$$\delta_{i+1}(r) = -\frac{2\mu V(r)}{\hbar^2 k_a} \sin^2(k_a r + \delta_i(r)) \tag{1}$$

where,

$$\mu = m_p/(m_n + m_p) = [\text{amu}]$$

and 1amu = 931MeV so,

$$\mu c^2 = [\text{MeV}] \tag{2}$$

After,

$$\hbar c = [\text{MeV} \cdot \text{s fm/s}] = [\text{MeV} \cdot \text{fm}] \tag{3}$$

dividing the equation (2) by (3), we get

$$\mu c^2/\hbar^2 c^2 = [\text{MeV } /\text{MeV}^2 \cdot \text{fm}^2]$$

$$\mu c^2/\hbar^2 c^2 = [1/\text{MeV} \cdot \ \text{fm}^2] \tag{4}$$

and using the last equation

$$k_a^2 = 2\mu c^2 E/\hbar^2 c^2 = E(2\mu c^2/\hbar^2 c^2) = [\text{MeV}/\text{MeV fm}^2] = [1/\text{fm}^2] \tag{5}$$

Replacing equations (4) and (5) on to equation (1)

$$-\frac{2\mu V(r)}{\hbar^2 k_a} = [\text{V(r)}/\text{MeV} \cdot \ \text{fm}]$$

but $V(r) = [\text{MeV}]$.