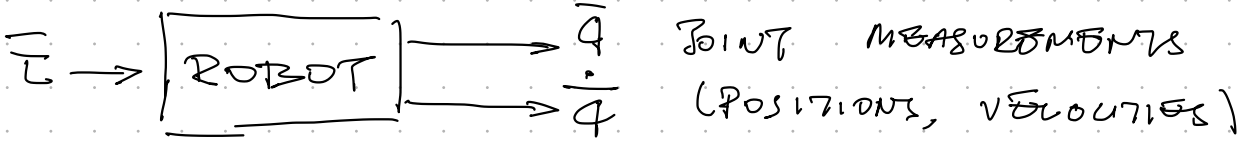
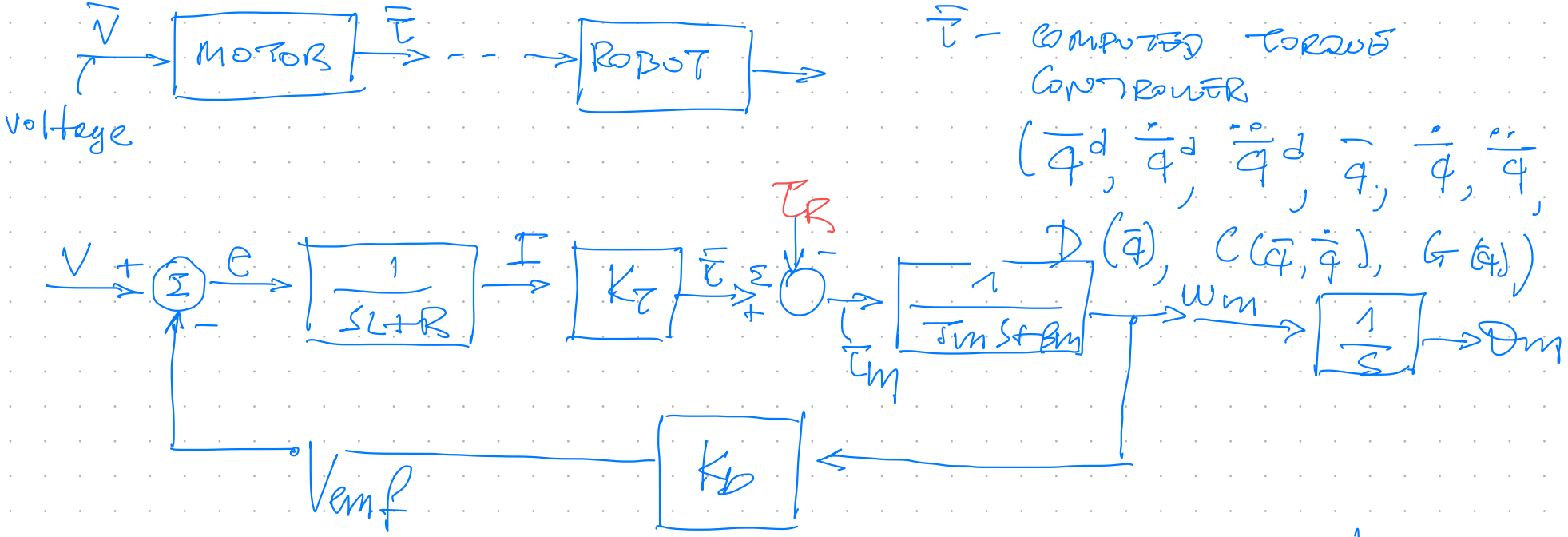
INDEPENDENT JOINT CONTROL





