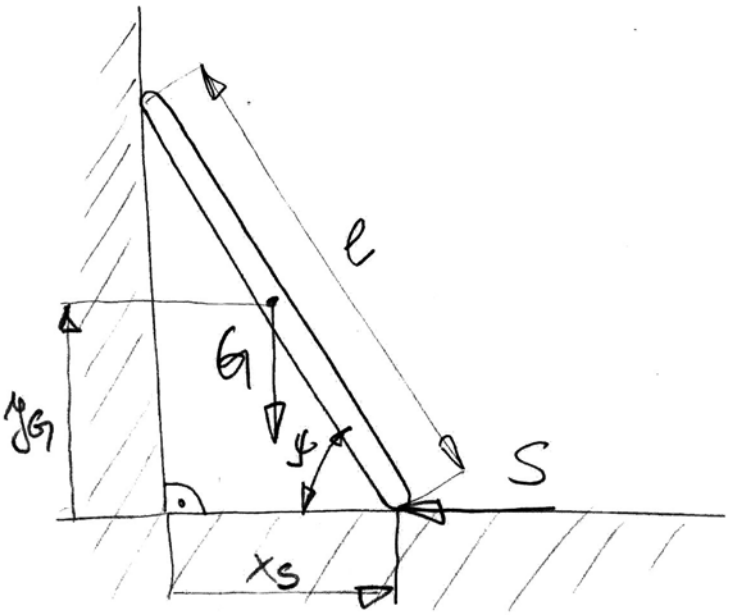
D: $G, l, \psi$

U: S pro rovnováhu
* virt. práce
* virt. výkony




Virt. práce sil pro rovnováhu $= 0$

$$\delta W = 0 \Rightarrow -G \cdot \delta y_G - S \cdot \delta x_S = 0 \qquad (F \delta x_1, \sigma(\delta p))$$

$$y_G = \frac{l}{2} \cdot \sin\psi \qquad x_S = l \cdot \cos\psi$$

$$\delta y_G = \frac{l}{2} \cos\psi \, \delta\psi \qquad \delta x_S = -l \sin\psi \, \delta\psi$$

$$-G \cdot \frac{l}{2} \cos\psi \, \delta\psi + S \, l \sin\psi \, \delta\psi = 0$$

$$S \cdot l \sin\psi = G \cdot \frac{l}{2} \cos\psi$$

$$S = \frac{G}{2} \cdot \frac{\cos\psi}{\sin\psi} = \frac{G}{2 \operatorname{tg}\psi}$$

# Virtuelle Arbeit ($\neq \delta r$, $\neq \delta\varphi$)

$$y_G = \frac{l}{2}\sin\varphi \qquad x_S = l\cdot\cos\varphi$$

$$v_G = \dot{y}_G = \frac{l}{2}\cos\varphi\cdot\dot{\varphi} \qquad v_S = \dot{x}_S = -l\sin\varphi\cdot\dot{\varphi}$$

$$\delta v_G = \frac{l}{2}\cos\varphi\cdot\delta\dot{\varphi} \qquad \delta v_S = -l\sin\varphi\cdot\delta\dot{\varphi}$$

$$-G\cdot\delta\dot{y}_G - S\,\delta\dot{x}_S = 0$$

$$-G\cdot\frac{l}{2}\cos\varphi\,\delta\dot{\varphi} + S\cdot l\cdot\sin\varphi\cdot\delta\dot{\varphi} = 0$$

$$-\frac{G}{2}\cos\varphi + S\sin\varphi = 0$$

$$\boxed{S = \frac{G}{2\tan\varphi}}$$