* Variation of the R function with r for various hydrogen orbitals

Characteristic features of Radial Wave Functions.

(i) The expression always contain the exponential decay term (e^{-Zr/na_0}) [comparable to that of first order kinetics as in the case of radioactive decay and for the higher values of n the decay is slower. Thus the wave function of an orbital with higher n extends to a larger distance from the nucleus

(ii) when $r \to \infty$ (practically for larger value of n), $R \to 0$

(iii) The R function for 2s orbital will vanish when $(2 - \frac{Zr}{a_0})$ ie, at $r = \frac{2a_0}{Z}$

$$R_{(2s)} = 0.$$ The function also changes its sign beyond this point which is called a node. It can be shown that an orbital designated by n and l has $n - l - 1$ number of nodes.