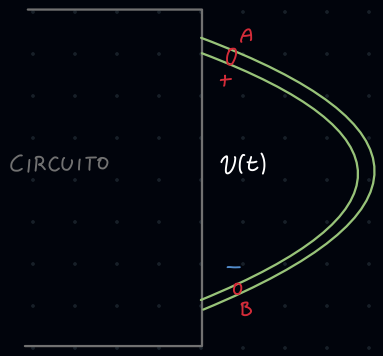
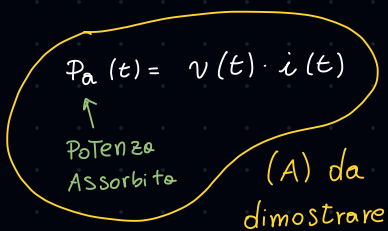




Ipotesi di lavoro

- Supponiamo che $v(t) = V_0 > 0$

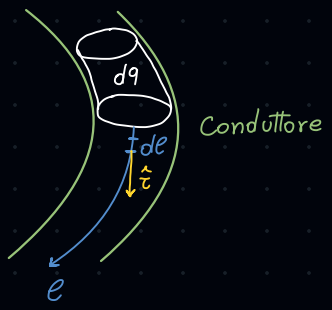
$\downarrow$

$V_A > V_B$

$$dq = i(t)\,dt$$

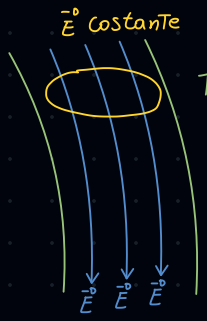
$$\Rightarrow dL = dq \cdot E\,\hat{\tau}\,d\vec{e}$$

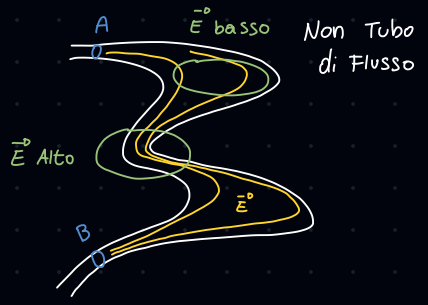
dL: Lavoro Elementare



HP: Dati $\begin{cases} e: \text{lunghezza conduttore} \\ S: \text{Sezione} \end{cases}$

$\hookrightarrow e >> \sqrt{S} \Rightarrow$ Il conduttore è un Tubo di flusso





$$\Rightarrow dL = dq \cdot E\,de \Rightarrow \underbrace{\frac{dL}{dt}}_{\text{Lavoro elem per unità di tempo}} = \underbrace{\frac{dq}{dt}}_{dP \text{ Potenza Elementare}} \cdot E\,de \Rightarrow dW = \frac{dq}{dt} E\,de \rightarrow W = \int_{A\beta B} \frac{dq}{dt} E\,de$$

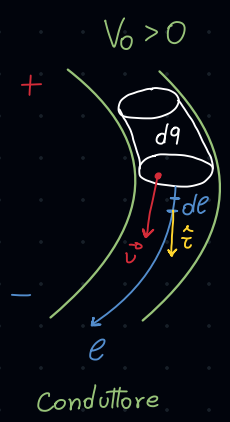
$i(t)$ per Hp(1) > 0

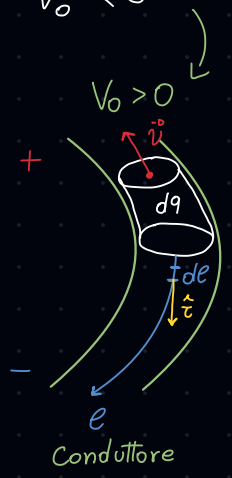
$$W_A = P_A = \int_{A\beta B} \frac{dq}{dt} E\,de = v(t) \cdot i(t)$$

