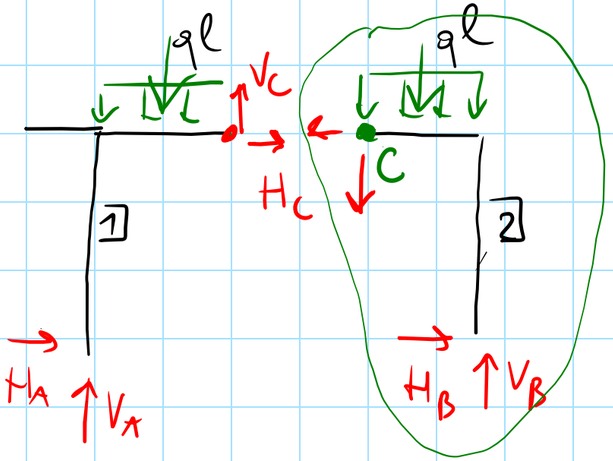
4ª EQUAZ.: EQUAZIONE AUSILIARIA: TIENE CONTO DEL VINCOLO INTERNO!

2 $+V_B \ell + H_B 2\ell - q\ell \cdot \frac{\ell}{2} = 0$ (+ ↺)

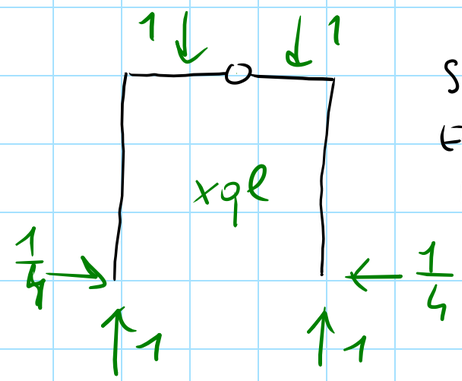
$$V_B = q\ell \,,\; V_A = q\ell \,,\; H_B = -\frac{1}{4}q\ell \,,\; H_A = \frac{1}{4}q\ell$$ (*)

