

Zeeman-Effekt

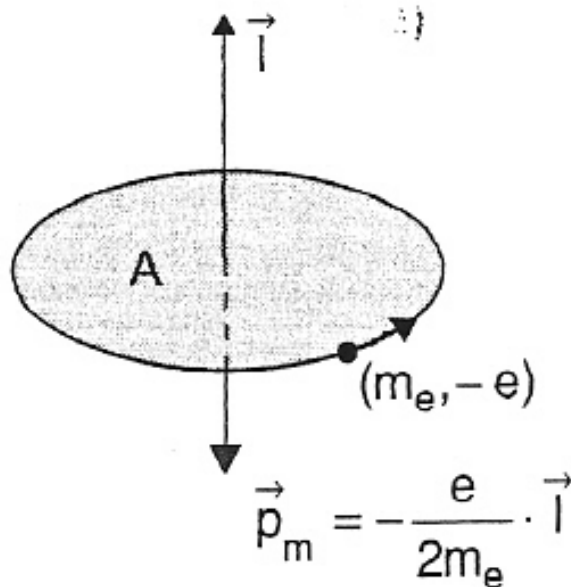
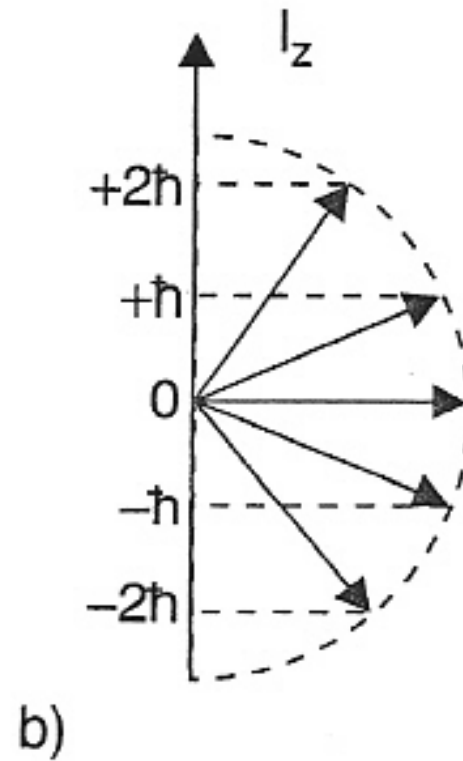
