Conduite du SI 2 : $\vec{C}_{1\to2} = \begin{pmatrix}0\\1125\\0\end{pmatrix}$ $\vec{D}_{0\to2} = \begin{pmatrix}0\\6875\\0\end{pmatrix}$

$\sum \vec{F} = \vec{0}$

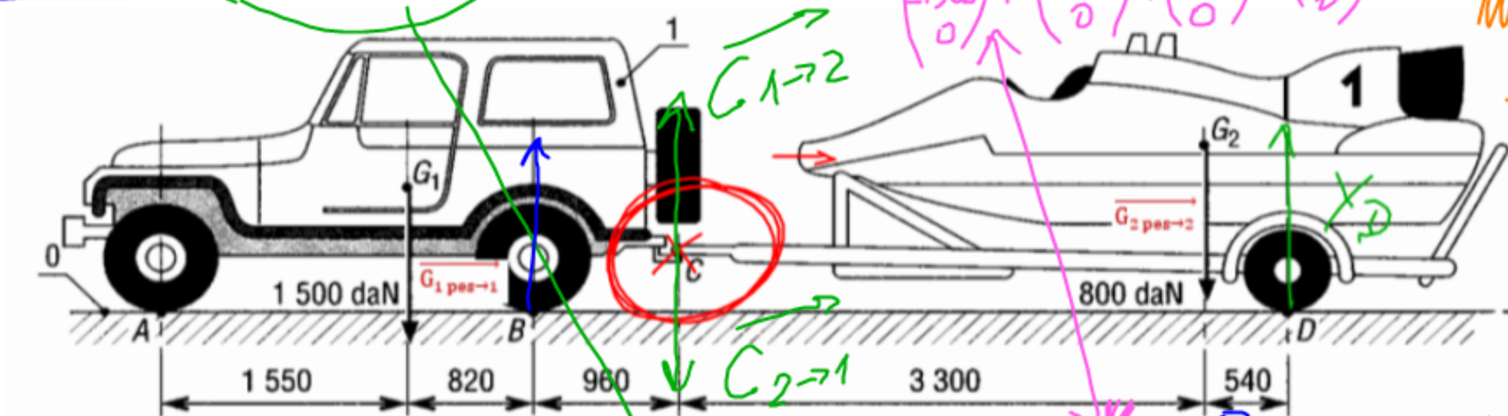
$\vec{G_1} + \vec{A} + \vec{B} + \vec{C} = \vec{0}$

$\begin{pmatrix}0\\-15000\\0\end{pmatrix} + \begin{pmatrix}0\\Y_A\\0\end{pmatrix} + \begin{pmatrix}0\\Y_B\\0\end{pmatrix} + \begin{pmatrix}0\\-1125\\0\end{pmatrix} = \vec{0}$

$\sum \vec{M_A F} = \vec{0}$

$\vec{M_A A} + \vec{M_A G_1} + \vec{M_A B} + \vec{M_A C} = \vec{0}$

$\vec{0} + \begin{pmatrix}0\\0\\-15000\cdot1{,}55\end{pmatrix} + \begin{pmatrix}0\\0\\Y_B\cdot2{,}37\end{pmatrix} + \begin{pmatrix}0\\0\\-1125\cdot3{,}33\end{pmatrix} = \vec{0}$



SI : 1

BAME : $\vec{G}_{1\,pes\to1} = \begin{pmatrix}0\\-15000\\0\end{pmatrix}$ $\vec{C}_{2\to1} = \begin{pmatrix}0\\-1125\\0\end{pmatrix} = -\vec{C}_{1\to2}$

$\vec{A}_{0\to1} = \begin{pmatrix}0\\Y_A\\0\end{pmatrix}$ $\vec{B}_{0\to1} = \begin{pmatrix}0\\Y_B\\0\end{pmatrix}$

PFS : $\sum \vec{F}\cdot\vec{x} = 0$: /

$\sum \vec{F}\cdot\vec{y} = 0 : -15000 + Y_A + Y_B - 1125 = 0$ (1)

$\sum \vec{M_A F}\cdot\vec{z} = 0 : -15000\cdot1{,}55 + Y_B\cdot2{,}37 - 1125\cdot3{,}33 = 0$ (2)