$e = V - y$

$e = RI + L\frac{dI}{dt}$

$R \simeq 20\,\Omega$

$L \simeq 5\,mH$

$\frac{I}{e} = \frac{1}{SL+R}$

$\omega_m = \frac{d}{dt}\theta_m$

$\tau = K_T \cdot I$

$K_T - \frac{N \cdot m}{A}$

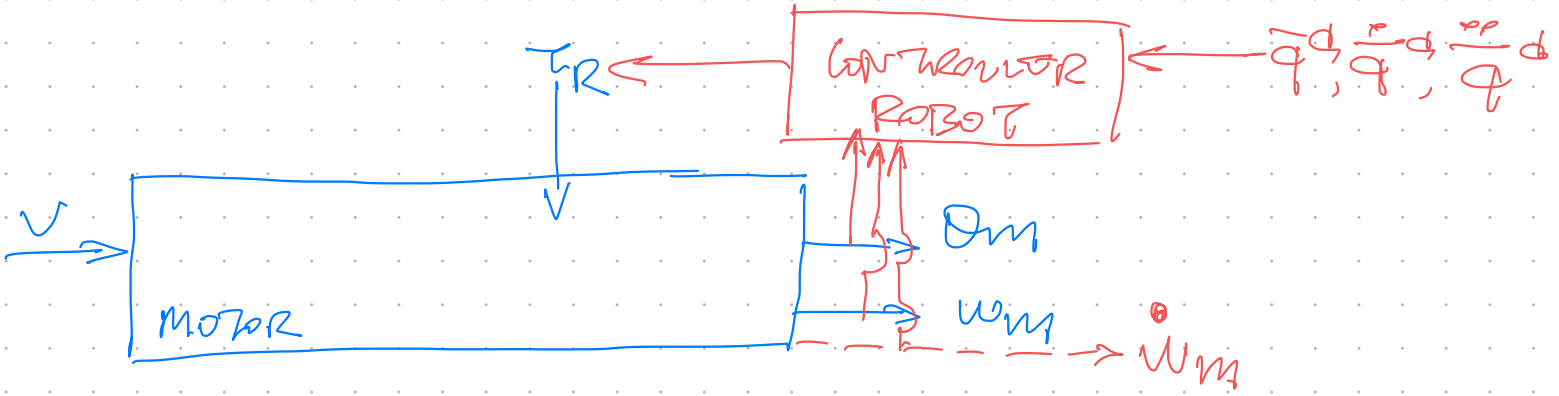
$\tau = \tau_m + \tau_R$

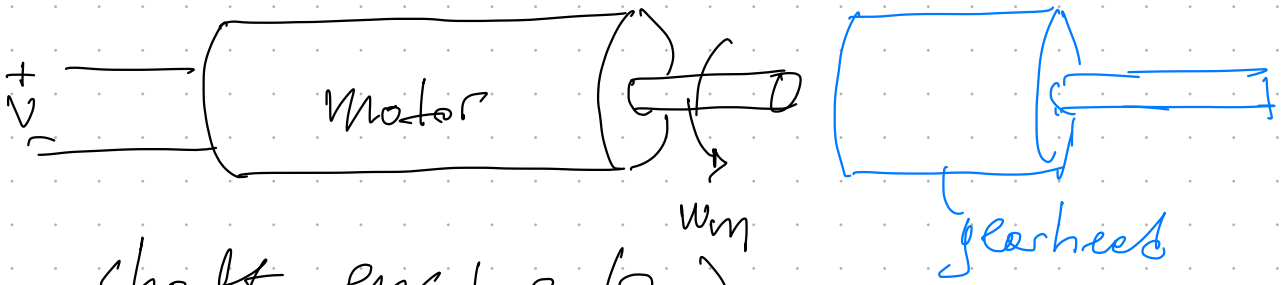
$\tau_m = J_m \dot{\omega}_m + \beta_m \omega_m$

