M. RAUGI: LEZIONI DI ELETTROTECNICA. ED. PISA UNIVERSITY | 01/03/2021

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RICERCA "RAUGI" → PAGINA "ATTIVITÀ DIDATTICA"

ACCESSO AI REGISTRI → PROGRAMMA DI ELETTROTECNICA

MODULO FISICA II E ELETTROTECNICA "2019-2020"

elearn.ing.unipi.it → CORSI TRIENNALI → ING. GESTIONALE

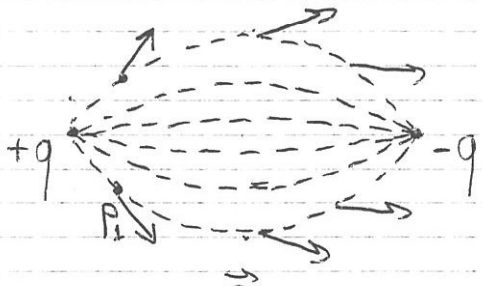
ELETTROTECNICA COME MODULO DI "FISICA II E ELETTROTECNICA"

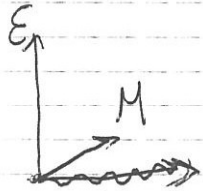
CARTELLA "LEZIONI" "TESTI"

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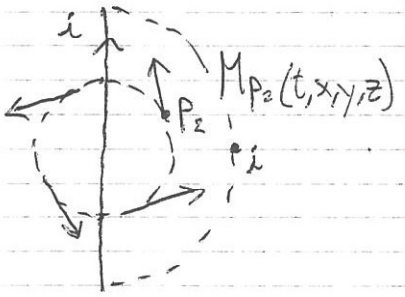
ELETTROTECNICA

CAMPI ELETTROMAGNETICI





CAMPI VETTORIALI → CAMPO ELETTRICO
→ CAMPO MAGNETICO

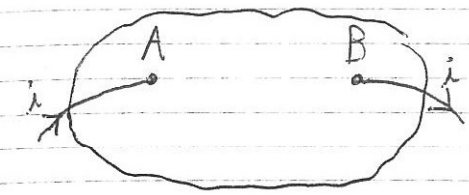




→ CORPO CONDUTTORE
CORRENTE

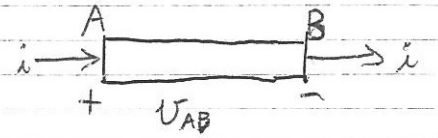
EQUAZIONI DI MAXWELL

$$\begin{cases} \vec{\mathcal{E}},\ \vec{H},\ \vec{J} \\ \dfrac{d\vec{\mathcal{E}}}{dt},\ \dfrac{d\vec{H}}{dt};\ \dfrac{d\vec{J}}{dt},\ \dfrac{d\vec{\mathcal{E}}}{d\bar{x}},\ \dfrac{d\vec{H}}{d\bar{x}},\ \dfrac{d\vec{J}}{d\bar{x}} \\ \int \mathcal{E}\, d\bar{x};\ \int H\, d\bar{x};\ \int J\, d\bar{x} \end{cases}$$

