

**NORMALIZED RADIAL WAVEFUNCTIONS for HYDROGENLIKE ATOMS:**

$$\Psi_{n,\ell,m}(r, \theta, \varphi) = R_{n,\ell}(r) Y_{\ell,m}(\theta, \varphi)$$

n	$\ell$	$R_{n,\ell}$	Atomic units, and Z=1	
1	0	$2 \left(\frac{Z}{a_0}\right)^{3/2} e^{-Zr/a_0}$	$2 e^{-r}$	1s
2	0	$\left(\frac{1}{2\sqrt{2}}\right) \left(\frac{Z}{a_0}\right)^{3/2} \left[2 - \left(\frac{Zr}{a_0}\right)\right] e^{-Zr/2a_0}$	$\left(\frac{1}{2\sqrt{2}}\right) (2-r) e^{-r/2}$	2s
2	1	$\left(\frac{1}{2\sqrt{6}}\right) \left(\frac{Z}{a_0}\right)^{3/2} \left[\left(\frac{Zr}{a_0}\right)\right] e^{-Zr/2a_0}$	$\left(\frac{1}{\sqrt{24}}\right) r e^{-r/2}$	2p
3	0	$\left(\frac{2}{81\sqrt{3}}\right) \left(\frac{Z}{a_0}\right)^{3/2} \left[27 - 18\left(\frac{Zr}{a_0}\right) + 2\left(\frac{Zr}{a_0}\right)^2\right] e^{-Zr/3a_0}$	$\left(\frac{2}{81\sqrt{3}}\right) (27 - 18r + 2r^2) e^{-r/3}$	3s
3	1	$\left(\frac{4}{81\sqrt{6}}\right) \left(\frac{Z}{a_0}\right)^{3/2} \left[6\left(\frac{Zr}{a_0}\right) - \left(\frac{Zr}{a_0}\right)^2\right] e^{-Zr/3a_0}$	$\left(\frac{4}{81\sqrt{6}}\right) (6r - r^2) e^{-r/3}$	3p
3	2	$\left(\frac{4}{81\sqrt{30}}\right) \left(\frac{Z}{a_0}\right)^{3/2} \left[\left(\frac{Zr}{a_0}\right)^2\right] e^{-Zr/3a_0}$	$\left(\frac{4}{81\sqrt{30}}\right) r^2 e^{-r/3}$	3d