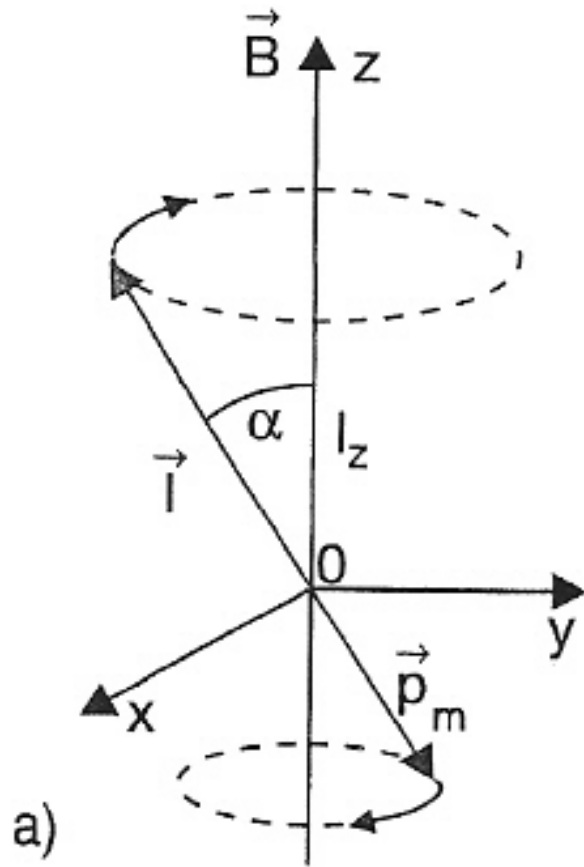
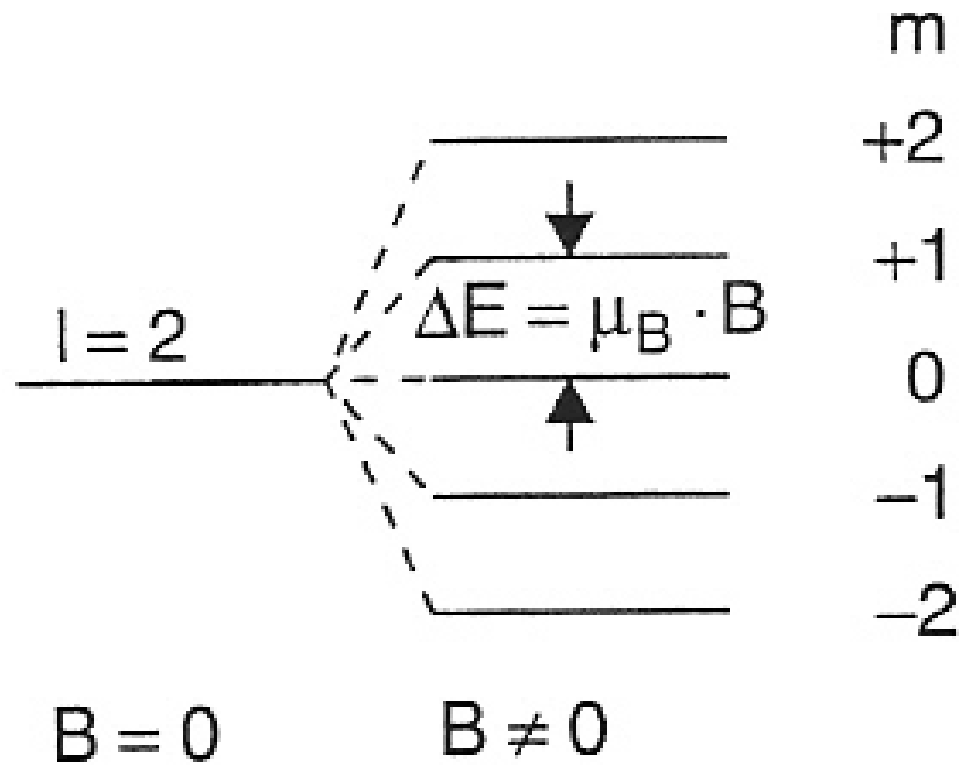


