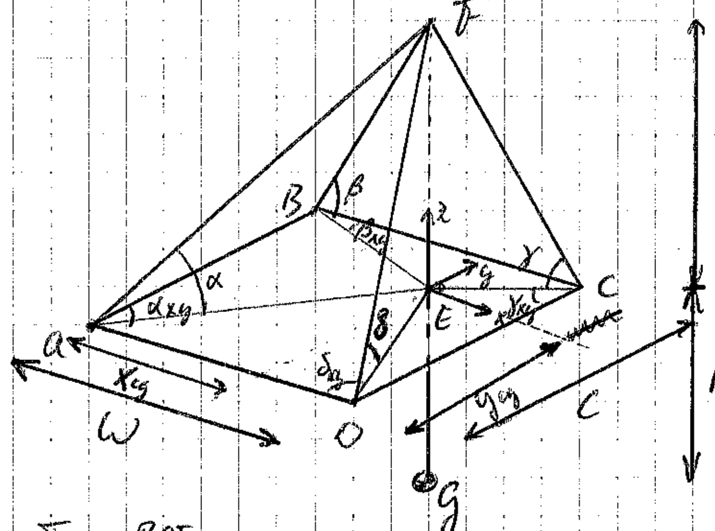


4 unknowns: RSF_A, RSF_B, RSF_C, RSF_D

known constants:
$G = 10.000\,[kg]$
$L = 1{,}36\,[m]$
$W = 1{,}98\,[m]$
$H_1 = 1{,}72\,[m]$
$H_2 =$
$X_{cg} = 1{,}08\,[m]$
$Y_{cg} = 0{,}98\,[m]$

derived knowns:

$\alpha = \arctan \frac{H}{\sqrt{x_{cg}^2 + y_{cg}^2}}$

$\alpha_{xy} = \arctan \frac{X_{cg}}{Y_{cg}}$

$\beta = \arctan \frac{H}{\sqrt{x_{cg}^2 + (L - Y_{cg})^2}}$

$\beta_{xy} = \arctan \frac{(L - Y_{cg})}{x_{cg}}$

$\gamma = \arctan \frac{H}{\sqrt{(W - X_{cg})^2 + (L - Y_{cg})^2}}$

$\gamma_{xy} = \arctan \frac{(L - Y_{cg})}{(W - X_{cg})}$

$\delta = \arctan \frac{H}{\sqrt{(W - X_{cg})^2 + Y_{cg}^2}}$

$\delta_{xy} = \arctan \frac{Y_{cg}}{(W - X_{cg})}$

$F_{Axy} = RSF_A \cos\alpha$
$F_{Az} = RSF_A \sin\alpha$
$F_{Ay} = RSF_A \cos\alpha \cos\alpha_{xy}$
$F_{Ax} = RSF_A \cos\alpha \sin\alpha_{xy}$

$F_{Bxy} = RSF_B \cos\beta$
$F_{Bz} = RSF_B \sin\beta$
$F_{By} = RSF_B \cos\beta \sin\beta_{xy}$
$F_{Bx} = RSF_B \cos\beta \cos\beta_{xy}$

$F_{Cxy} = RSF_C \cos\gamma$
$F_{Cz} = RSF_C \sin\gamma$
$F_{Cy} = RSF_C \cos\gamma \cos\gamma_{xy}$
$F_{Cx} = RSF_C \cos\gamma \sin\gamma_{xy}$

$F_{Dxy} = RSF_D \cos\delta$
$F_{Dz} = RSF_D \sin\delta$
$F_{Dy} = RSF_D \cos\delta \sin\delta_{xy}$
$F_{Dx} = RSF_D \cos\delta \cos\delta_{xy}$

