$$\frac{Sin(\theta i)}{V1} = \frac{Sin(\theta r)}{V2} \qquad V = \lambda f \qquad Td = \frac{x}{V1} \qquad Tr = \frac{x}{V2} + 2Z\frac{\sqrt{V2^2 - V1^2}}{V1*V2}$$

$$Z = \frac{Ti}{2}\frac{V1*V2}{\sqrt{V2^2 - V1^2}} \qquad Z = \frac{Xc}{2}\sqrt{\frac{V2 - V1}{V2 + V1}} \qquad Tr2 = \frac{x}{V3} + 2Z1\frac{\sqrt{V3^2 - V1^2}}{V1*V3} + 2Z2\frac{\sqrt{V3^2 - V2^2}}{V2*V3}$$

$$Td = \frac{2Zd\cos(\theta c)}{V1} + \frac{X}{V1}\sin(\theta c + \alpha) \qquad Tu = \frac{2Zu\cos(\theta c)}{V1} + \frac{X}{V1}\sin(\theta c - \alpha)$$

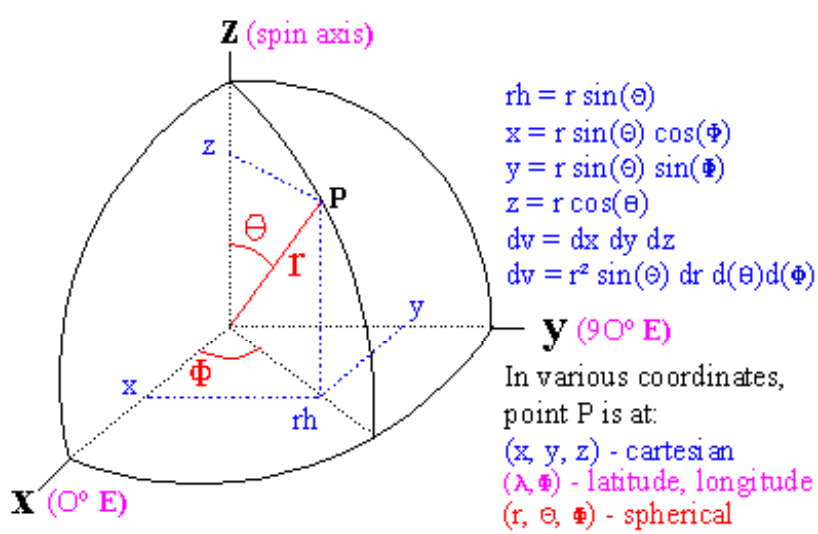
$$\theta_c = \frac{1}{2}\left(\sin^{-1}(V1md) + \sin^{-1}(V1mu)\right) \qquad \alpha = \frac{1}{2}\left(\sin^{-1}(V1md) - \sin^{-1}(V1mu)\right)$$

$$Vp = \sqrt{\frac{\frac{4}{3}\mu + \kappa}{\rho}} \qquad Vs = \sqrt{\frac{\mu}{\rho}} \qquad \theta c = \sin^{-1}\left(\frac{V1}{V2}\right) \qquad A = \frac{e^{-r}}{r}$$

$$EMF = -n\frac{d\varphi}{dt} \qquad dv = dxdydz \qquad dv = r^2\sin(\theta)drd\theta d\phi \qquad \frac{1}{1+x} = 1 - x + x^2 - x^3 \ldots$$

$$\vec{\beta} = -\vec{\nabla}\vec{V} \qquad \vec{\beta} = \frac{\mu_o}{4\pi}\left(\frac{2\vec{M}\cos(\theta)}{r^3}\vec{r} + \frac{\vec{M}\sin(\theta)}{r^3}\vec{\theta}\right) \qquad \tan(I) = 2\cot(\theta)$$

$$\mu o = 4\pi * 10^{-7}\frac{h}{m} \qquad \vec{\nabla} = \frac{\partial}{\partial r}\vec{r} + \frac{1}{r}\frac{\partial}{\partial\theta}\vec{\theta} + \frac{1}{r\sin(\theta)}\frac{\partial}{\partial\varphi}\vec{\varphi} \qquad \vec{\nabla} = \frac{\partial}{\partial x}\vec{x} + \frac{\partial}{\partial y}\vec{y} + \frac{\partial}{\partial z}\vec{z}$$

$$f(t) = A\cos(\omega t + \varphi) \qquad F = q\vec{v} \times (\vec{\beta} + \vec{E}) \qquad E = -\vec{m} \bullet \vec{\beta} \qquad \vec{\tau} = \vec{m} \times \vec{\beta} \qquad A^v B = -B^v A$$

$$\frac{\sin(a)}{\sin(A)} = \frac{\sin(c)}{\sin(C)} = \frac{\sin(b)}{\sin(B)} \qquad \cos(a) = \cos(b)\bullet\cos(c) + \sin(b)\bullet\sin(c)\bullet\cos(A)$$