Abb. 5.8. Klassisches Modell für Drehimpuls l und magnetisches Moment p_m eines auf einer Kreisbahn umlaufenden Elektrons

Zeeman-Effekt



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“normaler” Zeeman-Effekt

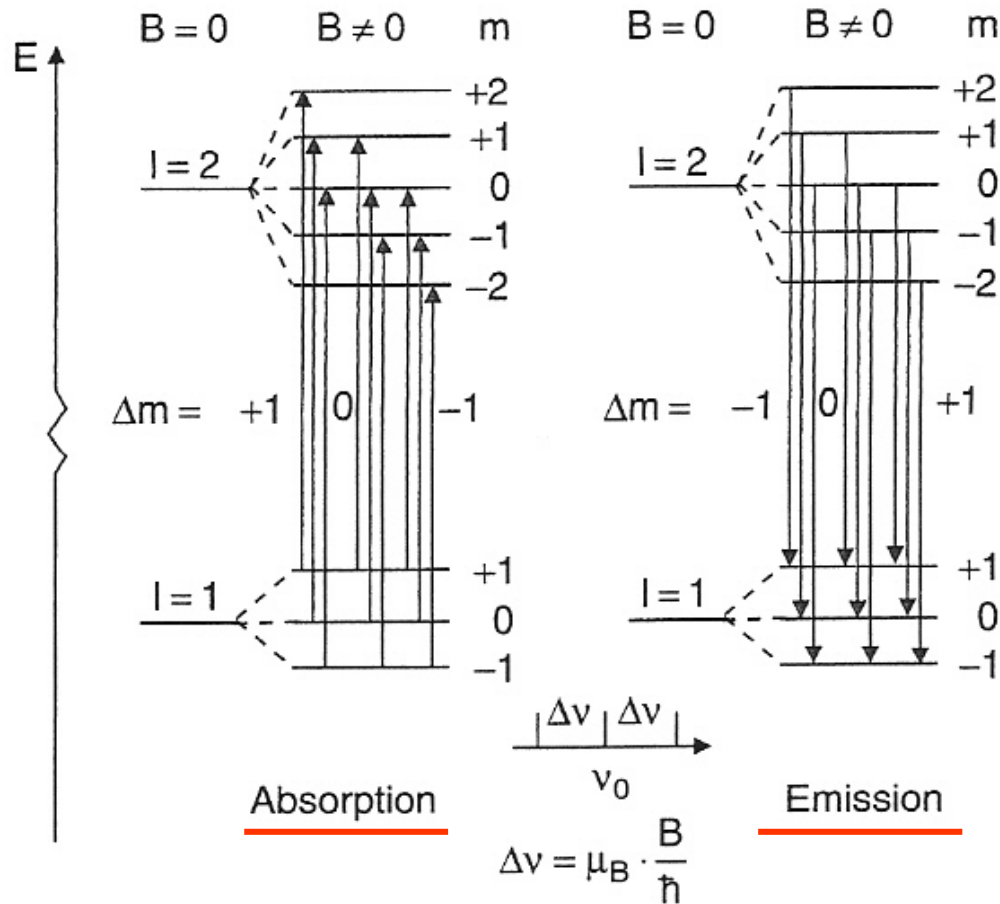
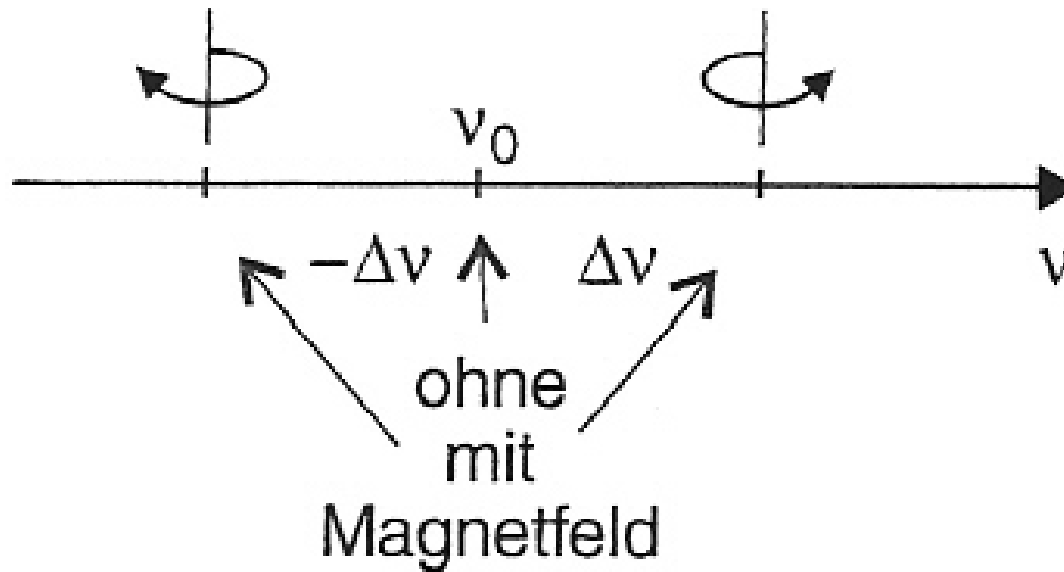


