Física 3 – Engenharia de Telecomunicações - Formulário 1

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$|e|=1,6.10^{-19}C$ $K_0=9.10^9\,Nm^2/C^2$ $\varepsilon_0=8,85.10^{-12}C^2/Nm^2$ $Q=n\,.\,e$ $(Q_{total})_{antes}=(Q_{total})_{depois}$

$\vec{F}_r=\vec{F}_1+\vec{F}_2+...$ $|\vec{F}|=\frac{k\,.\,|Q_1|\,.\,|Q_2|}{r^2}$ $\vec{F}=q\,.\,\vec{E}$ $\vec{F}_r=m\,.\,\vec{a}$ $V_{esfera}=\frac{4\pi R^3}{3}$ $V_{cilindro}=\pi R^2 L$

$A_{esfera}=4\pi R^2$ $A_{lateralCilindro}=2\pi R L$ $A_{circulo}=\pi R^2$ $\lambda=\frac{Q}{L}$ $\sigma=\frac{Q}{A}$ $\rho=\frac{Q}{V}$ $p=g\,.\,d$

$|\vec{E}|=\frac{k\,.\,Q}{r^2}$ $E_p=\frac{k\,.\,Q_1\,.\,Q_2}{r^2}$ $\vec{E}_r=\vec{E}_1+\vec{E}_2+...$ $E=\frac{k\,.\,Q}{d^2-\frac{L^2}{4}}$ $E=\frac{2k\lambda}{r}$ $E=\frac{k\,.\,Q\,.\,x}{(x^2+R^2)^{\frac{3}{2}}}$ $E_{pe}=q\,.\,V$

$E_y=-\frac{k\,.\,\lambda}{R}(\cos(\theta_1)-\cos(\theta_2))$ $E_y=-\frac{k\,.\,\lambda}{R}(\cos(\theta_1)-\cos(\theta_2))$ $E_y=\frac{k\,.\,Q}{L\,.\,y}(\text{sen}(\theta_2)-\text{sen}(\theta_1))$

$E_x=-\frac{k\,.\,\lambda}{R}(\text{sen}(\theta_2)-\text{sen}(\theta_1))$ $E_x=-\frac{k\,.\,Q}{L\,.\,y}(\cos(\theta_1)-\cos(\theta_2))$ $\vec{E}=-\left(\frac{dv}{dx}\hat{i}+\frac{dv}{dy}\hat{j}+\frac{dv}{dz}\hat{k}\right)=-\vec{\nabla}v$

$E=2\pi k\sigma\left(\frac{1}{\sqrt{1+\left(\frac{R_1}{x}\right)^2}}-\frac{1}{\sqrt{1+\left(\frac{R_2}{x}\right)^2}}\right)$ $E=\frac{2kp}{x^3}\,.\left(\frac{1}{\left(1-\left(\frac{d}{2x}\right)^2\right)^2}\right)$ $E=2\pi k\sigma\left(1-\frac{1}{\sqrt{1+\frac{R^2}{x^2}}}\right)$ $E=\frac{k\,.\,p}{\left(\frac{d^2}{4}+y^2\right)^{\frac{3}{2}}}$

$E=4\pi k\sigma$ $\Delta E=4\pi k\sigma$ $\vec{E}\,.\,d\vec{A}=E\,.\,dA\,.\cos(\theta)$ $\vec{E}\,.\,d\vec{A}=E_x dA_x+E_y dA_y+E_z dA_z$ $E\approx\frac{kp}{y^3}$ $E\approx\frac{2kp}{x^3}$

$\vec{E}=-\frac{dv}{dx}\hat{i}$ $E_{pe}=-\vec{p}\,.\,\vec{E}$ $\vec{E}=-\frac{dv}{dr}\hat{r}$ $E=\frac{\rho\,.\,r}{3\varepsilon_0}$ $E=\frac{\rho\,.\,r}{2\varepsilon_0}$ $E=\frac{\rho}{3\varepsilon_0}\,.\,\frac{(r^3-R_1^3)}{r^2}$ $E=\frac{\rho}{2\varepsilon_0}\,.\,\frac{(r^2-R_1^2)}{r}$

