Summary of S-states of H-atom

The "s-states" (l=0, m=0) of the Coulomb potential have no angular dependence. In general:

$$\psi_{nlm}(r,\theta,\phi) = R_{nl}(r)Y_{lm}(\theta,\phi)$$

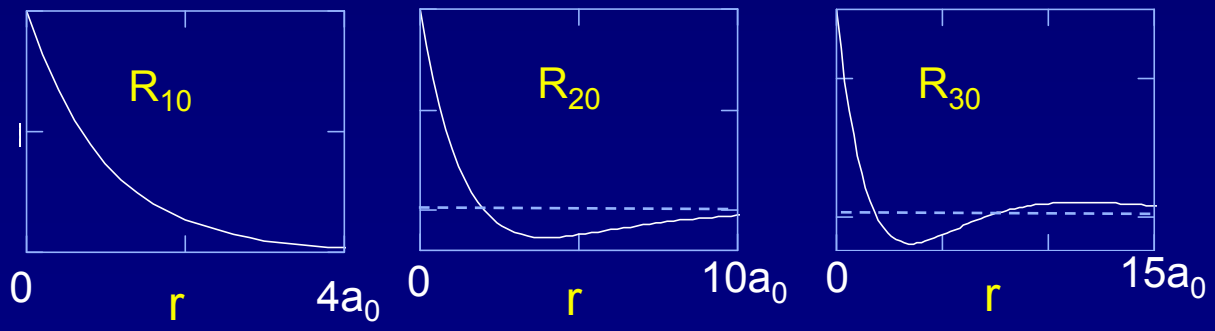
but:

$$\psi_{n00}(r,\theta,\phi) \propto R_{n0}(r)$$

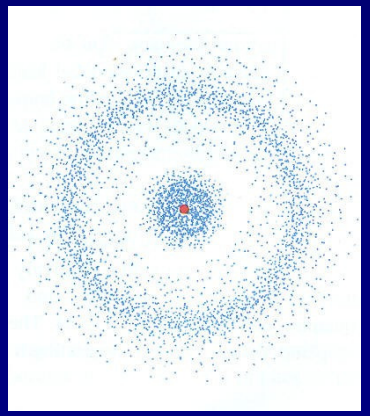
because $Y_{00}(\theta,\phi)$ is a constant.

S-state wave functions are spherically symmetric.

Some s-state wave functions (radial part):



$|\psi_{20}(r,\theta,\phi)|^2$:



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