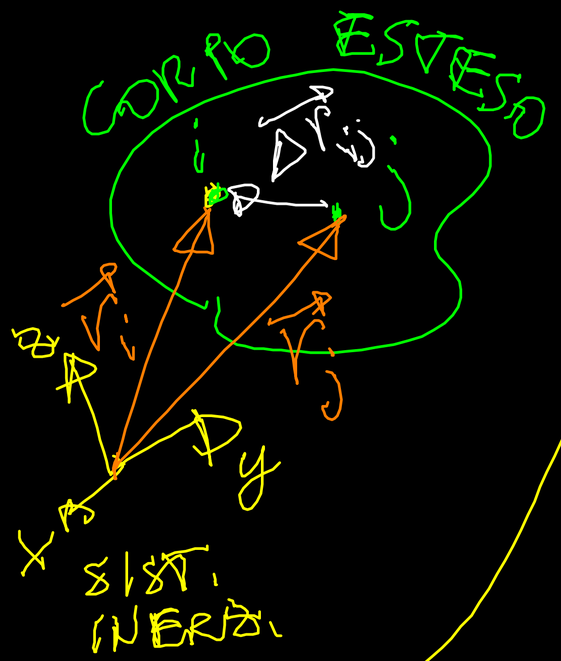
EQUILIBRIO STATICO



IL CORPO E' RIGIDO SE

$|\Delta\vec{r}_{ij}| = |\vec{r}_i - \vec{r}_j| = \text{costante}$

$\forall i,j$

(distanza tra punti contenuti)

$\vec{r}_i(t) = \text{costante}$

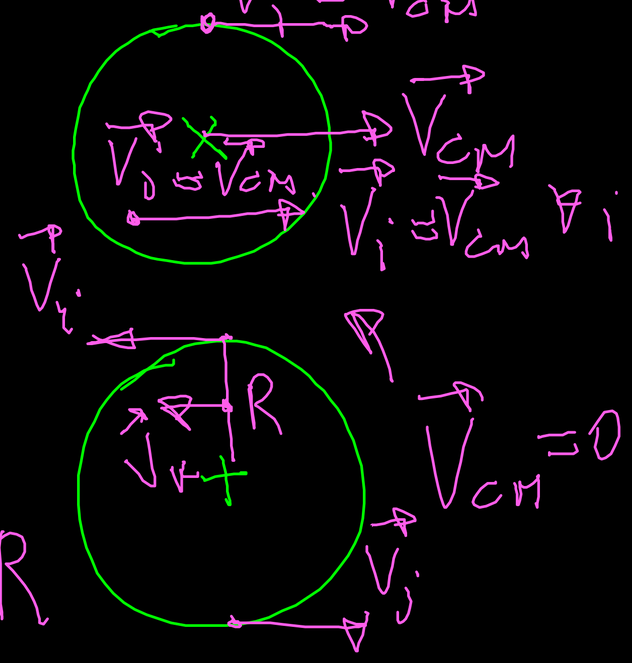
$\forall i$

$\Rightarrow \vec{v}_i(t), \vec{\omega}_i(t) = 0$

MOTO ROTOTR.

MOTO TRASLATORIO PURO

MOTO ROTATORIO PURO $|\vec{v}_i| \propto R$



Se $\boxed{\sum \vec{F}_{est} = 0}$ $\Rightarrow$ $\vec{a}_{cm} = 0 \Rightarrow \vec{V}_{cm} =$ costante