Résolution

(2) : $Y_B = \dfrac{15000\cdot1{,}55 + 1125\cdot3{,}33}{2{,}37} \simeq 11390$

(1) $Y_A = 15000 + 1125 - Y_B \simeq 4734$

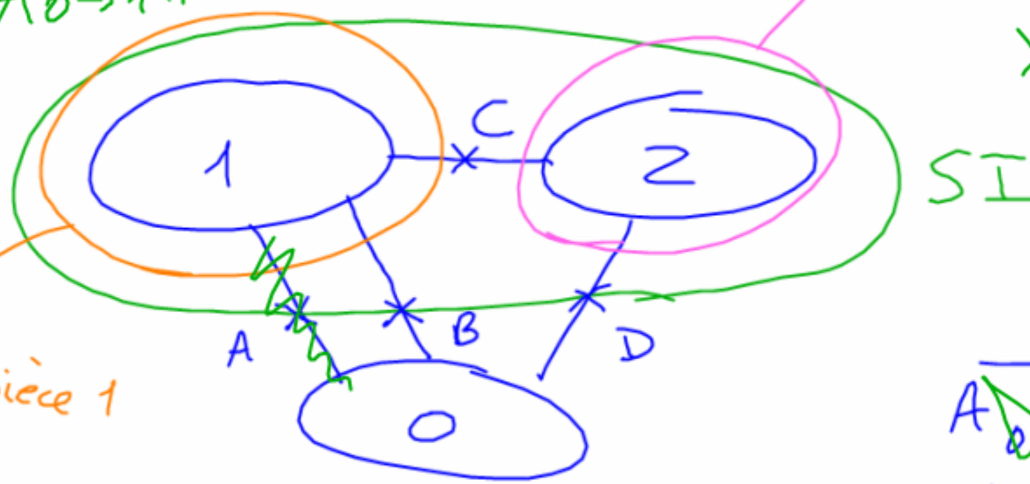
A la limite au basculement

$\|\overrightarrow{A_{0\to1}}\| = \vec{0}$ et G_2 inconnu

SI : pièce 2

$Y_C \ \overrightarrow{C_{1\to2}}$ $\quad \overrightarrow{G_{2\,pes\to2}}$ $\quad Y_{G2}$

$Y_D \ \overrightarrow{D_{0\to2}}$



SI : pièce 1

$\cancel{\overrightarrow{A_{0\to1}}}$

$Y_B \ \overrightarrow{B_{0\to1}}$ $\quad \overrightarrow{G_{1\,pes\to1}}$

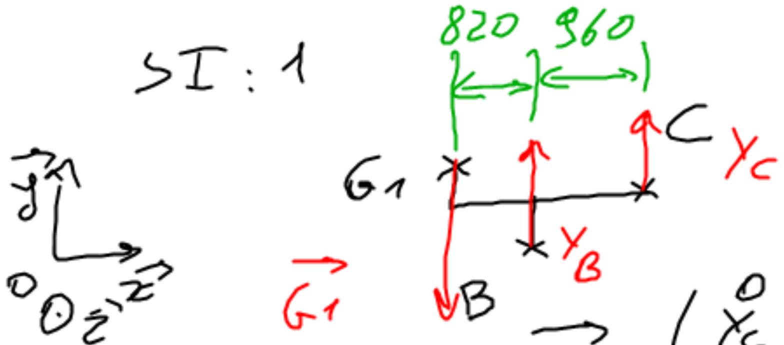
$Y_C \ \overrightarrow{C_{2\to1}}$

$\cancel{\overrightarrow{A_{0\to1}}}$ $\quad \overrightarrow{G_{1\,pes\to1}}$

$Y_B \ \overrightarrow{B_{0\to1}}$ $\quad \overrightarrow{G_{2\,pes\to2}}$ $\quad Y_{G2}$

$Y_D \ \overrightarrow{D_{0\to2}}$

SI : 1



BAME :

$$\overrightarrow{C_{2\to1}} = \begin{pmatrix} 0 \\ Y_C \\ 0 \end{pmatrix}$$

$$\overrightarrow{G_{1\,pes\to1}} = \begin{pmatrix} 0 \\ -15000 \\ 0 \end{pmatrix} \quad \overrightarrow{B_{0\to1}} = \begin{pmatrix} 0 \\ Y_B \\ 0 \end{pmatrix}$$

PFS : $\overrightarrow{\Sigma F}\cdot\vec{z} = 0$: /

$\overrightarrow{\Sigma F}\cdot\vec{y} = 0 : -15000 + Y_C + Y_B = 0$

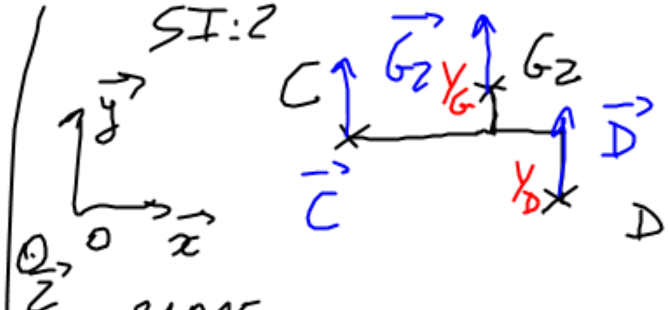
$\overrightarrow{\Sigma M_B F}\cdot\vec{z} = 0 : 15000 \cdot 0{,}82 + Y_C \cdot 0{,}96 = 0$