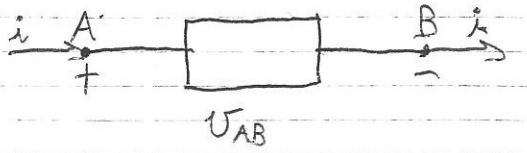


$+ \; U \; -$

$p = U_{AB} \cdot i$



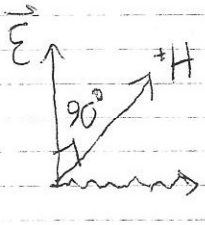


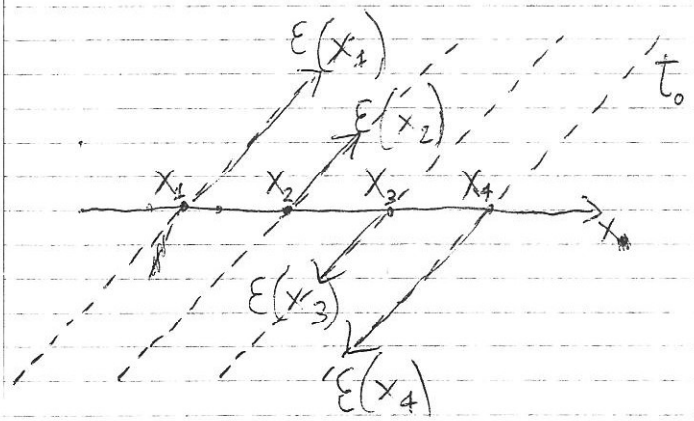


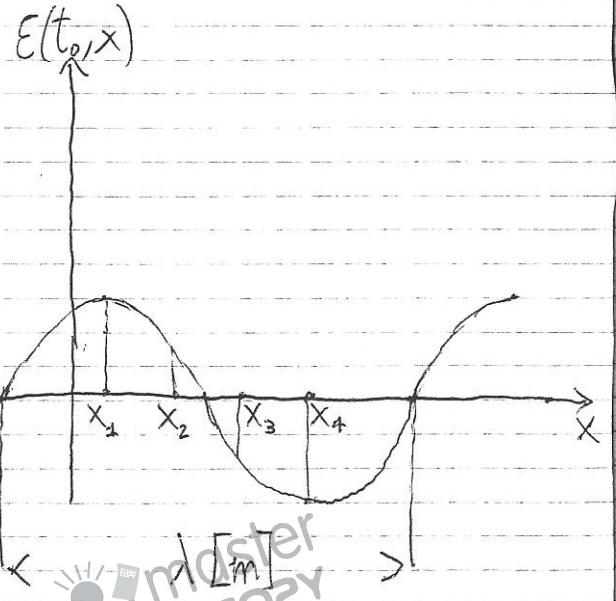
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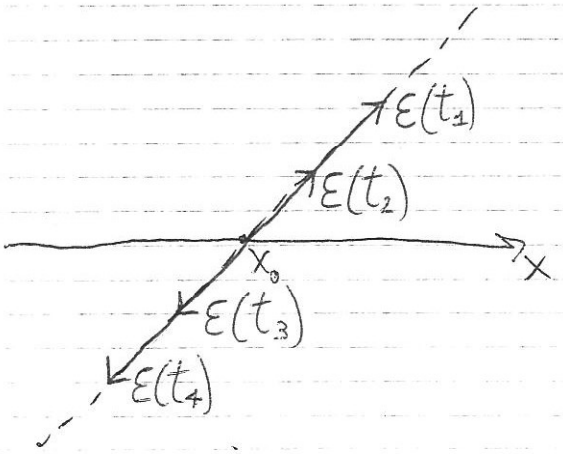
$$\mathcal{E}(t,x) \begin{cases} \mathcal{E}_1(t_0, x) \\ \mathcal{E}_2(t, x_0) \end{cases}$$

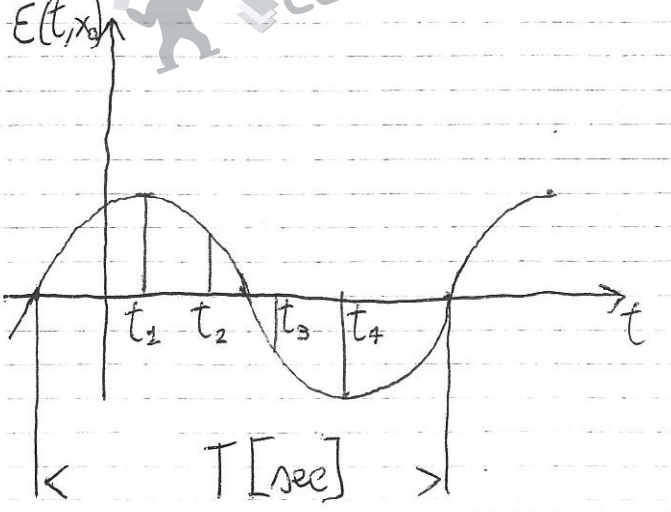
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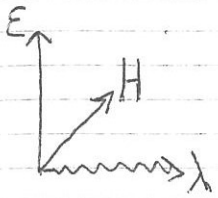


