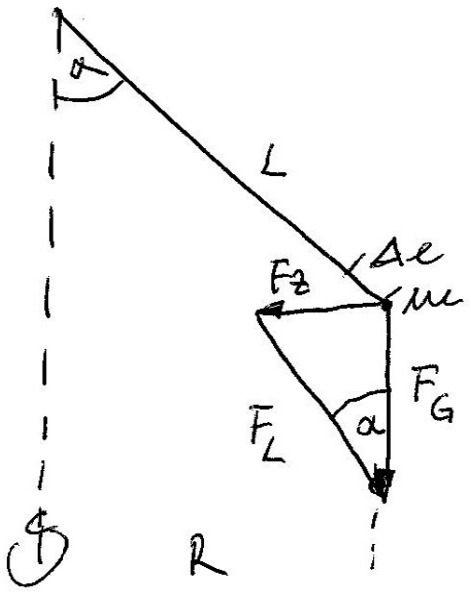
GUMMIBAND



$$F_L = \frac{F_z}{\sin\alpha} = K \cdot \Delta l$$

$$\Delta l = \frac{F_z}{\sin\alpha \cdot K} = \frac{m \cdot R \cdot \omega^2}{\sin\alpha \cdot K}$$

$$\frac{R}{L + \Delta l} = \sin\alpha \rightarrow R = (L + \Delta l) \cdot \sin\alpha$$

$$\Delta l = \frac{m \cdot (L + \Delta l) \cdot \sin\alpha \cdot \omega^2}{\sin\alpha \cdot K} = \frac{m \cdot L \cdot \omega^2 + m \cdot \omega^2 \cdot \Delta l}{K}$$

$$\Delta l \cdot K = m \cdot L \cdot \omega^2 + m \cdot \omega^2 \cdot \Delta l$$

$$\Delta l \cdot K - m \cdot \omega^2 \cdot \Delta l = m \cdot L \cdot \omega^2$$

$$\Delta l (K - m \cdot \omega^2) = m \cdot L \cdot \omega^2$$

$$\boxed{\Delta l = \frac{m \cdot L \cdot \omega^2}{K - m \cdot \omega^2}}$$