LATEX PRACTICE

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(74) Probability at diff K
$m = 6.64 \times 10^{-27}$ kg
$L = 2.0 \times 10^{-15}$ m
$U_0 = 30.0 \times 10^6$ eV $\times \frac{1.602 \times 10^{-19}\ \text{J}}{1\ \text{eV}} = 4.806 \times 10^{-12}$ J

$\beta = \sqrt{\frac{2m(U_0 - E)}{\hbar^2}}$

$k = \sqrt{\frac{2mE}{\hbar^2}}$

$\gamma = \frac{\beta}{k} - \frac{k}{\beta}$

$P = \frac{1}{\cosh^2(\beta L) + \left(\frac{\gamma}{2}\right)^2 \sinh^2(\beta L)}$

When $K = 29.0$ MeV
$E = 29.0 \times 10^6$ eV $\times \frac{1.602 \times 10^{-19}\ \text{J}}{1\ \text{eV}} = 4.646 \times 10^{-12}$ J

$$\beta = \sqrt{\frac{2\left(6.64 \times 10^{-27}\ \text{kg}\right)\left(4.806 \times 10^{-12}\ \text{J} - 4.646 \times 10^{-12}\ \text{J}\right)}{\left(\frac{6.626 \times 10^{-34}\text{J s}}{2\pi}\right)^2}} = 4.371 \times 10^{14}$$

When $K = 20.0$ MeV
$E = 20.0 \times 10^6$ eV $\times \frac{1.602 \times 10^{-19}\ \text{J}}{1\ \text{eV}} = 3.204 \times 10^{-12}$ J