

Formulário: Constantes físicas e factores de conversão

$c=3 \times 10^8 \text{ m/s}$	$\epsilon_0=8,85 \times 10^{-12} \text{ Fm}^{-1}$	$k_e=9 \times 10^9 \text{ N m}^2 \text{ C}^{-2}$
$e= -1,60 \times 10^{-19} \text{ C}$	$\mu_0=4\pi \times 10^{-7} \text{ NA}^{-2}$	$h=6,626 \times 10^{-34} \text{ J.s}; h=4,135 \times 10^{-21} \text{ Mev.s}$
$m_p= 1,67 \times 10^{-27} \text{ kg}$	$g= 10 \text{ m/s}^2$	$m_e=9,109 \times 10^{-31} \text{ kg}$

Cinemática

$$\vec{v} = \frac{d\vec{r}}{dt} \quad \vec{a} = \frac{d\vec{v}}{dt} \quad \vec{r} = \vec{r}_o + \int \vec{v} dt \quad \vec{v} = \vec{v}_o + \int \vec{a} dt \quad h_{max} = \frac{v_o^2 \sin^2 \theta}{2g} \quad X_{max} = \frac{v_o^2 \sin 2\theta}{g}$$

$$\vec{F} = m\vec{a} \quad a_c = \frac{v^2}{r} \quad \vec{a} = \vec{a}_t + \vec{a}_c \quad a_t = \frac{dv}{dt}$$

Movimentos oscilatórios e ondas

$$F = -kx \quad E_p = \frac{1}{2} kx^2 \quad E_c = \frac{1}{2} m v^2 \quad v^2 = \omega^2 (A^2 - x^2) \quad \omega^2 = \frac{k}{m}$$

$$\omega = 2\pi f = \frac{2\pi}{T} \quad v = \frac{\lambda}{T} = \frac{\omega}{k} \quad y = A \sin(kx - \omega t) \quad y = 2A \sin(kx) \cos(\omega t) \quad T = 2\pi \sqrt{\frac{L}{g}}$$

corda presa tubo aberto 2 lados tubo aberto 1 lado

$$\lambda = \frac{2L}{n}; \quad f = \frac{nv}{2L} = n f_1; \quad n=1,2,3... \quad f_n = \frac{nv}{2L} = n f_1 \quad n=1,2,3,... \quad f_n = \frac{nv}{4L} = n f_1 \quad n=1,3,5,...$$

$$v = \sqrt{\frac{F}{\mu}} \quad \mu = \frac{m}{L} \quad I = \frac{1}{A} \frac{dE}{dt} = \frac{P}{A} \quad \beta = 10 \log \frac{I}{I_0} \quad I_0 = 10^{-12} (W/m^2) \quad \frac{I_1}{I_2} = \frac{r_2^2}{r_1^2}$$

Electroestática e correntes eléctricas

$$\vec{F} = k_e \frac{q_1 q_2}{r^2} \vec{u} \quad k_e = \frac{1}{4\pi \epsilon_0} \quad \vec{E} = k_e \frac{Q}{r^2} \vec{u} \quad V = k_e \frac{Q}{r} \quad E_x = -\frac{dV}{dx} \quad \phi = \int \vec{E} \cdot \vec{u} dA = \frac{Q}{\epsilon_0} \quad \phi = E A \cos \theta$$

$$C = \frac{Q}{V} = \epsilon_0 \frac{A}{d} \quad E = \frac{\sigma}{\epsilon_0} \quad W = \frac{1}{2} C V^2 \quad \frac{1}{C_{eq}} = \frac{1}{C_1} + \frac{1}{C_2} \quad C_{eq} = C_1 + C_2 \quad V_B - V_A = -\int \vec{E} \cdot d\vec{r}$$

$$U_B - U_A = -q_0 \int \vec{E} \cdot d\vec{r} \quad V = k_e \sum \frac{Q_i}{r_i} \quad U = k_e \sum \frac{(Q_i Q_j)}{r_{ij}}$$

$$R = \rho \frac{L}{A} \quad R_{eq} = R_1 + R_2 \quad \frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} \quad \sum I_{in} = \sum I_{out} \quad \sum \epsilon_j = \sum R_j I_j \quad P = RI^2$$

$$V_c(t) = V_0 e^{-t/RC} \quad V_c(t) = \epsilon (1 - e^{-t/RC}) \quad I = I_0 e^{-t/RC} \quad E = \frac{\sigma}{(2\epsilon_0)} \quad \tau = RC$$

Magnetismo

$$\vec{F} = q\vec{v} \times \vec{B} \quad \vec{F} = I\vec{L} \times \vec{B}$$

$$B = \frac{\mu_0 I}{2\pi r} \quad \oint \vec{B} \cdot d\vec{L} = \mu_0 I \quad \vec{B} \cdot d\vec{L} = B dL \cos(\theta) \quad B = \mu_0 n I \quad \Phi = \vec{B} \cdot A \vec{u} = B A \cos \theta \quad \epsilon = -N \frac{d\Phi}{dt}$$

$$\frac{V_1}{V_2} = \frac{N_1}{N_2} \quad V_{eff} = \frac{V_{max}}{\sqrt{2}}$$

Física Moderna

$$\lambda = \frac{hc}{E} \quad E_c^{max} = hf - W_i \quad E = hf \quad I = I_0 e^{-\mu x} \quad N = N_0 e^{-\lambda t} \quad A = \lambda N \quad T_{1/2} = \frac{\ln 2}{\lambda}$$

$$hf = W_i + E_c \quad N_A = 6,02 \times 10^{23} \text{ átomos/mole} \quad 1 \text{ eV} = 1,6 \times 10^{-19} \text{ J}$$

$$h = 6,626 \times 10^{-34} \text{ J.s}; h = 4,135 \times 10^{-21} \text{ Mev.s}$$