COND. DI EQ. TRASLATORIO PER UN CORPO RIGIDO

NECESSARIA MA NON SUFFICIENTE

$\vec{N} + m\vec{g} = \sum \vec{F}_{esp} = 0$

$\Rightarrow \vec{a}_{cm} = 0$, $\vec{V}_{cm} = 0$

ma $\vec{V}_i \neq \vec{V}_{cm}$ $\forall i$

esempio: ruota sospesa

$\Rightarrow$ Se il corpo è rigido in moto TRASLATORIO

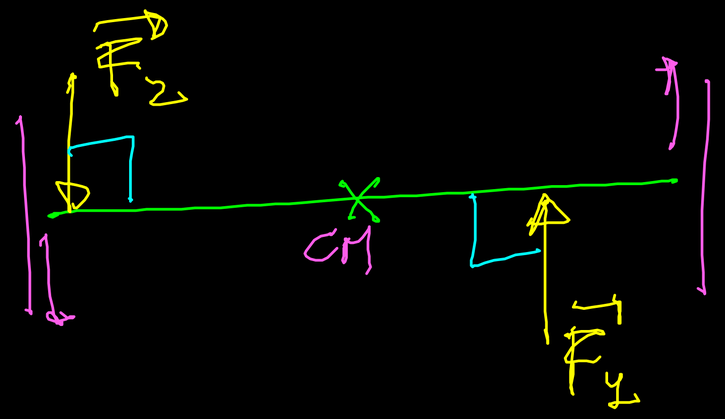
($\vec{V}_i = \vec{V}_{cm}$ $\forall i$)

$\Rightarrow \vec{V}_i = 0$ $\forall i$

$\Rightarrow$ è realizzata la cond. di EQ. STATICO

$\vec{V}_{cm} = 0$ (quiete)

PORTA GIREVOLE



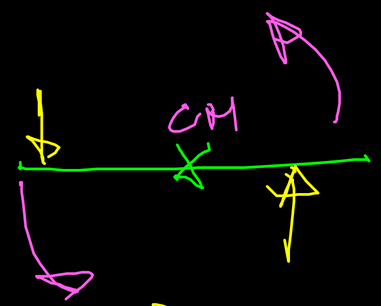
CM → asse di rotazione

$$|\vec{F}_1| = |\vec{F}_2|$$

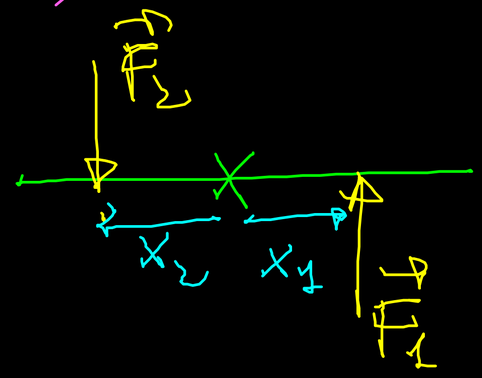
$$\vec{F}_1 + \vec{F}_2 = \vec{0} = \sum \vec{F}_{ext}$$

