Tutorial 1 Question

- Text: Ch 42: Pr 6
- (a) What is the approximate radius of a $_{29}^{64}{\rm Cu}$ nucleus? (b) Approximately what is the value of A for a nucleus whose radius is $3.9\times10^{-15}~{\rm m}$?

Solution

(a) We know $r pprox (1.2 imes 10^{-15} \; \mathrm{m}) A^{1/3}$ and $^{64}_{29}\mathrm{Cu}$ has an atomic mass A = 64 so

$$r \approx (1.2 \times 10^{-15} \text{ m})(64)^{1/3} \approx 4.8 \times 10^{-15} \text{ m}.$$

(b) This time we are given $r=3.9\times 10^{-15}~\mathrm{m}$ and asked to estimate the atomic mass A,

$$A \approx \left[\frac{r}{1.2 \times 10^{-15} \text{ m}} \right]^3 \approx 34.$$

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