

Chapter 1 Problem 13 [†]

Given

$$D_h = 0.1 \text{ nm} = 1.0 \times 10^{-10} \text{ m}$$

$$D_p = 1 \text{ fm} = 1.0 \times 10^{-15} \text{ m}$$

Solution

How much bigger is the hydrogen atom than the proton?

Divide the hydrogen atom size by the proton size to give

$$\frac{D_h}{D_p} = \frac{1.0 \times 10^{-10} \text{ m}}{1.0 \times 10^{-15} \text{ m}} = 10^5$$

The hydrogen atom is 100,000 times larger than the proton.

[†]Problem from Essential University Physics, Wolfson