⇒ la porta è in eq. traslatorio

la porta non è in eq. statico



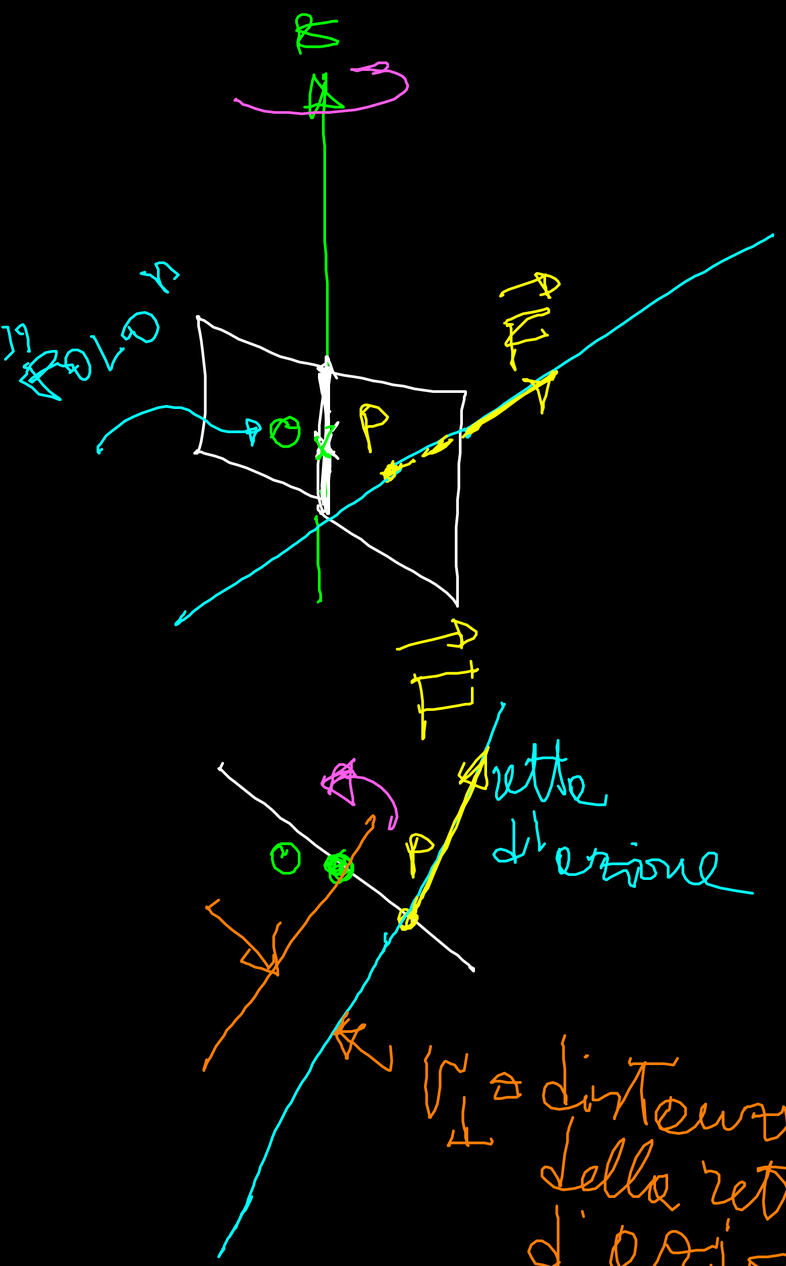
la porta ruota intorno a CM

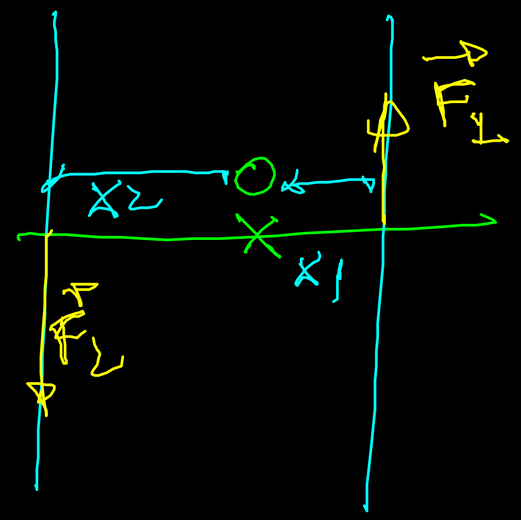


Si verifica sperimentalmente che la porta NON ruota se

$$\frac{|\vec{F}_1|}{|\vec{F}_2|} = \frac{x_2}{x_1}$$

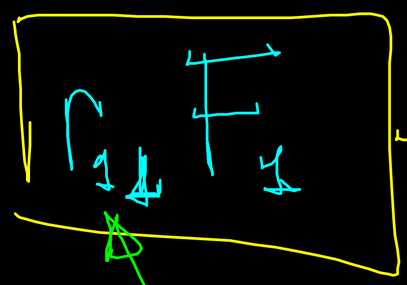
$$|\vec{F}_2| x_1 - |\vec{F}_2| x_2 = 0$$





$x_1 = r_{1\perp}$

$x_2 = r_{2\perp}$



INTENSITÀ DEL MOMENTO DI $\vec{F}$ RISPETTO AL POLO O