

Formulas guia 1 y 2

Posición

$$x' = \gamma(x - vt)$$

$$y' = y$$

$$z' = z$$

$$t' = (t - \frac{v}{c^2}x)$$

$$\gamma = \frac{1}{\sqrt{1 - v^2/c^2}}$$

Velocidad

$$u'_x = \frac{u_x - v}{1 - u_x v/c^2}$$

$$u'_y = \frac{u_y}{\gamma(1 - u_x v/c^2)}$$

$$u'_z = \frac{u_z}{\gamma(1 - u_x v/c^2)}$$

Efecto Doppler relativista

$$f_{obs} = f_{fuente} \frac{\sqrt{1 + v/c}}{\sqrt{1 - v/c}}$$

Cantidad de movimiento

$$\vec{p} = \frac{m\vec{u}}{\sqrt{1 - u^2/c^2}}$$

$$\vec{F} = \frac{d\vec{p}}{dt}$$

$$\vec{F} = q\vec{v} \times \vec{B}$$

Energía

$$E = mc^2 + K = \gamma mc^2$$

$$E^2 = \vec{p}^2 c^2 + (mc^2)^2$$

En fotones

$$E = pc$$

En particulas

$$E_i = \frac{m_i c^2}{\sqrt{1 - u_i^2/c^2}}$$