Sistemas de Control II - FCEFyN (UNC).

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Caso de estudio 2 - Motor (Actividad 1.4b)

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

```
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)
```

```
symFT =
```

$$-\frac{\mathrm{Ra} + \mathrm{Laa}\, s}{J\ \mathrm{Laa}\, s^2 + J\ \mathrm{Ra}\, s + \mathrm{Ki}\ \mathrm{Km}}$$

$\omega_{R\,máx} = 1.8377e+03$

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

Calculate $T_{L\,\mathrm{máx}}$.

```
Tl= 214.7e-3;
```