$\Sigma F_x \searrow : 0 = F_{ax} + F_{Bx} - F_{Cx} - F_{Dx}$

$\Sigma F_y \nearrow : 0 = F_{ay} - F_{By} - F_{Cy} + F_{Dy}$

$\Sigma F_z \uparrow : 0 = F_{az} + F_{Bz} + F_{Cz} + F_{Dz} - G$

$$\Sigma F_x: \quad \cos\alpha \sin\alpha_{xy} RSF_a + \cos\beta \cos\beta_{xy} RSF_B - \cos\gamma \sin\gamma_{xy} RSF_c - \cos\delta \cos\delta_{xy} RSF_D = 0$$

$$\Sigma F_y: \quad \cos\alpha \cos\alpha_{xy} RSF_a - \cos\beta \sin\beta_{xy} RSF_B - \cos\gamma \cos\gamma_{xy} RSF_c + \cos\delta \sin\delta_{xy} RSF_D = 0$$

$$\Sigma F_z: \quad \sin\alpha \, RSF_a + \sin\beta \, RSF_B + \sin\gamma \, RSF_c + \sin\delta \, RSF_D = G$$

$RSF_a = 0$:

$$\begin{bmatrix} \cos\beta \cos\beta_{xy} & -\cos\gamma \sin\gamma_{xy} & -\cos\delta \cos\delta_{xy} \\ -\cos\beta \sin\beta_{xy} & -\cos\gamma \cos\gamma_{xy} & \cos\delta \sin\delta_{xy} \\ \sin\beta & \sin\gamma & \sin\delta \end{bmatrix} \begin{pmatrix} RSF_B \\ RSF_c \\ RSF_D \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \\ G \end{pmatrix} \longrightarrow \begin{pmatrix} RSF_B \\ RSF_c \\ RSF_D \end{pmatrix} = \begin{pmatrix} 53{,}8 \\ 29{,}8 \\ 36{,}1 \end{pmatrix} [kN]$$

$RSF_B = 0$:

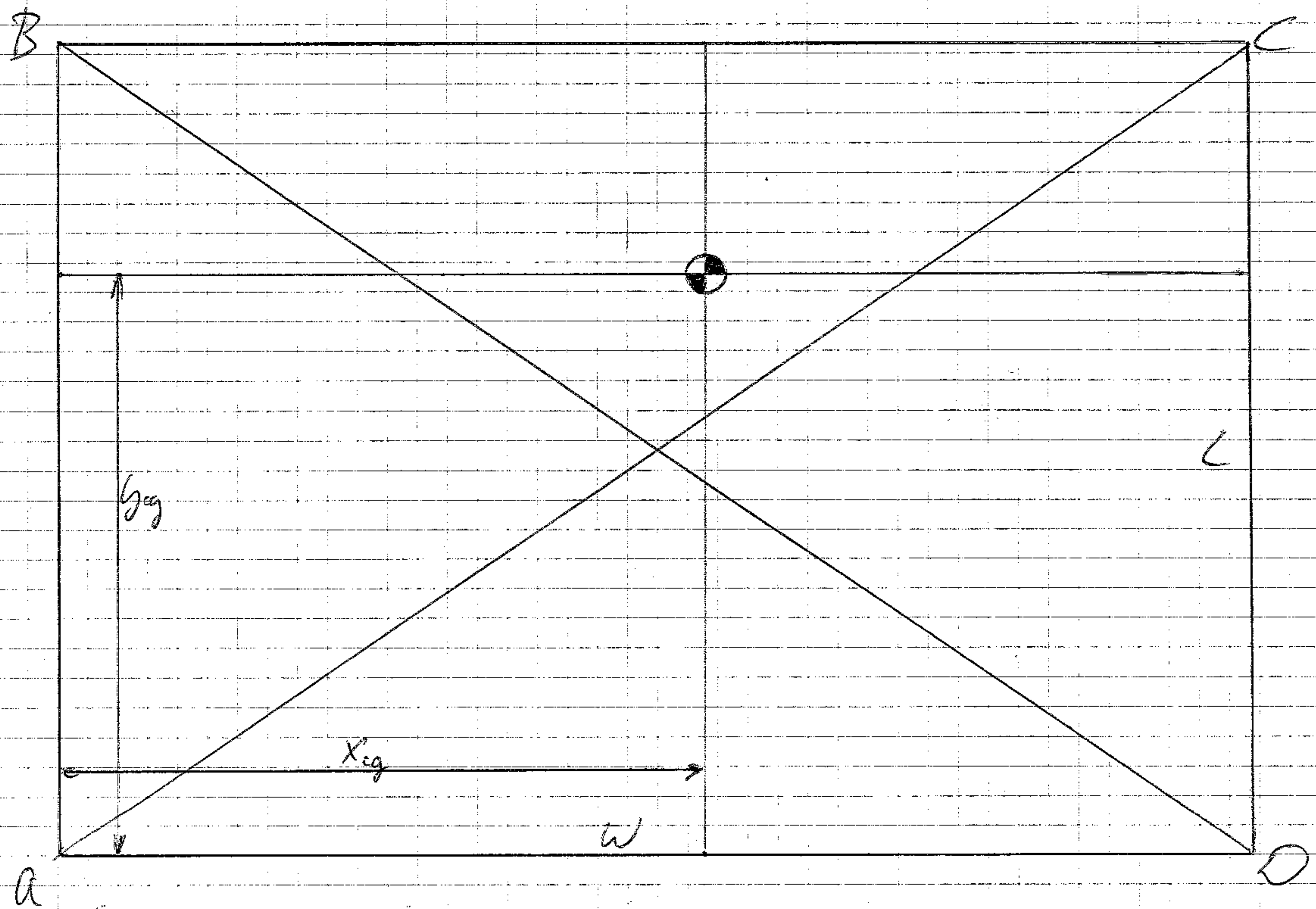
$$\begin{bmatrix} \cos\alpha \sin\alpha_{xy} & -\cos\gamma \sin\gamma_{xy} & -\cos\delta \cos\delta_{xy} \\ \cos\alpha \cos\alpha_{xy} & -\cos\gamma \cos\gamma_{xy} & \cos\delta \sin\delta_{xy} \\ \sin\alpha & \sin\gamma & \sin\delta \end{bmatrix} \begin{pmatrix} RSF_a \\ RSF_c \\ RSF_D \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \\ G \end{pmatrix} \longrightarrow \begin{pmatrix} 58{,}6 \\ 81{,}0 \\ -21{,}6 \end{pmatrix} [kN] = \begin{pmatrix} RSF_a \\ RSF_c \\ RSF_D \end{pmatrix}$$

