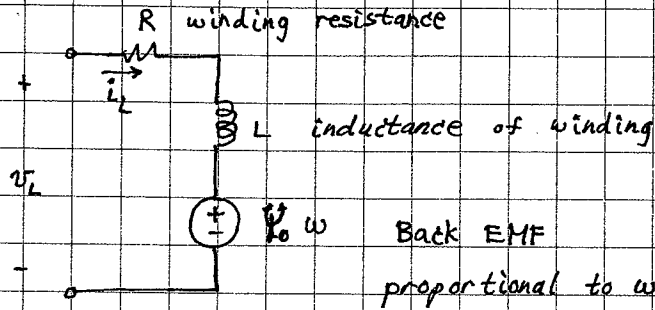


Motor Electronics

Improved Motor Model motor = R, L, and V drop

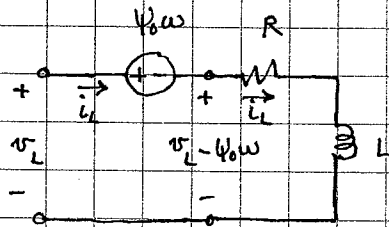


Motivation: Consider simple motor eqn from p. 9 of text.

$$v_A = Ri_A + L \frac{di_A}{dt} - \Psi_0 \omega \sin(\theta)$$

(In a motor with more windings, we expect the last term to be relatively independent of θ : $\Psi_0 \omega$.)

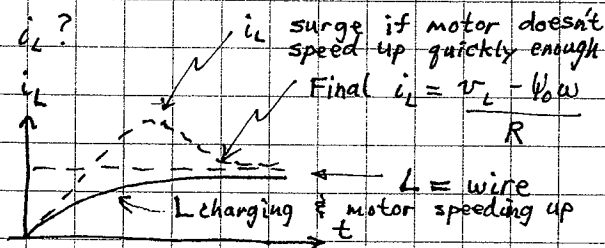
- Back EMF just lowers v_L , once motor is moving. No back EMF when motor stopped.



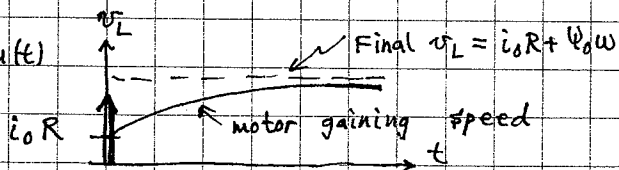
Control v_L or i_L ?

$v_L = \text{const} = v_0 u(t)$

• reasonable



$i_L = \text{const} = i_0 u(t)$



• Still a V spike at $t=0$. Not good!