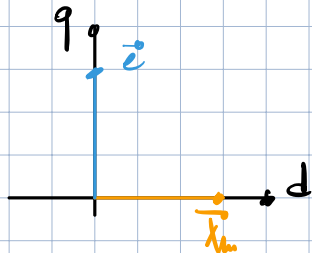


STIMATORI DI FCEM

$$\begin{aligned}\vec{v}^0 &= R\vec{x} + L \frac{d\vec{x}}{dt} + \frac{d\vec{\lambda}_{lm}}{dt} \\ &= R\vec{x} + L \frac{d\vec{x}}{dt} + \vec{e}\end{aligned}$$

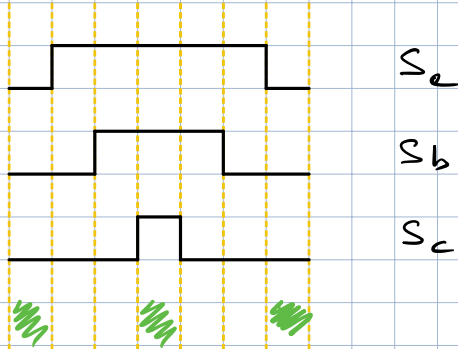
$$\vec{e} = \vec{v}^0 - R\vec{x} - L \frac{d\vec{x}}{dt}$$



MISURA DELLE CORRENTI

e	0	1	1	1	1	0	
b	0	0	1	1	1	0	
c	0	0	0	1	0	0	

"SM"



Altri serie $\frac{di}{dt}$

ESTENSIONE ALLA MACCHINA ANISOTROPA

"FLUSSO ATRIUM"

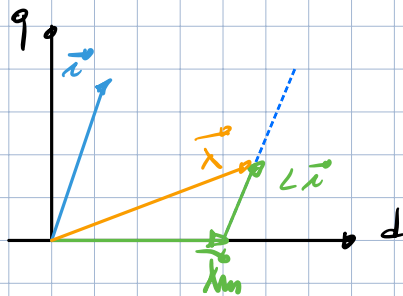
$$\vec{v}^0 = R\vec{x} + \frac{d\vec{\lambda}}{dt}$$

$$\vec{\lambda} = \vec{\lambda}_{lm} + L\vec{x}$$

$\alpha\beta$

$$\vec{\lambda}_{lm} = \int \vec{v}^0 - R\vec{x} dt - L\vec{x}$$

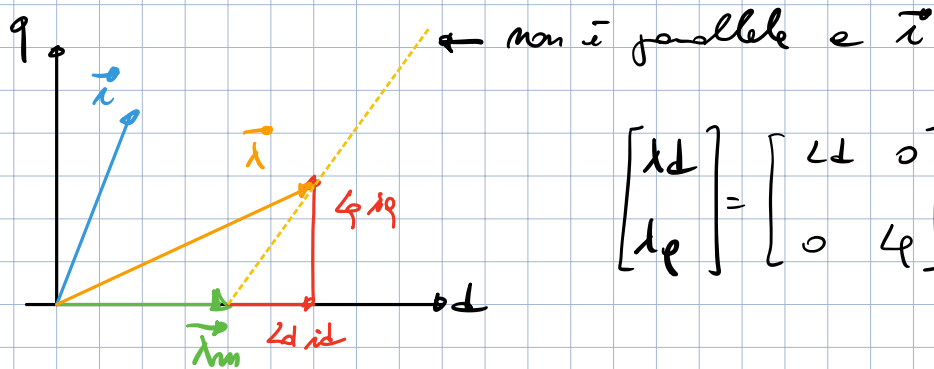
$\alpha\beta$



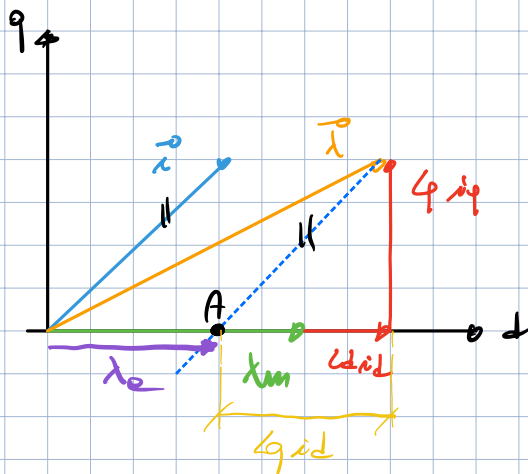
MACCHINA ISOTROPA:

È semplice togliere $L\vec{i}$ e $\vec{i}$ per avere $\vec{i}_m$

Se la macchina è ANISOTROPA?



$$\begin{bmatrix} \lambda_d \\ \lambda_q \end{bmatrix} = \begin{bmatrix} L_d & 0 \\ 0 & L_q \end{bmatrix} \begin{bmatrix} i_d \\ i_q \end{bmatrix} + \begin{bmatrix} \lambda_m \\ 0 \end{bmatrix}$$



λ_e : flusso d'induzione

$$\begin{aligned} \vec{\lambda} &= \underbrace{\lambda_m}_{\text{green}} + \underbrace{L_d i_d}_{\text{red}} + \underbrace{j L_q i_q}_{\text{blue}} \\ &= \underbrace{\lambda_e}_{\text{purple}} + \underbrace{L_q \vec{i}}_{\text{blue}} \end{aligned}$$

$$\lambda_e = \lambda_m + (L_d - L_q) i_d$$

Idea: siamo persone λ_e (che è lo stesso di λ_m) e possiamo usare questo approccio anche $\lambda_m = 0$ (Spm REC!!)

$$\vec{\lambda} = \int \vec{\nu} - R \vec{i} dt = \vec{\lambda}_e + L_q \vec{i}$$

$$\vec{\lambda}_e = \int \vec{\nu} - R \vec{i} dt - L_q \vec{i}$$

