

$$t' = \varphi(v) \cdot \beta \cdot \left( t - \frac{v}{c^2} x \right)$$

$$x' = \varphi(v) \cdot \beta \cdot (x - vt)$$

$$y' = \varphi(v) \cdot y$$

$$z' = \varphi(v) \cdot z$$

where

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