with the help of uncertainty principle show that electrons are not present in the atomic nucleus.

Solution:

The uncertainty principle states

$$\Delta p \Delta x \geq \frac{\hbar}{2}$$

Because $\Delta p = m \Delta v$, we get $\Delta v \geq \dfrac{\hbar}{2m\Delta x}$

The numerical values of the constant

$$\hbar = 1.054 \times 10^{-34} \, \text{J} \cdot \text{s}$$

$$m = 9.1 \times 10^{-31} \, \text{kg}$$

$$\Delta x \sim 1 \, \text{fm} = 10^{-15} \, \text{m}$$

Thus

$$\Delta v \geq \frac{1.054 \times 10^{-34}}{2 \times 9.1 \times 10^{-31} \times 10^{-15}} = 5.5 \times 10^{10} \frac{\text{m}}{\text{s}}$$

So $\Delta v > c$, where $c = 3 \times 10^8 \dfrac{\text{m}}{\text{s}}$ light speed

Therefore electrons are not present in the atomic nucleus.