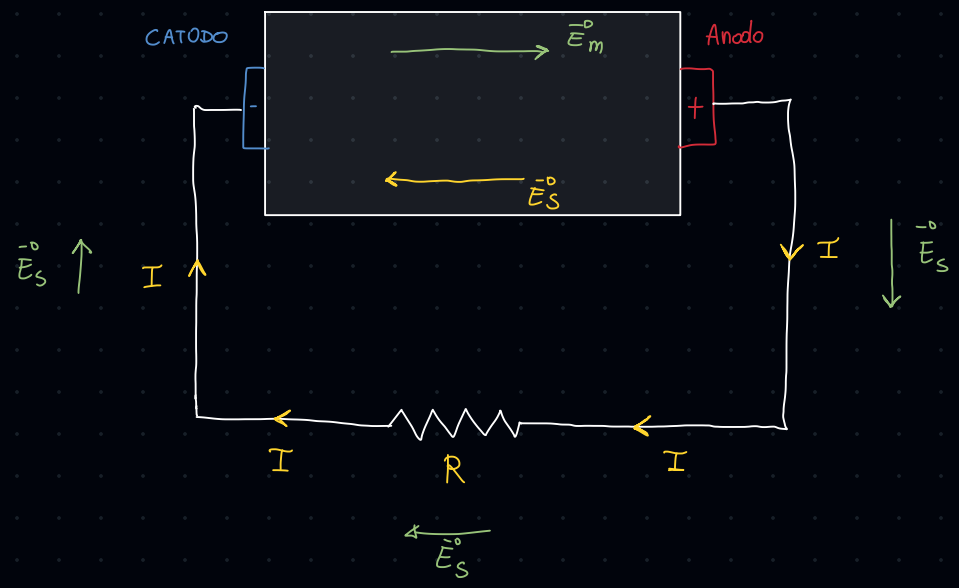
Forza elettromotrice



$$L_{\vec{E}} = \int_A^B \vec{E}_S \cdot d\vec{\ell} \;\overset{A=B}{=}\; \oint \vec{E}_S \cdot d\vec{\ell} = 0$$

Deve esserci un campo NON CONSERVATIVO

CONSERVATIVI

$$\rightarrow L_{TOT} = \oint \vec{E}\, d\vec{\ell} = \oint_A^B \vec{E}_S \cdot d\ell + \oint_A^B \vec{E}_S\, d\ell + \int_B^A \vec{E}_m \cdot d\ell$$

$$\Rightarrow L = \int_B^A \vec{E}_m\, d\vec{\ell} \quad (1)$$

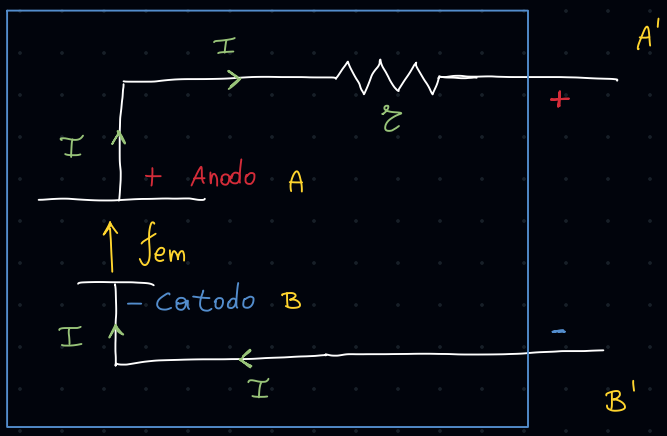
Forza em

Definiamo $\mathcal{f}_{em} = \frac{L}{q} \Rightarrow L = q \cdot \mathcal{f}_{em}$

$$\rightarrow L = q \cdot \int_B^A \vec{E}_m \cdot d\vec{\ell}$$

Lavoro che il campo em compie per spostare la carica q da B ad A

Generatore



Legge di Ohm $V_A - V_B = R \cdot I$

$V_{A'} - V_{B'} = (V_A - V_B) - R \cdot I$ (2)

Gen NON Id.

Dalla (1) $f_{em} = \Delta V$

$\Rightarrow \Delta V' = f_{em} - R \cdot I$ (a)

$\Delta V' = f_{em} - \mathcal{E} \cdot I = R \cdot I \rightarrow f_{em} = R \cdot I + \mathcal{E} \cdot I \Rightarrow f_{em} = I(R + \mathcal{E})$ (b)

$I = \frac{f_{em}}{R + \mathcal{E}}$ c

$\Delta V = R \cdot I \Rightarrow I = \frac{\Delta V}{R} \Rightarrow \frac{\Delta V}{R} = \frac{f_{em}}{R + \mathcal{E}} \Rightarrow \Delta V = \frac{f_{em} \cdot R}{R + \mathcal{E}}$ d

Se $\mathcal{E} = 0 \rightarrow \Delta V = \frac{f_{em} \cdot R}{R} \rightarrow f_{em} = \Delta V$