

(11.8) What is the minimum photon energy required for the reaction  $^{11}\text{B}(\gamma, n)^{10}\text{B}$ ?

$$\text{MeV} := 1.60217733 \cdot 10^{-13} \cdot \text{joule} \quad \text{amu} := 1.6605402 \cdot 10^{-27} \cdot \text{kg}$$

$$M_{^{11}\text{B}} := 11.009305 \cdot \text{amu}$$

$$M_n := 1.008665 \cdot \text{amu}$$

$$M_{^{10}\text{B}} := 10.012937 \cdot \text{amu}$$

$$Q := -931.5 \cdot \frac{\text{MeV}}{\text{amu}} \cdot (M_n + M_{^{10}\text{B}} - M_{^{11}\text{B}}) \quad \text{eqn. (5.14)}$$

$$Q = -11.455 \cdot \text{MeV}$$

neglect the recoil effect.

$$E_{\gamma, \text{min}} = 11.455 \text{ MeV}$$