Answer on Question #79533- Physics - Atomic and Nuclear Physics

Question: *The radius of hydrogen atom is 0.43 ×10¹² m convert it in cm,mm,nm*

Answer:

First of all, one should note that the given number (pay attention to the power) is extremely large: it is almost three times the distance between the Sun and the Earth. Obviously, there is a typos here, however, switching to power -12 also does not lead to the right result.

According to [1], the radius of a hydrogen atom is about 0.53×10^{-10} m (it is called Bohr radius). In order to calculate this value in cm, mm and nm, one should recall that 1 cm = 10^{-2} m; 1 mm = 10^{-3} m; 1 nm = 10^{-9} m. Hence,

$$\begin{aligned} 0.53\cdot10^{-10}m &= 0.53\cdot\frac{10^{-10}}{10^{-2}}cm = 0.53\cdot10^{-8}cm \\ &= 0.53\cdot\frac{10^{-10}}{10^{-3}}mm = 0.53\cdot10^{-7}mm \\ &= 0.53\cdot\frac{10^{-10}}{10^{-9}}nm = 0.53\cdot10^{-1}nm \end{aligned} \quad (1)$$

In case if it was necessary to consider the given number, there is also an answer as follows:

$$0.43\cdot10^{12}m = 0.43\cdot10^{14}cm = 0.43\cdot10^{15}mm = 0.43\cdot10^{21}nm \quad (2)$$

[1] (Electronic resource) https://en.wikipedia.org/wiki/Hydrogen_atom