

STRENGTH OF BOHR'S ATOMIC MODEL:

1. Electron is a negatively charged discrete particle. Its position in space and the velocity (momentum) can be specified accurately at any time.
2. Electrons (in hydrogen atom) moves/circles around the nucleus at specific orbit which has radius, $r_n = (n^2 h^2 \epsilon_0 / \pi e^2 m)$
Every orbit has a energy of $E_n = -\frac{e^4 m}{8 \epsilon_0^2 h^2 n^2}$
3. The atom does not radiate energy while in one of its stationary states (ie. atom does not change energy while the electron moves within an orbit)

4. Electron moves to another orbit by absorbing or emitting a photon whose energy equals the difference in energy between the two states:

$$\Delta E = (2.18 \times 10^{-18} \text{ J}) \left(\frac{1}{n_x^2} - \frac{1}{n_y^2} \right) \quad (n_x < n_y)$$

Therefore an atomic spectrum is not continuous because the atom's energy has only certain discrete levels or states.

WEAKNESS OF BOHR'S ATOMIC MODEL:

1. Bohr Theory could not explain about the hydrogen atom spectrum under the influence of external magnetic field. (Zeeman effect)
2. Bohr Theory could not explain about the observed spectrum of atom/ion which has more than one electron (ie. polyelectron atom)
3. Bohr Theory could not give a satisfactory explanation about the formation of chemical bonding of molecules.

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