Radiale Wellenfunktionen

$n=1;\ l=0$ (K-Schale, s-Orbital)

$$R_{10}(r) = \frac{2}{a_B^{3/2}}\, e^{-r/a_B}$$

$n=2;\ l=0$ (L-Schale, s-Orbital)

$$R_{20}(r) = \frac{2}{(2a_B)^{3/2}}\left(1-\frac{r}{2a_B}\right) e^{-r/2a_B}$$

$l=1$ (L-Schale, p-Orbital)

$$R_{21}(r) = \frac{1}{\sqrt{3}}\,\frac{1}{(2a_B)^{3/2}}\,\frac{r}{a_B}\, e^{-r/2a_B}$$

$n=3;\ l=0$ (M-Schale, s-Orbital)

$$R_{30}(r) = \frac{2}{(3a_B)^{3/2}}\left[1-\frac{2r}{3a_B}+\frac{2}{27}\left(\frac{r}{a_B}\right)^2\right] e^{-r/3a_B}$$

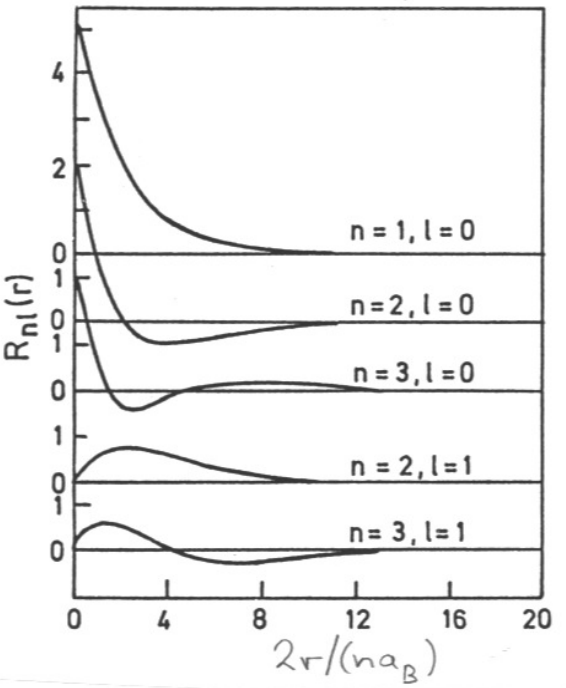
$l=1$ (M-Schale, p-Orbital)

$$R_{31}(r) = \frac{4\sqrt{2}}{9}\,\frac{1}{(3a_B)^{3/2}}\,\frac{r}{a_B}\left(1-\frac{r}{6a_B}\right) e^{-r/3a_B}$$

$l=2$ (M-Schale, d-Orbital)

$$R_{32}(r) = \frac{2\sqrt{2}}{27\sqrt{5}}\,\frac{1}{(3a_B)^{3/2}}\left(\frac{r}{a_B}\right)^2 e^{-r/3a_B}$$

Radiale Wellenfunktion R_{nl}



radiale Wahrscheinlichkeitsdichte $r^2 R_{nl}(r)$