$RSF_c = 0$:

$$\begin{bmatrix} \cos\alpha \sin\alpha_{xy} & \cos\beta \cos\beta_{xy} & -\cos\delta \cos\delta_{xy} \\ \cos\alpha \cos\alpha_{xy} & -\cos\beta \sin\beta_{xy} & \cos\delta \sin\delta_{xy} \\ \sin\alpha & \sin\beta & \sin\delta \end{bmatrix} \begin{pmatrix} RSF_a \\ RSF_B \\ RSF_D \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \\ G \end{pmatrix} \longrightarrow \begin{pmatrix} RSF_a \\ RSF_B \\ RSF_D \end{pmatrix} = \begin{pmatrix} -33{,}4 \\ 84{,}4 \\ 67{,}3 \end{pmatrix} [kN]$$

$RSF_D = 0$

$$\begin{bmatrix} \cos\alpha \sin\alpha_{xy} & \cos\beta \cos\beta_{xy} & -\cos\gamma \sin\gamma_{xy} \\ \cos\alpha \cos\alpha_{xy} & -\cos\beta \sin\beta_{xy} & -\cos\gamma \cos\gamma_{xy} \\ \sin\alpha & \sin\beta & \sin\gamma \end{bmatrix} \begin{pmatrix} RSF_a \\ RSF_B \\ RSF_c \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \\ G \end{pmatrix} \longrightarrow \begin{pmatrix} RSF_a \\ RSF_B \\ RSF_c \end{pmatrix} = \begin{pmatrix} 36{,}3 \\ 20{,}5 \\ 6{,}3 \end{pmatrix} [kN]$$



A can be eliminated $\longrightarrow$ ΔBCD includes cg
D can be eliminated $\longrightarrow$ ΔABC includes cg

B cannot: ΔACD does not include cg
C cannot: ΔABD does not include cg