Formulário: Física

Constantes físicas e factores de conversão

$c=3\times10^8$ m/s	$\varepsilon_0=8{,}85\times10^{-12}$ Fm^{-1}	$k_e=9\times10^9$ N m^2 C^{-2}
e= -1,60 x10^{-19} C	$\mu_0=4\pi\times10^{-7}$ NA^{-2}	$h=6{,}626\,x10^{-34}J.s;\ h=4{,}135\,x10^{-21}Mev.s$
	g = 9,8 m/s^2	m_e=9,109 x 10^{-31} kg

Cinemática

$$\vec{v}=\frac{d\vec{r}}{dt}\quad \vec{a}=\frac{d\vec{v}}{dt}\quad \vec{r}=\vec{r}_o+\int\vec{v}\,dt\quad \vec{v}=\vec{v}_o+\int\vec{a}\,dt\quad h_{max}=\frac{v_o^2 sen^2\theta}{2g}\quad X_{max}=\frac{v_o^2 sen2\theta}{g}$$

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

Movimentos oscilatórios e ondas

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

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

corda presa *tubo aberto 2 lados* *tubo aberto 1 lado*

$$\lambda=\frac{2L}{n};\ f=\frac{nv}{2L}=nf_1;\ n=1,2,3\ldots\quad f_n=\frac{nv}{2L}=nf_1\quad n=1,2,3,\ldots\quad f_n=\frac{nv}{4L}=nf_1\quad n=1,3,5,\ldots$$

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

Electroestática e correntes eléctricas

$$\vec{F}=k_e\frac{q_1q_2}{r^2}\vec{u}\quad k_e=\frac{1}{4\pi\epsilon_0}\quad \vec{E}=k_e\frac{Q}{r^2}\vec{u}\quad V=k_e\frac{Q}{r}\quad E_x=-\frac{dV}{dx}\quad \phi=\int\vec{E}\cdot\vec{u}\,dA=\frac{Q}{\epsilon_0}\quad \phi=EA\cos\theta$$

$$C=\frac{Q}{V}=\epsilon_0\frac{A}{d}\quad W=\frac{1}{2}CV^2\quad \frac{1}{C_{eq}}=\frac{1}{C_1}+\frac{1}{C_2}\quad C_{eq}=C_1+C_2$$

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

$$V_c(t)=V_0e^{-t/RC}\quad V_c(t)=\epsilon(1-e^{-t/RC})\quad I=I_0e^{-t/RC}\quad E=\frac{\sigma}{(2\epsilon_0)}\quad \tau=RC$$

Magnetismo

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

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

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

Física Moderna

$$\lambda=\frac{hc}{E}\quad E_c^{max}=hf-Wi\quad E=hf\quad I=I_0e^{-\mu x}\quad N=N_0e^{-\lambda t}\quad A=\lambda N\quad T_{1/2}=\frac{\ln 2}{\lambda}$$

$hf=W_i+E_c$ N_A = 6,02x10^{23} átomos/mole $1eV=1{,}6\,x10^{-19}J$

$h=6{,}626\,x10^{-34}J.s;\ h=4{,}135\,x10^{-21}Mev.s$