HYDROGEN RADIAL PROBABILITY DISTRIBUTIONS

For the R(r) functions given in TZDII, the probability functions are plotted below.

$$R1s = \frac{2}{\sqrt{a_B^3}} e^{-r/a_B}$$

$$R2s = \frac{1}{\sqrt{2a_B^3}}\left(1 - \frac{r}{2a_B}\right)e^{-r/2a_B}$$

$$R2p = \frac{1}{\sqrt{24a_B^3}} re^{-r/2a_B}$$

$$R3s = \frac{1}{\sqrt{2a_B^3}}\left(1 - \frac{2r}{3a_B} + \frac{2r^2}{27a_B^2}\right)e^{-r/3a_B}$$

$$R3p = \frac{8}{27\sqrt{6a_B^3}}\left(1 - \frac{r}{6a_B}\right) re^{-r/3a_B}$$

$$R3d = \frac{4}{81\sqrt{30a_B^7}} r^2 e^{-r/3a_B}$$

With the n = 1 state in green, the n = 2 states in blues and the n = 3 states in red.