Chapter 1 Problem 11 †

Given

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

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

Solution

How much bigger is the hydrogen atom than the proton?

Divide the hydrogen atom size by the proton size to give

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

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

[†]Problem from Essential University Physics, Wolfson