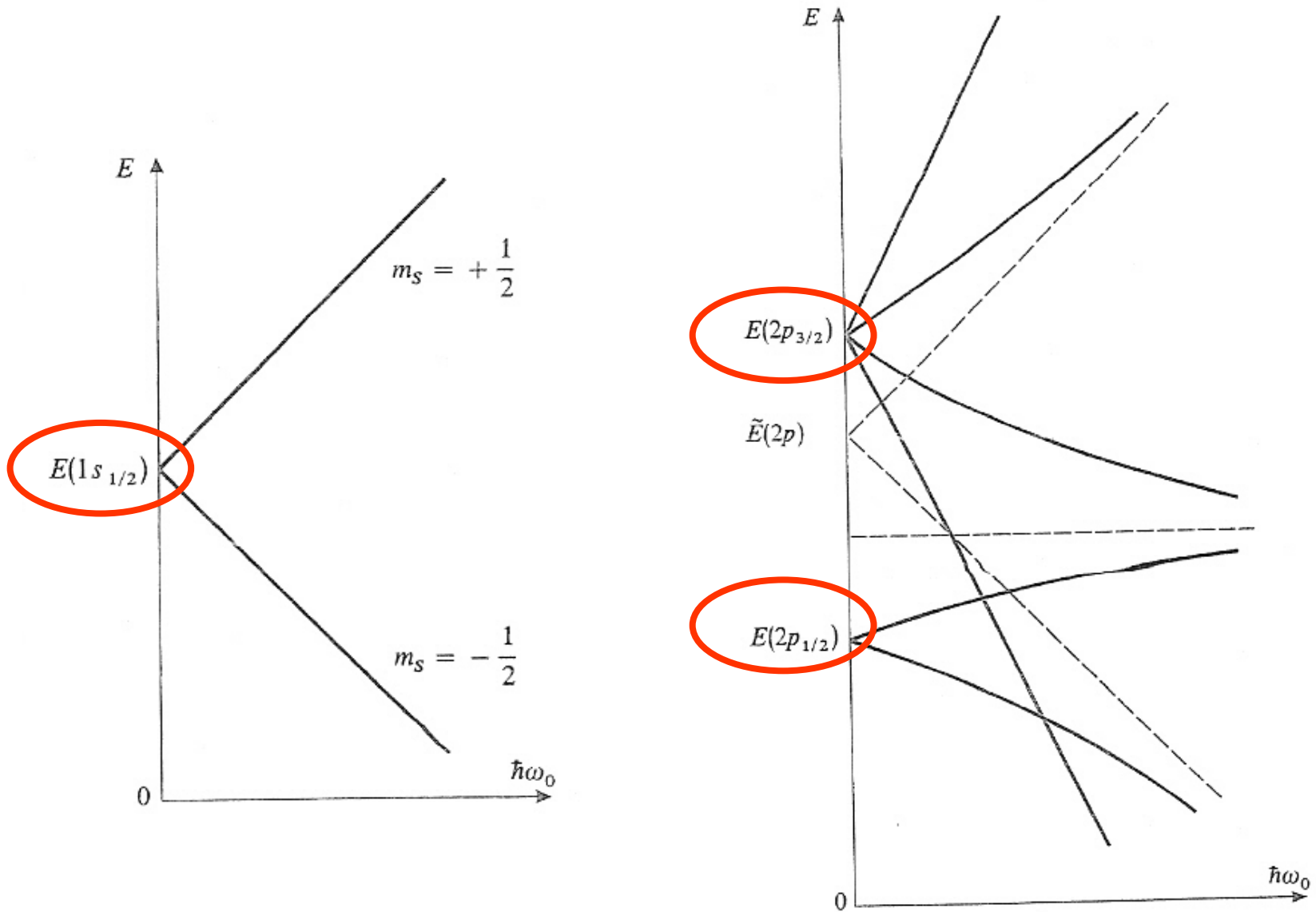
Abb. 5.12. Termschema für Zeeman-Übergänge mit $\Delta m = \pm 1, 0$ in Absorption und Emission

