

Sistemas de Control II - FCEFyN (UNC).

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Caso de estudio 2 - Motor (Actividad 1.4b)

Transfer function calculate $\frac{\omega_R}{T_L}$

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clear all; close all; clc;

syms s
syms Ra Laa Km Ki J Bm theta
syms Ia wr Va Tl

Va= 0;
Bm= 0;

eq1= s*Ia      == -(Ra/Laa)*Ia-(Km/Laa)*wr+(1/Laa) *Va;
eq2= s*wr      == (Ki/J) *Ia-(Bm/J) *wr-(1/J) *Tl;
eq3= s*theta == wr;

sol= solve([eq1, eq2, eq3], [wr, Tl, Ia]);

symFT= (sol.wr)/(sol.Tl)
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$$\text{symFT} = -\frac{Ra + Laa s}{J Laa s^2 + J Ra s + Ki Km}$$

$$\omega_{R\max} = 1.8377e + 03$$

$$i_a(t) = 0.2147A = 214.7mA$$

Calculate $T_{L\max}$.

$$Tl = 214.7e-3;$$