Résolution : $Y_C = -\dfrac{15000 \cdot 0{,}82}{0{,}96} \simeq -12800$

$Y_B = 15000 - Y_C = 15000 - (-12800) = 27800$

Conclusion $\overrightarrow{C_{2\to1}} = \begin{pmatrix} 0 \\ -12800 \\ 0 \end{pmatrix}$

SI : 2



$$\overrightarrow{G_{2\,pes\to2}} = \begin{pmatrix} 0 \\ Y_G \\ 0 \end{pmatrix}$$

BAME :

$$\overrightarrow{C_{1\to2}} = \begin{pmatrix} 0 \\ 12800 \\ 0 \end{pmatrix} = -\overrightarrow{C_{2\to1}} \quad \overrightarrow{D_{0\to2}} = \begin{pmatrix} 0 \\ Y_D \\ 0 \end{pmatrix}$$

PFS : $\overrightarrow{\Sigma F}\cdot\vec{y} = 0 : 12800 + Y_D + Y_G = 0$

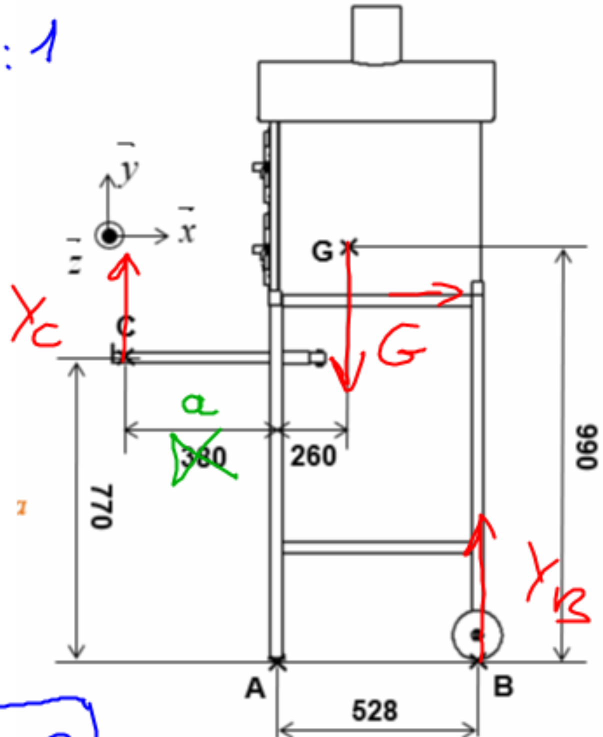
$\overrightarrow{\Sigma M_{G_2} F}\cdot\vec{z} = 0 : -12800 \cdot 3{,}3 + Y_D \cdot 0{,}54 = 0$

Résolution $Y_D = \dfrac{12800 \cdot 3{,}3}{0{,}54} \simeq 78200$

$Y_G = -12800 - 78200 = -91000$

Conclusion : $\|\overrightarrow{G_2}\| = 91000$ N à la limite au basculement. Il y a basculement si $G_2 \geq 91000$ N

SI : 1



sol : 0
four : 1
homme : 2

$\|\vec{C}\| = f(a)$

BAME :

$\overrightarrow{C_{2\to1}} = \begin{pmatrix} 0 \\ Y_C \\ 0 \end{pmatrix}$ $\overrightarrow{B_{0\to1}} = \begin{pmatrix} 0 \\ Y_B \\ 0 \end{pmatrix}$

$\overrightarrow{G_{pes\to1}} = \begin{pmatrix} 0 \\ -800 \\ 0 \end{pmatrix}$ $\overrightarrow{A_{0\to1}} = \vec{0}$

(limite au basculement)

PFS : $\sum \vec{F} \cdot \vec{y} = 0$: $Y_C + Y_B - 800 = 0$

$0{,}528 + a$

$\sum \overrightarrow{M_B F} \cdot \vec{z} = 0$: $800 \cdot 0{,}268 - Y_C \cdot 0{,}908 = 0$

Résolut. : $Y_C = \dfrac{800 \cdot 0{,}268}{0{,}908} \simeq 236$ $Y_C = \dfrac{800 \cdot 0{,}268}{(0{,}528 + a)}$

$Y_B = 800 - 236 = 564$

Conclu. : $\|\vec{C}\| = 236\,N$ correspond à une charge verticale $\simeq 23{,}6$ kg

$$Y_c = 800 - \frac{800\cdot(0{,}26+a)}{(0{,}528+a)}$$

$$= \frac{800(0{,}528+a) - 800\cdot(0{,}26+a)}{(0{,}528+a)}$$

$$= \frac{800(0{,}528 \cancel{+a} - (0{,}26\cancel{+a}))}{(0{,}528+a)}$$

$$Y_c = \frac{800\cdot 0{,}268}{0{,}528+a}$$