$$x_{cm} = \frac{\sum x_i m_i}{\sum m_i}$$

$$T_m = 2\pi\sqrt{\frac{m}{k}}$$

$$T_p = 2\pi\sqrt{\frac{l}{g}}$$

$$E_k = \frac{3}{2}k_b T$$

$$\overline{v} = \overline{v}_{OO'} + \overline{w} \times \overline{r}' + \overline{v}'$$

$$\overline{a}_{NI} = \overline{a}_{OO'} + \overline{\alpha} \times \overline{r}' - \omega^2\overline{r}' + 2\overline{\omega} \times \overline{v}' + \overline{a}'$$

$$\Delta U = Q - W$$

$$\Delta U = nc_v\Delta T$$

$$W_{\text{R}} = nRTln(\frac{V_{\text{B}}}{V_{\text{A}}})$$

$$\gamma = \frac{c_p}{c_v}$$

$$W_{\text{IR}} = Q_1 - Q_2$$

$$W_{\text{TOT}} = W_{\text{IR}} - W_{\text{R}}$$

$$\eta = 1 - \frac{|Q_{\text{CED}}|}{Q_{\text{ASS}}}$$

$$\eta_c = 1 - \frac{T_2}{T_1}$$

$$\underline{F} = \frac{1}{4\pi\varepsilon_r\varepsilon_o}\frac{q_1 q_2}{r^2}\hat{\mathrm{r}}$$

$$\underline{E} = \sum_{i=1}^{n}\frac{1}{4\pi\varepsilon_o}\frac{q_i}{r_i^2}\hat{\mathrm{r}}_i$$

$$\underline{F} = q(\underline{E} + \underline{v} \times \underline{B})$$

$$\oint \underline{E} \cdot d\underline{s} = 0$$

$$W = \int_a^b \underline{F} d\underline{s}$$

$$\Delta V = -\int_a^b \underline{E} d\underline{s}$$

$$\Delta U_{el} = q_o\Delta V = -W$$

$$\underline{p} = qd$$

$$\sigma = \frac{q}{A}$$

$$\underline{E} = -\underline{\nabla}V$$

$$U_{el} = \frac{1}{2}QV$$

$$d\phi_E = \underline{E} \cdot d\underline{S} \rightarrow \phi_E = \oint_S \underline{E}d\underline{S} = \frac{1}{\varepsilon_r\varepsilon_o}\sum q$$

$$\Delta V = \int_a^b \frac{\sigma}{\varepsilon_o}dy = \frac{qd}{\varepsilon_o A}$$

$$C = \frac{q}{\Delta V} = \frac{\varepsilon_o A}{d}$$

$$\underline{E} = \frac{\sigma - \sigma_p}{\varepsilon_o} = \frac{\sigma}{\varepsilon} = \frac{\sigma}{\varepsilon_r\varepsilon_o}$$

$$\underline{D} = \varepsilon_o\underline{E} + \underline{P} = \varepsilon_r\varepsilon_o\underline{E}$$

$$\phi_{\text{D}} = \int_S \underline{E}d\underline{S} = \frac{1}{\varepsilon_o}\sum q_{\text{i,TOT}} = \frac{1}{\varepsilon_r\varepsilon_o}\sum q_{\text{i,LIBERE}}$$

$$u_e = \frac{1}{2}\underline{D} \cdot \underline{E}$$

$$U_{el} = u_e \cdot A$$

$$\underline{J} = \sigma_c\underline{E}$$

$$\underline{E} = \rho\underline{J}$$

Kirchhoff:

$$\sum_k i_k = 0(1)$$

$$\sum_m \varepsilon_m = \sum_k i_k R_k(2)$$

Serie:

$$R_s = \sum_i R_i \text{ e } \frac{1}{C_s} = \sum_i \frac{1}{C_i}$$

Parallelo:

$$\frac{1}{R_p} = \sum_i \frac{1}{R_i} \text{ e } C_p = \sum_i C_i$$

$$d\underline{B} = \frac{\mu_o}{4\pi}\frac{id\underline{s} \times \hat{\mathrm{r}}}{r^2}$$

$$\underline{B} = \frac{\mu_o i}{2\pi R} \leftarrow \text{Biot-Savart}$$

$$\phi_{\text{B}} = \oint_S \underline{B} \cdot d\underline{S} = \mu_o i_{\text{TOT}} = \mu i_{\text{LIBERE}} \leftarrow \text{Ampere}$$

$$\underline{B} = \mu_o n i\hat{\mathrm{x}}$$

$$u_{\text{B}} = \frac{1}{2}\frac{|\underline{B}|^2}{\mu_o}$$

$$U_{el} = \frac{1}{2}\varepsilon_o|\underline{E}|^2 + \frac{1}{2}\underline{D} \cdot \underline{E}$$

$$\underline{B} = \mu\underline{H} = \mu_o(\underline{H} + \underline{m})$$

$$T_m \text{ e } T_p = \text{Periodo}$$

$$m = \text{Massa}$$

$$k = \text{Costante Elastico}$$

$$l = \text{Lunghezza}$$

$$g = \text{Accelerazione gravitazionale sulla terra}$$

$$R = \text{Costante dei gas} = 8,314 \frac{J}{(mol \cdot K)}$$

$$k_b = \text{Costante di Boltzmann} = 1,38 \times 10^{-23} \frac{J}{K}$$

$$c = \text{Velocitá della luce} = 3 \times 10^8 \frac{m}{s}$$

$$G = \text{Costante Gravitazionale} 6,67 \times 10^{-11} \frac{m^3}{kg \cdot s^2}$$

$$E_k = \text{Energia Cinetica}$$

$$T = \text{Temperatura}$$

$$U = \text{Energia del sistema}$$

$$Q = \text{Calore}$$

$$W = \text{Lavoro}$$

$$c_v = \text{calore specifico a v = cost}$$

$$\eta = \text{Rendimento}$$

$$\varepsilon_o = \text{Permeativitá del vuoto} = 8,85 \times 10^{-12}$$

$$\varepsilon_r = \text{Costante dielettrico}$$

$$\varepsilon_m = \text{Forza Elettromotrice - Potenziale}$$

$$\mu_o = \text{Permeabilitá del vuoto} = 4\pi \times 10^{-7}$$

$$\mu = \text{Costante diamagnetico}$$

$$E = \text{Campo elettrico}$$

$$q = \text{Carica}$$

$$B = \text{Campo Magnetico}$$

$$V = \text{Potenziale}$$

$$\underline{p} = \text{Momento di dipolo}$$

$$\sigma = \text{Densitá di carica}$$

$$\sigma_p = \text{Densitá di carica polarizzata}$$

$$\sigma_c = \text{Conducivitá}$$

$$\phi = \text{Flusso}$$

$$C = \text{Capacitá}$$

$$D = \text{Spostamento Elettrico}$$

$$\underline{J} = \text{Densitá di corrente}$$

$$u_e o u_B = \text{Densitá di energia}$$

$$\underline{H} = \text{Campo Henry}$$