

Gesamtenergie:

$$E = E_{kin} + E_0 = 800 \text{ keV} + 511 \text{ keV} = 1311 \text{ keV}$$

Masse:

$$E = m \cdot c^2 \quad \rightarrow \quad m = \frac{E}{c^2} = \frac{1311 \cdot 10^3 \text{ V} \cdot 1,6 \cdot 10^{-19} \text{ As}}{(3,0 \cdot 10^8 \frac{\text{m}}{\text{s}})^2} = 2,33 \cdot 10^{-30} \text{ kg}$$

Geschwindigkeit:

$$m = \frac{m_0}{\sqrt{1 - (\frac{v}{c})^2}} \quad \rightarrow \quad \sqrt{1 - (\frac{v}{c})^2} = \frac{m_0}{m} \quad \rightarrow \quad 1 - (\frac{v}{c})^2 = (\frac{m_0}{m})^2 \quad \rightarrow$$

$$1 - (\frac{m_0}{m})^2 = (\frac{v}{c})^2 \quad \rightarrow \quad \frac{v}{c} = \sqrt{1 - (\frac{m_0}{m})^2} = \sqrt{1 - (\frac{9,1 \cdot 10^{-31} \text{ kg}}{2,33 \cdot 10^{-31} \text{ kg}})^2} = 0,92 \quad \rightarrow \quad \underline{v = 0,92 \text{ c}}$$