1.4.1.1 Mboyo's Board Work

For reference, here is a list of the equations Mboyo wrote on the board in the videos.

$$E = mc^2$$

$$E = \frac{m_0 c^2}{\sqrt{1 - \frac{v^2}{c^2}}}$$

$$E = m_0 c^2$$

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

$$\frac{1}{\sqrt{1 - x^2}}$$

$$E = \frac{m_0 c^2}{\sqrt{1 - x^2}}$$

$$\frac{1}{\sqrt{1 - x^2}}$$

$$\frac{1}{\sqrt{1 - x^2}} = 1 + \frac{x^2}{2} + \dots$$

$$\frac{1}{\sqrt{1 - x^2}} = 1 + \frac{v^2}{2c^2} + \dots$$

$$= m_0 c^2 \left(1 + \frac{x^2}{2} + \dots\right)$$

$$= m_0c^2(1 + \frac{v^2}{2c^2} + \dots)$$

$$= m_0c^2 + \frac{1}{2}m_0v^2 + \dots$$

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

$$= mc^2 + \frac{1}{2}m_0v^2$$

$$= +\frac{3}{8}m(\frac{v}{c})^4 + \dots$$

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

$$1 - \frac{v^2}{c^2} = 0 => v = c$$

$$1 - \frac{v^2}{c^2} > 0 => v^2 < c^2$$

Learn About Verified Certificates

English


Download on the
App Store
ANDROID APP ON
Google play