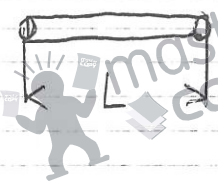




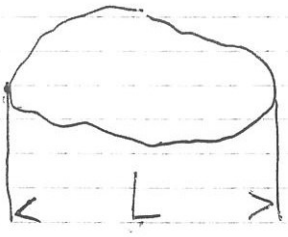
$$f = \frac{1}{T}\ [Hz]$$

$$\lambda = \frac{c}{f} = \frac{3 \cdot 10^8\ m/sec}{f}$$

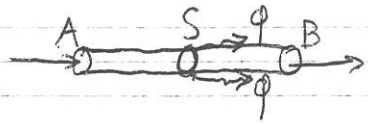




$\lambda >> L$

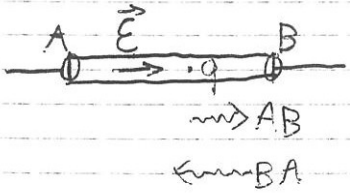


$\lambda > 10L$



$$i = \frac{\Delta q}{\Delta t}\Big|_S = \frac{q(t_2) - q(t_1)}{t_2 - t_1} \rightarrow i = \frac{dq}{dt}\ [Ampere]$$





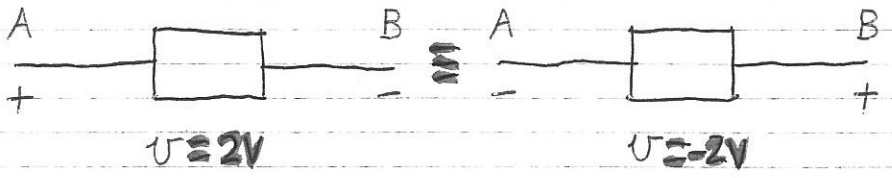
$$L_{AB} = q\,\upsilon_{AB} \quad \begin{matrix}(+)\\(-)\end{matrix}$$

$$\upsilon_{AB} = \frac{L_{AB}}{q} \quad \begin{matrix}(+)\\(-)\end{matrix} \quad [VOLT]$$



$$\upsilon_{AB} = -\upsilon_{BA}$$

$$v_{AB} = \frac{L_{AB}}{q}\ \begin{matrix}(+)\\(-)\end{matrix}$$ [VOLT]

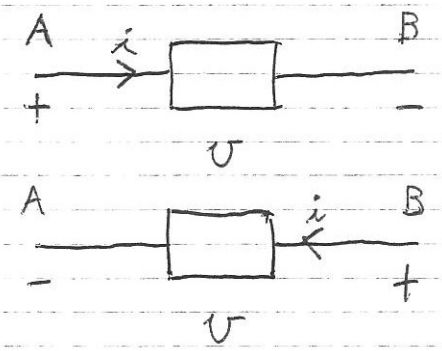


$v_{AB} = -v_{BA}$

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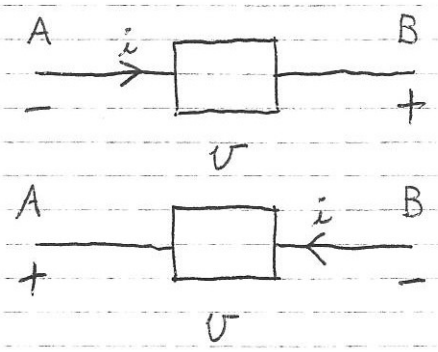
EQUAZIONE COSTITUTIVA $v = f(i)$ DIRETTA $f = g^{-1}$

