

Q value

$$= K_a \left(1 - \frac{m_a}{m_y}\right) + K_b \left(1 + \frac{m_a}{m_y}\right)$$

$$- 2 \cos \theta \sqrt{K_a \frac{m_a}{m_y} K_b \frac{m_b}{m_y}}$$

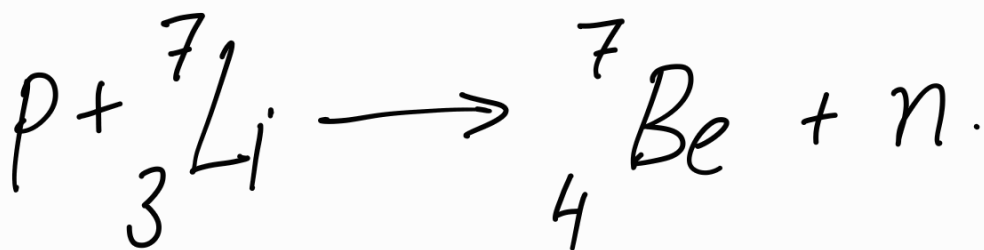
Y- Product

a - Projectile particle

b - outgoing particle.

Question 1.

$\theta = 90^\circ$  (assumed)



$$\begin{aligned}
 Q &= (m_{Li} + m_p)c^2 - (m_{Be} + m_n)c^2 \\
 &= \left( (7.01822 + 1.00814) \right. \\
 &\quad \left. - (7.01915 + 1.00898) \right) \\
 &\quad \times 931 \text{ MeV}
 \end{aligned}$$

$$= -1.647 \text{ MeV}$$

$Q < 0 \Rightarrow$  reaction is  
 endoenergetic.