

Equation sheet Ch 36 (special relativity)

$$\beta = \frac{v}{c}$$

$$\gamma = \frac{1}{\sqrt{1 - \beta^2}}$$

$$L = l\sqrt{1 - \beta^2}$$

$$\Delta t = \frac{\Delta \tau}{\sqrt{1 - \beta^2}}$$

$$\Delta s^2 = (c\Delta t)^2 - (\Delta x)^2$$

$$p = \gamma_p mu$$

$$E^2 = (pc)^2 + (mc^2)^2$$

$$E = K + mc^2$$

$$E = \gamma_p mc^2$$

$$K = (\gamma_p - 1)mc^2$$

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

$$y' = y$$

$$z' = z$$

$$t' = \gamma\left(t - \frac{vx}{c^2}\right)$$

$$u' = \frac{u - v}{1 - \frac{uv}{c^2}}$$

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

$$z = y'$$

$$z = z'$$

$$t = \gamma\left(t' + \frac{vx'}{c^2}\right)$$

$$u = \frac{u' + v}{1 + \frac{u'v}{c^2}}$$