$i = g(v)$ INVERSA $g = f^{-1}$



RIFERIMENTI $\{v, i\}$ ASSOCIATI

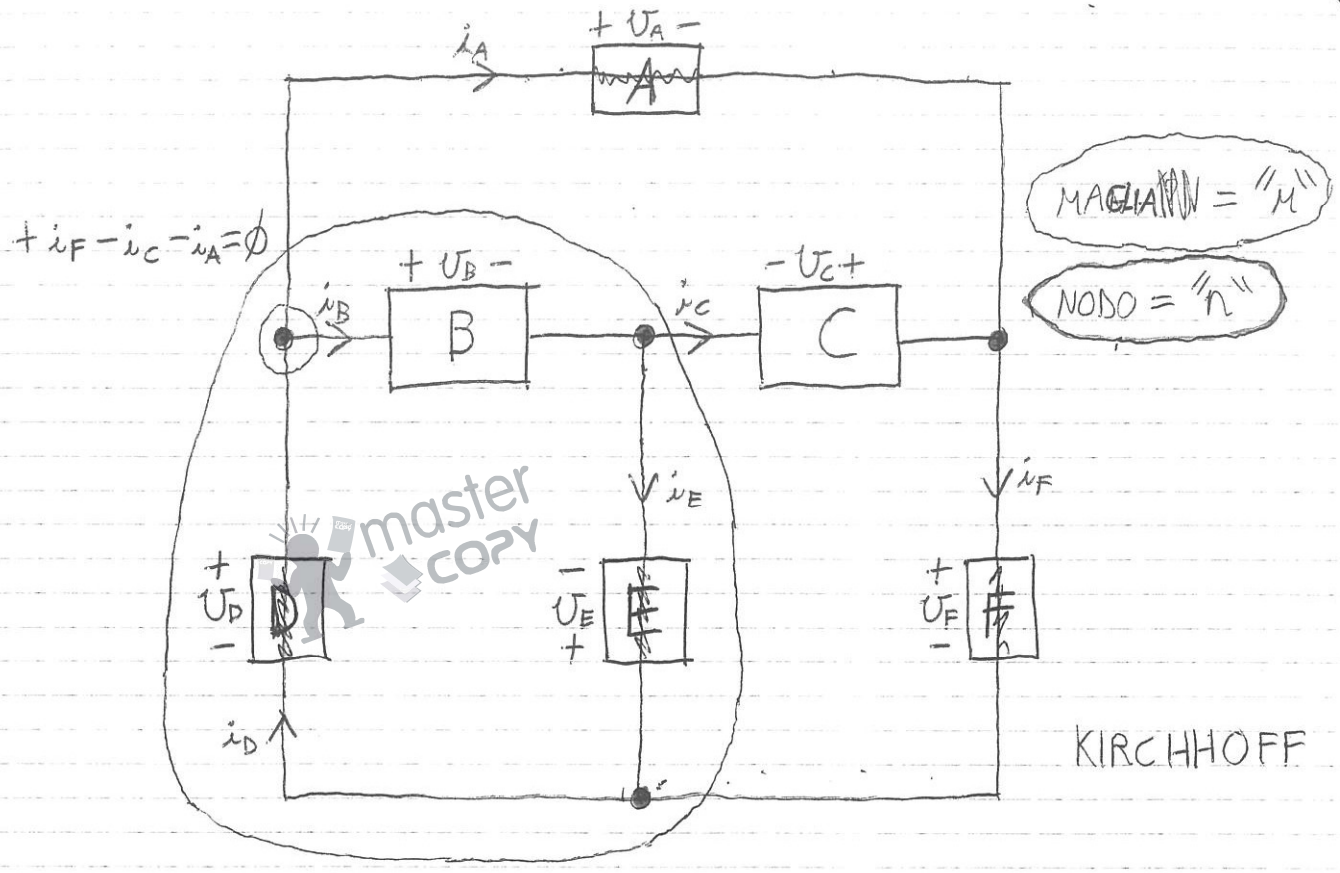
$$P = \begin{cases} > \emptyset & \text{ASSORBITA} \\ < \emptyset & \text{EROGATA} \end{cases}$$



RIFERIMENTI $\{v, i\}$ NON ASSOCIATI

$$P = \begin{cases} > \emptyset & \text{EROGATA} \\ < \emptyset & \text{ASSORBITA} \end{cases}$$

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PROBLEMA FONDAMENTALE CIRCUITO ELETTRICO

DETERMINARE TUTTE LE "i" E LE "v" DI UN CIRCUITO

I° PRINCIPIO DI KIRCHHOFF → $n-1$ EQ. LINEARMENTE INDIPENDENTI

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