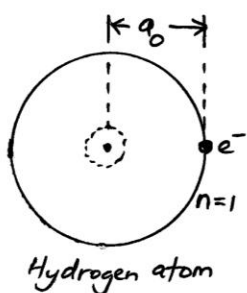


First Bohr Radius a_0 

$$r_n = \frac{n^2 h^2 \epsilon_0}{\pi e^2 m}$$

$$n=1$$

$$r_1 = \frac{(1)^2 (6.626 \times 10^{-34} \text{ Js})^2 (8.84 \times 10^{-12} \text{ N m}^{-2} \text{ C}^2)}{\pi (1.60217 \times 10^{-19})^2 (9.109 \times 10^{-31} \text{ kg})}$$

$$= 5.29 \times 10^{-11} \text{ m}$$

$$r_1 = (5.29 \times 10^{-11} \times 10^{10}) \text{ \AA}$$

$$\text{or } a_0 = 0.529 \text{ \AA}$$

$$\text{or } \frac{h^2 \epsilon_0}{\pi e^2 m} = a_0 = 0.529 \text{ \AA}$$

$$\therefore r_n = a_0 n^2$$

$$\frac{36 a_0 \text{ (5th excited state)}}{n=6}$$

$$\frac{25 a_0 \text{ (4th excited state)}}{n=5}$$

$$r_1 = 0.529 \text{ \AA} = a_0$$

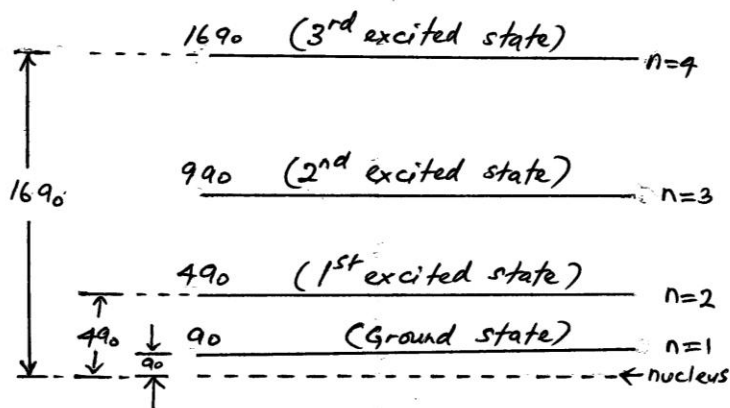
$$r_2 = (0.529)(2^2) = 4 a_0$$

$$r_3 = (3^2) a_0 = 9 a_0$$

$$r_4 = (4^2) a_0 = 16 a_0$$

$$r_5 = (5^2) a_0 = 25 a_0$$

$$r_6 = (6^2) a_0 = 36 a_0$$



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