

65. Using  $m_p = 1.672623 \times 10^{-27}$  kg in Eq. 38-45 yields

$$\gamma = \frac{E}{m_p c^2} = \frac{14.242 \times 10^{-9} \text{ J}}{1.50328 \times 10^{-10} \text{ J}} = 94.740 .$$

Solving for the speed , we obtain

$$v = c \sqrt{1 - \left( \frac{1}{\gamma} \right)^2} = 0.99994c .$$