

# Kräftefreie Kreisel

$$\omega_3 = \text{konst}$$

$$I \frac{d\omega_1}{dt} - (I - I_3) \omega_2 \omega_3 = 0$$

$$I \frac{d\omega_2}{dt} - (I_3 - I) \omega_1 \omega_3 = 0$$

$$\frac{d\omega_1}{dt} = \omega_3 \frac{(I - I_3)}{I} \omega_2 = A \omega_2$$

$$\frac{d\omega_2}{dt} = -\omega_3 \frac{(I - I_3)}{I} \omega_1 = -A \omega_1$$

$$\frac{d^2 \omega_1}{dt^2} = A \frac{d\omega_2}{dt} = -A^2 \omega_1$$

$$\omega_1 = \omega_0 \cos(At)$$

$$\omega_2 = \omega_0 \sin(At)$$