4 EQ. IN 4 INCOGNITE (EST.)

H_A, V_A, H_B, V_B

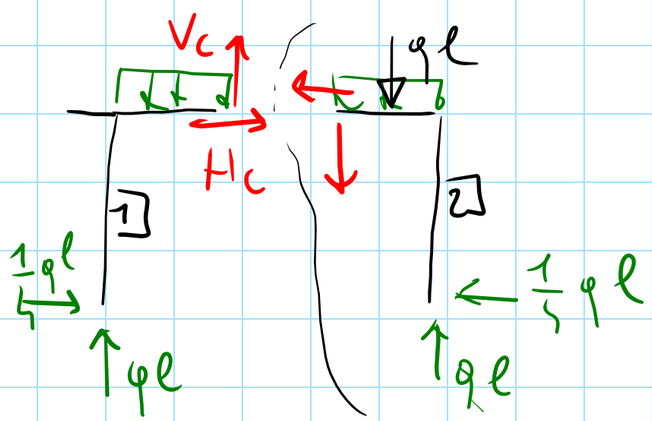


1° STEP: DET. LE 4 INCOGNITE ESTERNE



S.C.L. EQUIL. DELLA STRUTTURA INTERA

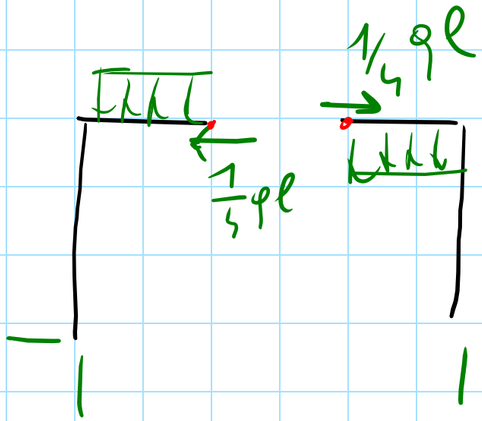
2° STEP; DOPO (*), STUDIO UNO DEI 2 CORPI E DETERMINO H_C, V_C

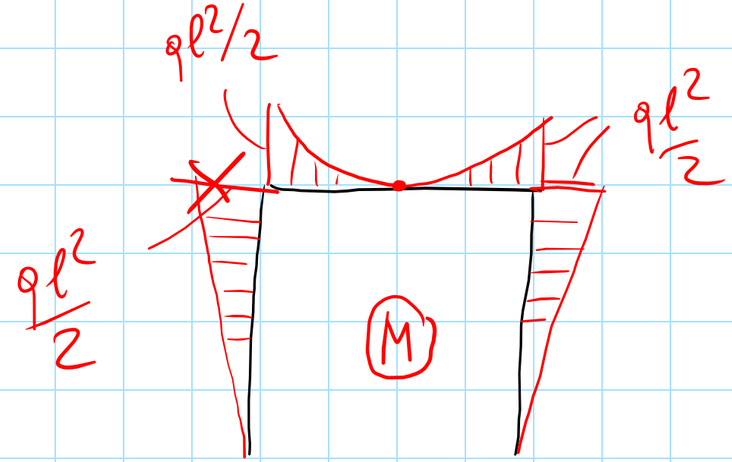


$$\pm \rightarrow [2]: -H_C - \tfrac{1}{4}q\ell = 0$$

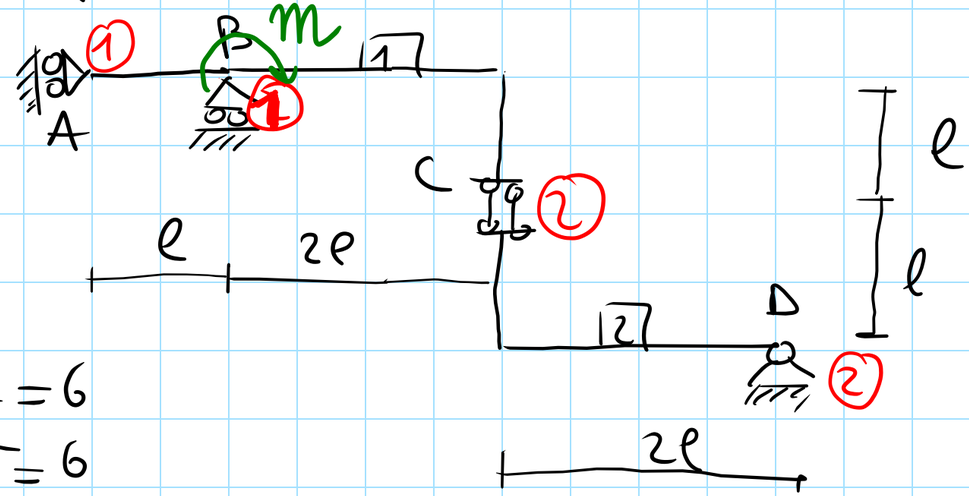
$$+\uparrow [2]: +q\ell - q\ell - V_C = 0$$

$$\Rightarrow \begin{cases} H_C = -\frac{1}{4}q\ell \\ V_C = 0 \end{cases}$$





LES: (VINCOLO INTERNO DOPPIO PENDOLO)