β_m ← viscous friction coefficient

ω_m ← angular motor velocity

$V_{emf} = K_b \omega_m$

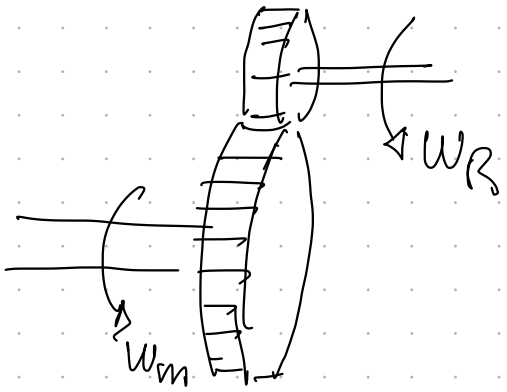




MAXON – motors

Shaft encoder (θ_m)

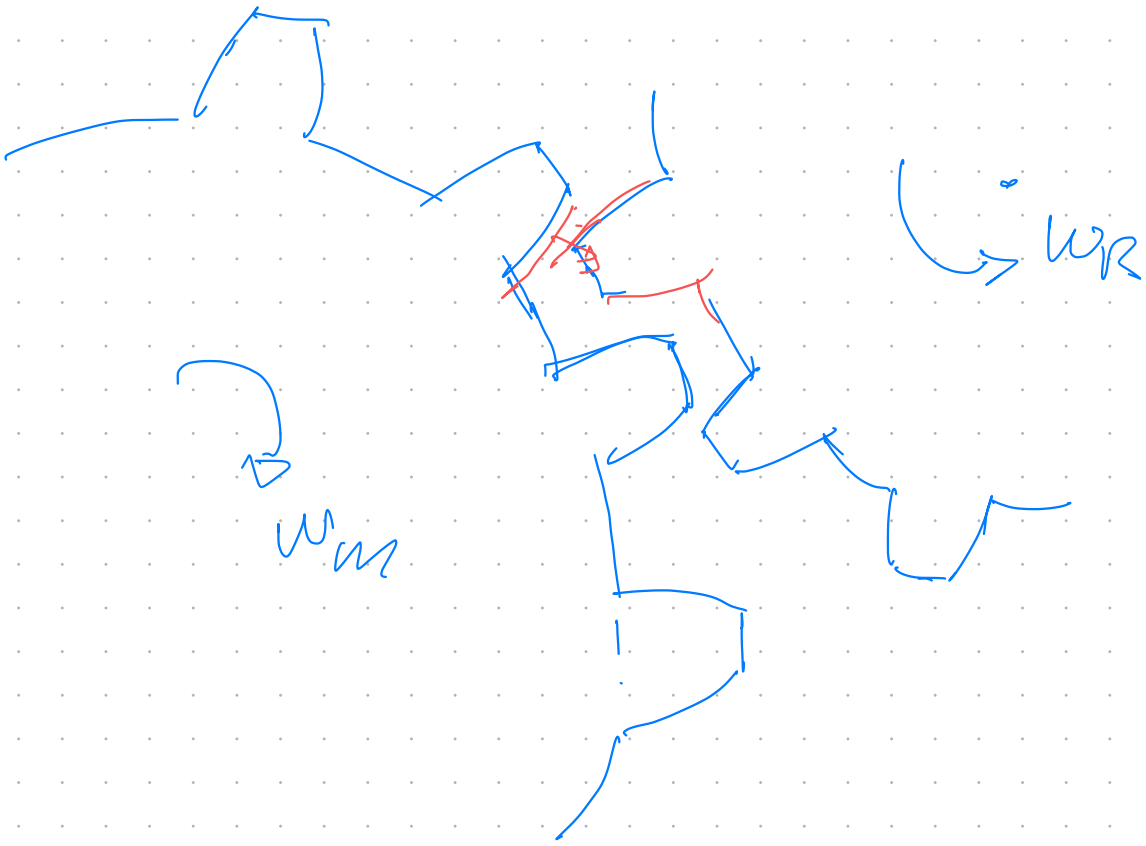
tachometer



$\omega_R << \omega_m$

$$\frac{\omega_R}{\omega_m} = \frac{1}{N} \qquad N \simeq 10$$

$$\tau_R = N^2 \tau_m$$



gear backlash