(4.4) ¹⁶N decays through β - decay to ¹⁶O with a half-life of 7.1 s. A number of very energetic gammas follow after the β -emission, the dominating one with an energy of 6.14 MeV. What is the ¹⁶O recoil energy?

m*dc2* stands for the energy $m_d^* c^2$ calculated from $E = m c^2$.

 $MeV := 1.60217733 \cdot 10^{-13} \cdot joule \qquad keV := 10^{-3} \cdot MeV$ $E_{\gamma} := 6.14 \cdot MeV \qquad M_{d} := 16 \qquad \text{Because the mass of the daughter is 16.}$ $mdc2 := M_{d} 931.5 \cdot MeV \qquad \text{Eqn. (4.23)}$ $E_{d} := \frac{E_{\gamma}^{-2}}{2 \cdot mdc2} \qquad \text{Eqn. (4.34)}$

 $E_d = 1.265 \cdot 10^{-3} \cdot MeV$ or $E_d = 1.26 \cdot keV$