$V_{AB} = v(t)$

QED

Hp lavoro: $v(t) = V_0 < 0$





$$P_a(t) = \int_{AfB} \frac{dq}{dt} E \, de$$

Negativo

$$i(t) < 0 = i(t) \cdot v(t) > 0$$

< 0 < 0

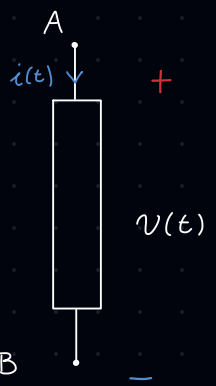
$- \cdot - = +$

$$P_e(t) = v(t) \cdot i(t)$$

Potenza erogata

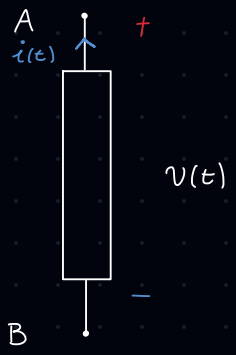
$$P_a(t) = -P_e(t)$$

Convenzioni di segno



$P_a(t) = V(t) \cdot i(t)$

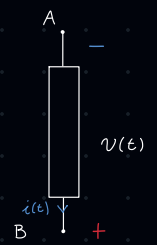
Convenzione dell'utilizzatore



$P_e(t) = i(t) \cdot V(t)$

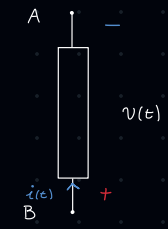
Convenzione del generatore

CASI ANALOGHI



$P_e(t) = i(t) \cdot V(t)$

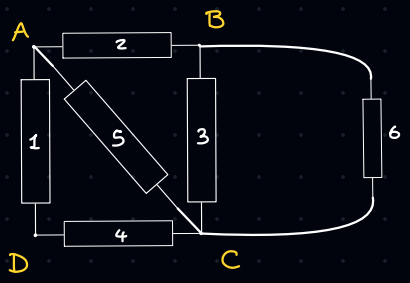
Convenzione del generatore



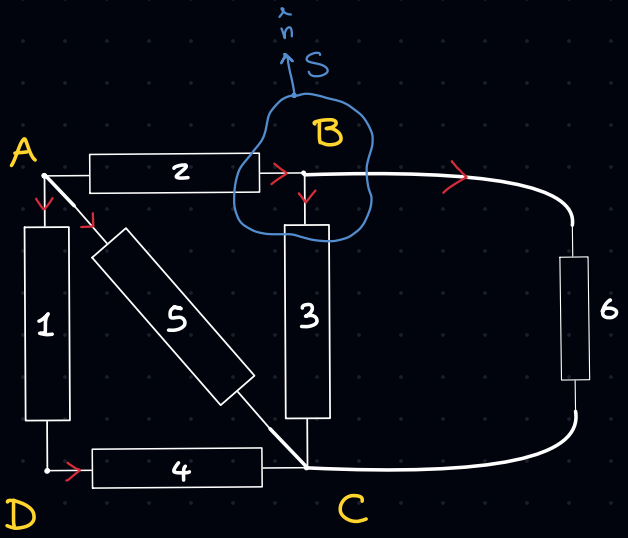
$P_a(t) = V(t) \cdot i(t)$

Convenzione dell'utilizzatore

Circuito Elettrico



- 6 Dipoli
- 4 Nodi



$$\left|\frac{dQ_S}{dt}\right| \ll |i(t)|$$

↑ Hp. Quasi Stazionarietà

$$i_S(t) = -\frac{dQ_S}{dt}$$

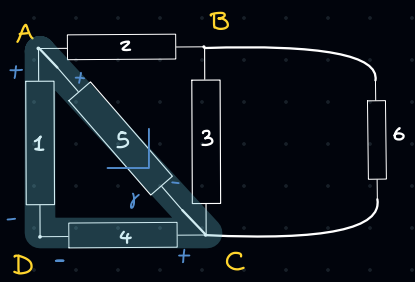
$$i_3(t) + i_6(t) - i_2(t) \cong -\frac{dQ_S}{dt} \simeq 0$$

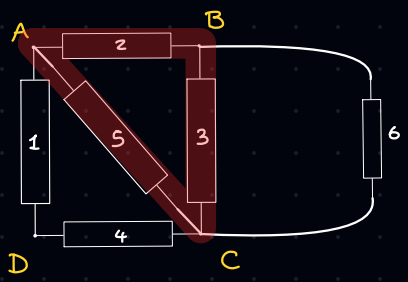
$$\begin{cases} A: & i_1(t) + i_2(t) + i_3(t) = 0 \\ B: & i_3(t) + i_6(t) - i_2(t) = 0 \\ C: & -[i_4(t) + i_5(t) + i_3(t)] = 0 \\ D: & i_4(t) - i_1(t) = 0 \end{cases}$$

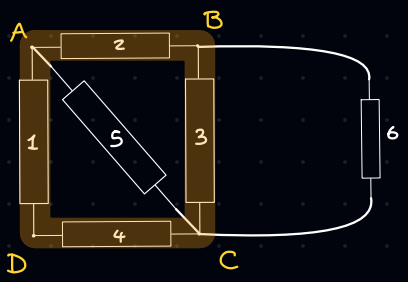
$$\sum_k (\pm)\, i_k(t) = 0$$

Legge di Kirchhoff per le correnti

L'eq C si ottiene come: $C = -eqD - eqA - eqB$







E molte Altre ...

$$\oint_\gamma \vec{E}^{\circ} \cdot \hat{t} \, d\vec{e}^{\circ} = -\frac{d\phi_\gamma}{dt}$$

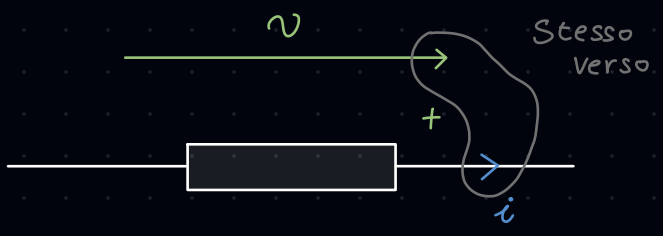
Hp Quasi Staz.

$$v_4(t) - v_1(t) + v_5(t) = -\frac{d\phi_\gamma}{dt} \cong 0$$

$$\sum_K (\pm)\, v_K(t) = 0$$

$\forall$ maglia

Conv. Alternative



generatore