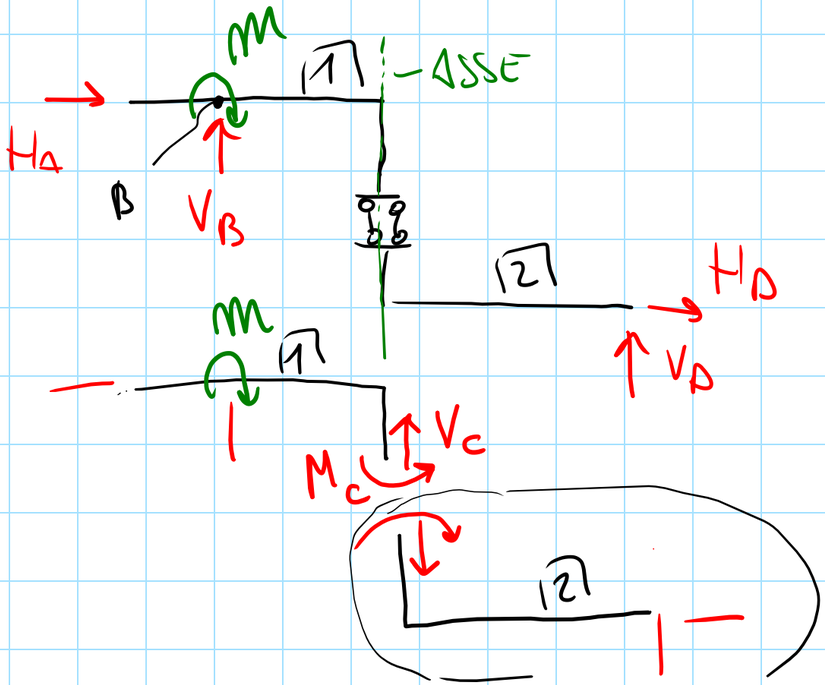


$g = 6$

$v = 6$

$\lambda = 6$

ISOSTATICA



1° PASSAGGIO

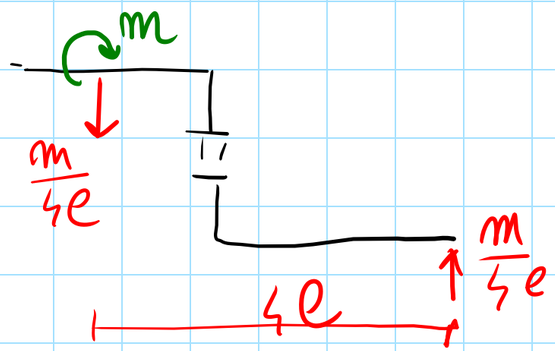
$$\boxed{1+2}\begin{cases} \rightarrow : H_A + H_D = 0 \\ \uparrow : V_B + V_D = 0 \\ \circlearrowleft_B : -m + V_D \cdot 4\ell + H_D 2\ell = 0 \end{cases} \quad \left.\begin{matrix} 4\ \text{EQ.} \\ 4\ \text{INC.} \end{matrix}\right\}$$

$$\overset{+}{\rightarrow} \boxed{2} : \; +H_D = 0$$

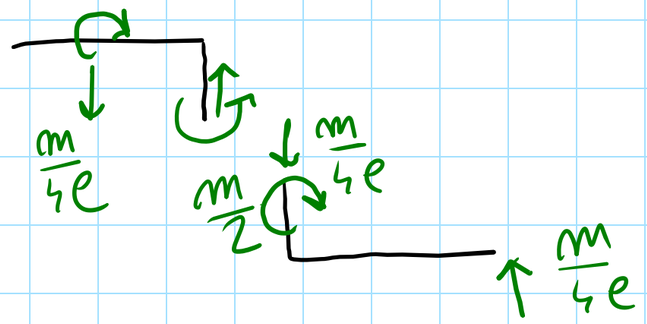
EQ. AUSILIARIA: BILANCIO FORZE $\boxed{2}$

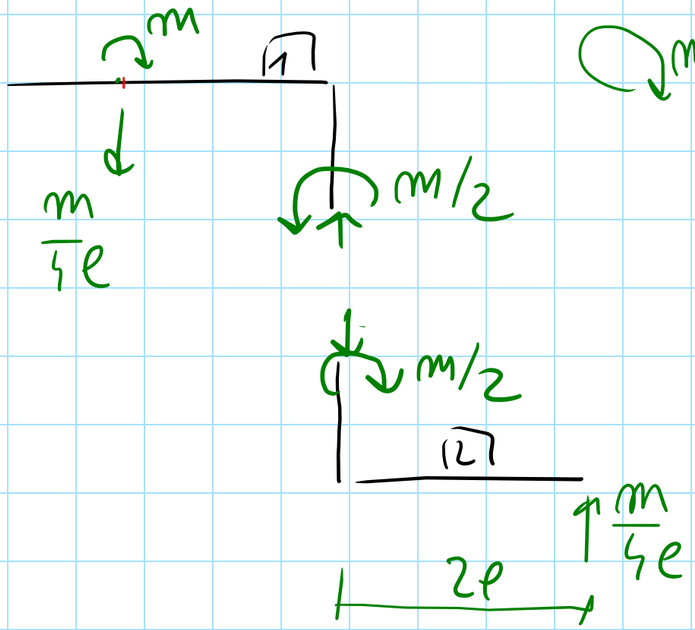
ALL'ASSE DEL DOPPIO PENDOLO INTERNO

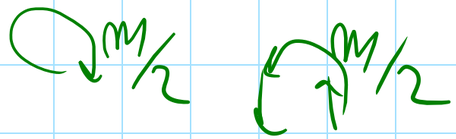
$$H_D = 0 \;,\; H_A = 0 \;,\; V_D = \frac{m}{4\ell} \;;\; V_B = -\frac{m}{4\ell} \quad (*)$$



2° PASSAGGIO; DOPO (*)







S.C.L. EQUIL.