$E=\frac{\rho}{2\varepsilon_0}\,.\,\frac{(r^2-R_1^2)}{r}$ $\Delta V=-\int\vec{E}\,.\,d\vec{r}$ $\Delta V=-\int\vec{E}\,.\,d\vec{x}$ $\Delta v=-E\,.\,\Delta x$ $\Delta V=V_f-V_i$

$\Delta V=-\left[\int E_x dx+\int E_y dy+\int E_z dz\right]$ $V=V_0+a\,.\,t$ $V^2=V_0^2+2.\,a\,.\,\Delta x$ $v=\frac{\Delta x}{\Delta t}$ $X=X_0+V_0 t+\frac{at^2}{2}$

$a=\frac{\Delta v}{\Delta t}$ $\phi_E=\int_S\vec{E}\,d\vec{A}$ $\phi_E=\vec{E}\,.\,\vec{A}$ $\phi_E=E\,.\,A\,.\cos(\theta)$ $\oint\vec{E}\,.\,d\vec{A}=\frac{q_{int}}{\varepsilon_0}$ $V_{total}=V_1+V_2+V_3+...$

$V\approx\frac{k\,.\,p\,.\cos(\theta)}{r^2}$ $V=\frac{k\,.\,Q}{\sqrt{x^2+R^2}}$ $V=\frac{2kQ}{R^2}\,.\left(\sqrt{x^2+R^2}-x\right)$ $V=2\,.\,k\,.\,\lambda\,.\,\ln\left(\frac{r_{ref}}{r}\right)$ $V=\frac{k\,.\,\lambda R\,.\,\alpha}{\sqrt{x^2+R^2}}$

$$v = k \cdot \lambda \cdot \ln\left(\frac{\sec(\theta_2) + tg(\theta_2)}{\sec(\theta_1) + tg(\theta_1)}\right) \quad V = \frac{\rho}{3\varepsilon_0} \cdot \left(\frac{R^2 - r^2}{2}\right) + \frac{k \cdot Q}{R} \quad V = -\frac{k \cdot Q}{L} \cdot \ln\left(\frac{x - \frac{L}{2}}{x + \frac{L}{2}}\right)$$

$$V = k \cdot \lambda \cdot (\theta_2 - \theta_1) \quad V = 2k\pi\sigma \cdot \left(\sqrt{x^2 + R_2^2} - \sqrt{x^2 + R_1^2}\right)$$

$$V = \frac{\rho}{2\varepsilon_0}\left[\frac{R^2 - r^2}{2} + R^2 \cdot \ln\left(\frac{r_{ref}}{R}\right)\right] \quad V = \frac{\rho}{2\varepsilon_0}\left[\frac{R^2 - r^2}{2} + R^2 \cdot \ln\left(\frac{r_{ref}}{R}\right)\right] \quad V = \frac{\rho}{3\varepsilon_0} \cdot \left(\frac{R^2 - r^2}{2}\right) + \frac{k \cdot Q}{R} \quad V = \frac{k \cdot Q}{r}$$

$$V = \frac{\rho}{3\varepsilon_0} \cdot \left[\frac{1}{2} \cdot (R_2^2 - r^2) - R_1^3 \cdot \left(\frac{1}{r} - \frac{1}{R_2}\right) + \frac{1}{R_2} \cdot (R_2^3 - R_1^3)\right] \quad V = \frac{\rho}{3\varepsilon_0} \cdot \left[\frac{1}{2} \cdot (R_2^2 - r^2) - R_1^3 \cdot \left(\frac{1}{r} - \frac{1}{R_2}\right) + \frac{1}{R_2} \cdot (R_2^3 - R_1^3)\right]$$

$$tg(\theta) = \frac{sen(\theta)}{\cos(\theta)} \quad cotg(\theta) = \frac{1}{tg(\theta)} \quad sen(\theta) = \frac{C.O.}{hipotenusa} \quad \cos(\theta) = \frac{C.A.}{hipotenusa} \quad \sec(\theta) = \frac{1}{\cos(\theta)}$$

$$cossec(\theta) = \frac{1}{sen(\theta)} \quad X = X_0 + V_0 t + \frac{at^2}{2} \quad W_{el} = -\Delta E_{pe} = -(E_{pf} - E_{pi}) \quad W_{ef} = -q \cdot \Delta V \quad \vec{\tau} = \vec{p} \times \vec{E}$$

$$|\vec{\tau}| = p \cdot E\, sen(\theta)$$