For non-radiating or stable states, the relationship between the electron wavelength and the allowed radii is:

$$2\pi[nr_1] = 2\pi r_{(n)} = n\lambda_{(1)} = \lambda_{(n)} \qquad (2)$$

where $n = 1$
or $n = 2, 3, 4$ ....
or $n = 1/2, 1/3, 1/4$ ....

and $\lambda_{(1)}$ = the allowed wavelength for $n = 1$
$r_{(1)}$ = the allowed radius for $n = 1$

In a hydrogen atom (and the following applies equally to a deuterium atom), the ground state electron-path radius can be defined as $r_{(0)}$. This is sometimes referred to as the Bohr radius, a_0. There is normally no spontaneous photon emission from a ground state atom and thus there must be a balance between the centripetal and the electric forces present. Thus:

$$[m_{(e)}.v_1^2]/r_{(0)} = Ze^2/(4\pi.\epsilon_{(0)}.r_{(0)}^2) \qquad (3)$$

where $m_{(e)}$ = electron rest mass
v_1 = ground state electron velocity
e = elementary charge
$\epsilon_{(0)}$ = electric constant (sometimes referred to as the permittivity of free space)
Z = atomic number (for hydrogen, 1)

Looking first at the excited (higher energy) states, where the hydrogen atom has absorbed photon(s) of discrete wavelength/frequency (and hence energy), the system is again stable and normally non-radiating, and to maintain force balance, the effective nuclear charge becomes $Z_{eff} = Z/n$, and the balance equation becomes:

$$[m_{(e)}.v_n^2]/nr_{(0)} = [e^2/n]/(4\pi.\epsilon_{(0)}.[nr_{(0)}]^2) \qquad (4)$$