

Case Study: DC Motor

Inputs: v_a – input voltage

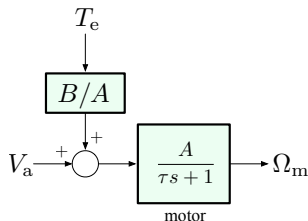
τ_e – load/disturbance torque

Outputs: ω_m – angular speed of the motor

Transfer function:

$$\Omega_m = \frac{A}{\tau s + 1} V_a + \frac{B}{\tau s + 1} T_e$$

τ – time constant
 A, B – system gains



Objective: have Ω_m approach and track a given reference Ω_{ref} in spite of disturbance T_e .