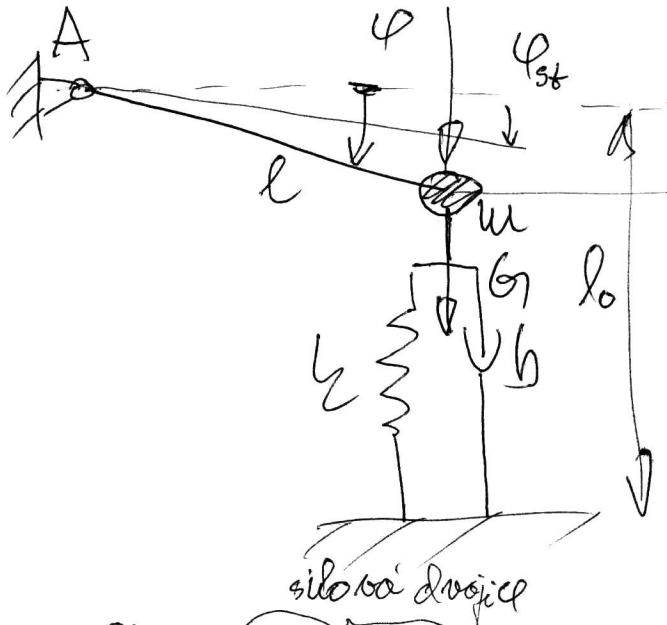
$$F(t) = F_0 \sin(\omega t)$$



I_A … moment setrv. k bodu A

$I_A = ml^2$ (Königova věta)

$$I_A \cdot \ddot{\varphi} = -\underbrace{k \cdot l \cdot \varphi \cdot l}_{\text{síla v pružině}} - b \cdot l \cdot \dot{\varphi} \cdot l + F(t) + G$$

Steinerova věta

φ úhel od φ_{st} (stat. rovn. poloha)

$$I_A \cdot \ddot{\varphi} + b l^2 \dot{\varphi} + k l^2 \varphi = F(t) + G$$

$$\ddot{\varphi} + \underbrace{\frac{b l^2}{I_A}}_{2b_r\Omega} \dot{\varphi} + \underbrace{\frac{k l^2}{I_A}}_{\Omega^2} \varphi = \underbrace{\frac{F_0}{I_A} \sin(\omega t)}_{\varphi_{p1}} + \underbrace{\frac{G}{I_A}}_{\varphi_{p2}}$$

$$\varphi_c = \varphi_h + \varphi_{p1} + \varphi_{p2} \qquad \Omega_b = \Omega \sqrt{1 - b_r^2}$$

$$\left.\begin{aligned} \varphi_{p1} &= r \sin(\omega t - \psi) \\ \varphi_{p2} &= C \end{aligned}\right\} \text{odhady}$$

$$\varphi_h = e^{-b_r \Omega t} (A \cos \Omega_b \cdot t + B \sin \Omega_b \cdot t)$$