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(3.7/50.)

m_1, m_2
$v \ll c$
$E_{c_1} = E_{c_2}$
$\lambda_1/\lambda_2 = ?$

$E_{c_1} = E_{c_2} \Rightarrow \frac{m_1 v_1^2}{2} = \frac{m_2 v_2^2}{2}$

$\downarrow$

$E_{c_1} = \frac{m_1 v_1^2}{2}$
$E_{c_2} = \frac{m_2 v_2^2}{2}$

$\frac{m_1^2 v_1^2}{2m_1} = \frac{m_2^2 v_2^2}{2m_2}$

$\downarrow$

$p_1 = (m_1 v_1) = \left(\frac{h}{\lambda_1}\right)$
$p_2 = (m_2 \cdot v_2) = \left(\frac{h}{\lambda_2}\right)$
din ipoteza de Broglie.

$\frac{p_1^2}{2m_1} = \frac{p_2^2}{2m_2} \rightarrow \left(\frac{p_2^2}{p_1^2}\right) = \left(\frac{m_2}{m_1}\right) \rightarrow$

$\rightarrow \frac{(h/\lambda_2)}{(h/\lambda_1)} = \sqrt{\frac{m_2}{m_1}} \rightarrow \left(\frac{\lambda_1}{\lambda_2}\right) = \sqrt{\frac{m_2}{m_1}}$

(3.8/50)

$\left(\frac{v}{c}\right) \rightarrow 1$
m_0, E_c
h, c
$\lambda = ?$

$E_c = (m - m_0)c^2 = p^2/2m \Rightarrow \boxed{p = \sqrt{2m E_c}}$ (*)

$\left(\frac{E_c}{c^2}\right) = m - m_0 \Rightarrow \boxed{m = (m_0 + E_c/c^2)}$ (**)

$\bar{p} = m \cdot \bar{v} = \left(\frac{h}{\lambda}\right)$ i.p. L. de Broglie.

$p \underset{(*)}{=} \sqrt{2m \cdot E_c} \underset{(**)}{=} \sqrt{2 E_c (m_0 + E_c/c^2)} = \left(\frac{h}{\lambda}\right) \Rightarrow \boxed{\lambda = \left(\frac{h}{p}\right)}$

deci: $\boxed{\lambda = \frac{h}{\sqrt{2 E_c (m_0 + E_c/c^2)}}} = \frac{h \cdot c}{\sqrt{2 \cdot E_c (m_0 c^2 + E_c)}}$