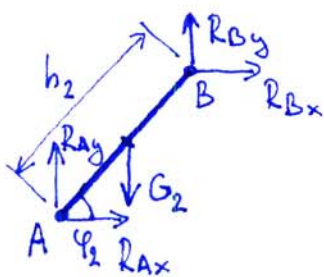


Určete pohyblivost a statickou určitost soustavy, uvolněte jednotlivá tělesa a sestavte rovnovážné rovnice v poloze popsané úhlem φ_2 . Uvažujte vliv tíhy na všech tělesech a odvalování tělesa 5.

Dáno: $G_2, G_3, G_4, G_5, G_6, M_5, F_6,$
 $a, r_5,$
 h_2, h_3, h_4 (délky těles 2,3,4)

$$n = 3 \cdot (6 - 1) - 2(5_{\text{rot}} + 1_{\text{posuv}} + 1_{\text{val}}) = 15 - 14 = 1^{\circ} \text{ volnosti}$$

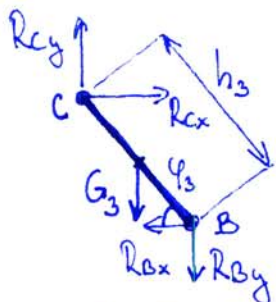
→ soustava je pohyblivá a staticky určitá



$$x: R_{Ax} + R_{Bx} = 0$$

$$y: R_{Ay} + R_{By} - G_2 = 0$$

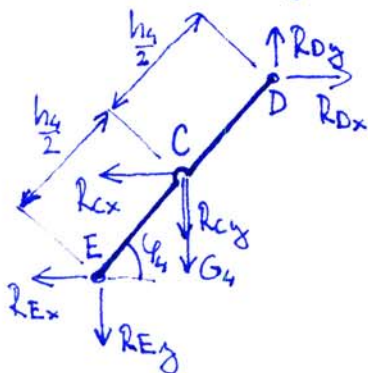
$$M_A: R_{By} \cdot \cos \varphi_2 \cdot h_2 - R_{Bx} \cdot \sin \varphi_2 \cdot h_2 - G_2 \cdot \cos \varphi_2 \cdot \frac{h_2}{2} = 0$$



$$x: R_{Cx} - R_{Bx} = 0$$

$$y: R_{Cy} - R_{By} - G_3 = 0$$

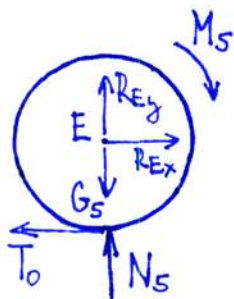
$$M_B: G_3 \cdot \cos \varphi_3 \cdot \frac{h_3}{2} - R_{Cx} \cdot \sin \varphi_3 \cdot h_3 - R_{Cy} \cdot \cos \varphi_3 \cdot h_3 = 0$$



$$x: R_{Dx} - R_{Cx} - R_{Ex} = 0$$

$$y: R_{Dy} - R_{Cy} - R_{Ey} - G_4 = 0$$

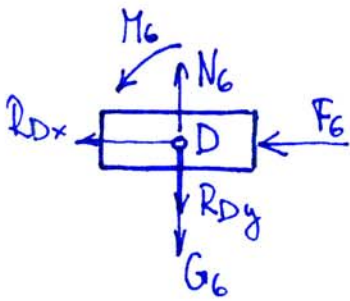
$$M_C: R_{Dy} \cdot \cos \varphi_4 \cdot \frac{h_4}{2} - R_{Dx} \cdot \sin \varphi_4 \cdot \frac{h_4}{2} + R_{Ey} \cdot \cos \varphi_4 \cdot \frac{h_4}{2} - R_{Ex} \cdot \sin \varphi_4 \cdot \frac{h_4}{2} = 0$$



$$x: R_{Ex} - T_0 = 0$$

$$y: R_{Ey} + N_5 - G_5 = 0$$

$$M_E: -M_5 - T_0 \cdot r_5 = 0$$



$$x: -R_{Dx} - F_6 = 0$$

$$y: N_6 - R_{Dy} - G_6 = 0$$

$$M_D: M_6 = 0$$

Vztahy pro výpočet pomocných veličin:

$$r_5 + h_4 \cdot \sin \varphi_4 = a \rightarrow \sin \varphi_4 = \frac{a - r_5}{h_4} \rightarrow \varphi_4$$

$$h_2 \cdot \sin \varphi_2 + h_3 \cdot \sin \varphi_3 + \underbrace{\frac{h_4}{2} \sin \varphi_4}_{\frac{a - r_5}{2}} = a$$

$$\rightarrow h_3 \cdot \sin \varphi_3 = a - \frac{a - r_5}{2} - h_2 \cdot \sin \varphi_2 = \frac{a + r_5}{2} - h_2 \cdot \sin \varphi_2$$

$$\sin \varphi_3 = \frac{a + r_5 - 2h_2 \cdot \sin \varphi_2}{2h_3} \rightarrow \varphi_3$$