# Øvelse 2 Disposition

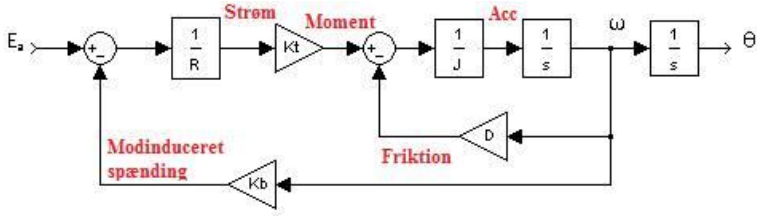
## Formål

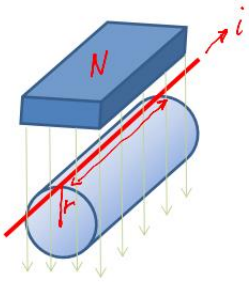
Forståelsen af motor teori

Bestemme modellen af DC motor

## Motor teori

Tachometer




$T_m = B l r i_a = K_t \cdot i_a$

$V_b = B l r \theta_m' = K_b \cdot \omega_m$

Stationær tilstand ligninger

$$E_a - K_b\omega = R_a I_a \Rightarrow E_a = R_a I_a + K_b\omega$$

$$T_m = K_t I_a$$

$$T_m(s) = K_t I_a(s)$$

$$V_b(s) = K_b s\theta_m(s)$$

Tegn DC motor med forsyning, motor og back EMF

$$G_\theta(s) = \frac{\theta(s)}{E_a(s)} = \frac{\frac{k_t}{R_a \cdot J_m}}{s\left(s + \frac{1}{j_m}\left(D + \frac{k_t \cdot K_b}{R_a}\right)\right)} \Rightarrow G_\omega(s) = \frac{\omega(s)}{E_a(s)} = \frac{\frac{k_t}{R_a \cdot J_m}}{s + \frac{1}{j_m}\left(D + \frac{k_t \cdot K_b}{R_a}\right)}$$

Type 0 system, 1. orden system

## Målling

Step input

- Stationær fejl
- Rise time – pol
- K værdi $K = \frac{\omega(s)}{E_a(s)}$ når vi er i stationær tilstand

Frekvens sweep

- 3dB frekvensen