

1. Using Table 45-1, the difference in mass between the muon and the pion is

$$\Delta m = \left(139.6 \frac{\text{MeV}}{c^2} - 105.7 \frac{\text{MeV}}{c^2} \right) = \frac{(33.9 \text{ MeV})(1.60 \times 10^{-13} \text{ J/MeV})}{(2.998 \times 10^8 \text{ m/s})^2} = 6.03 \times 10^{-29} \text{ kg} .$$