“normaler” Zeeman-Effekt

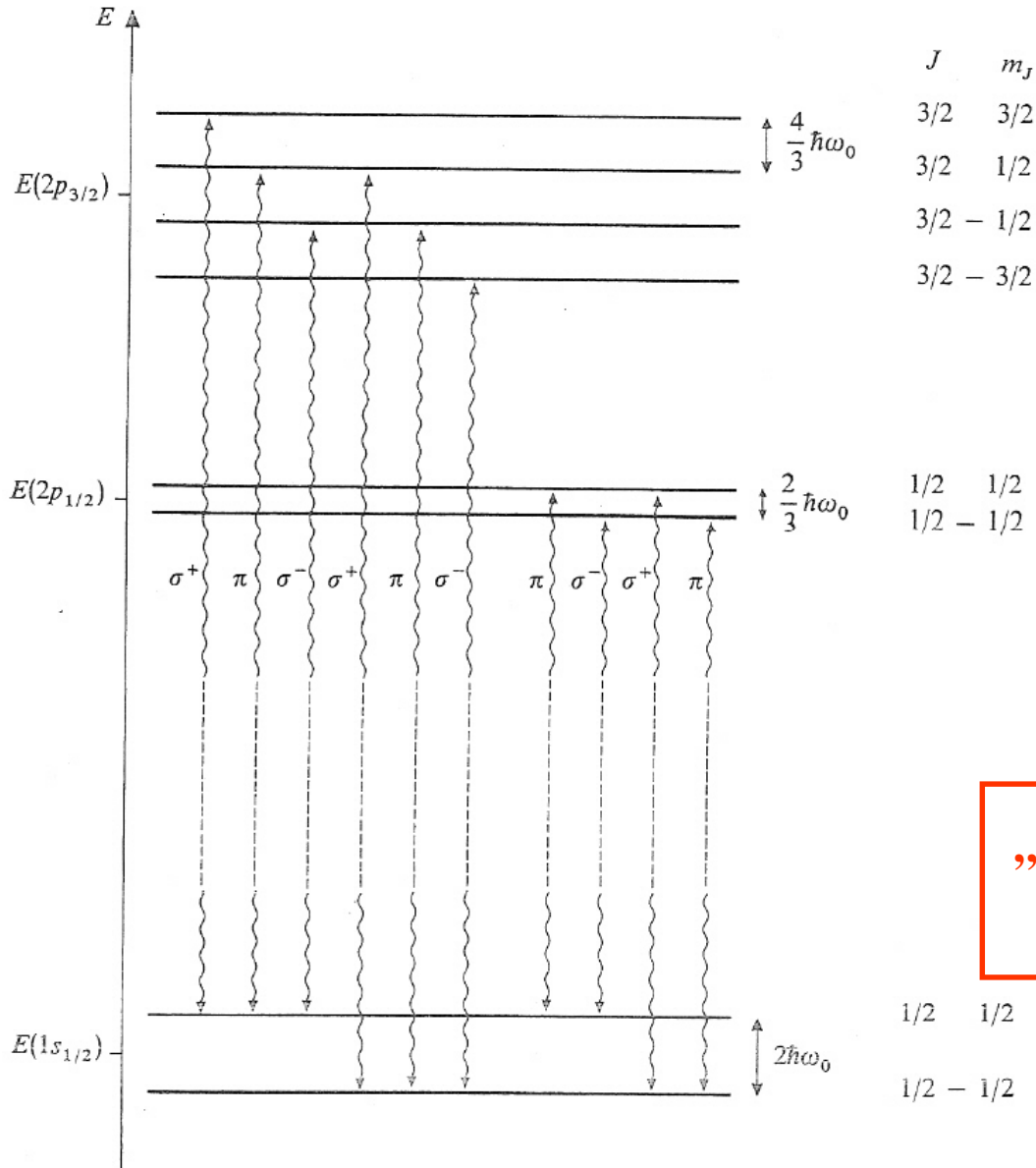
$$\Delta m = +1 \quad \Delta m = 0 \quad \Delta m = -1$$



Zeeman-Effekt der Resonanz 1s-2p im H-Atom

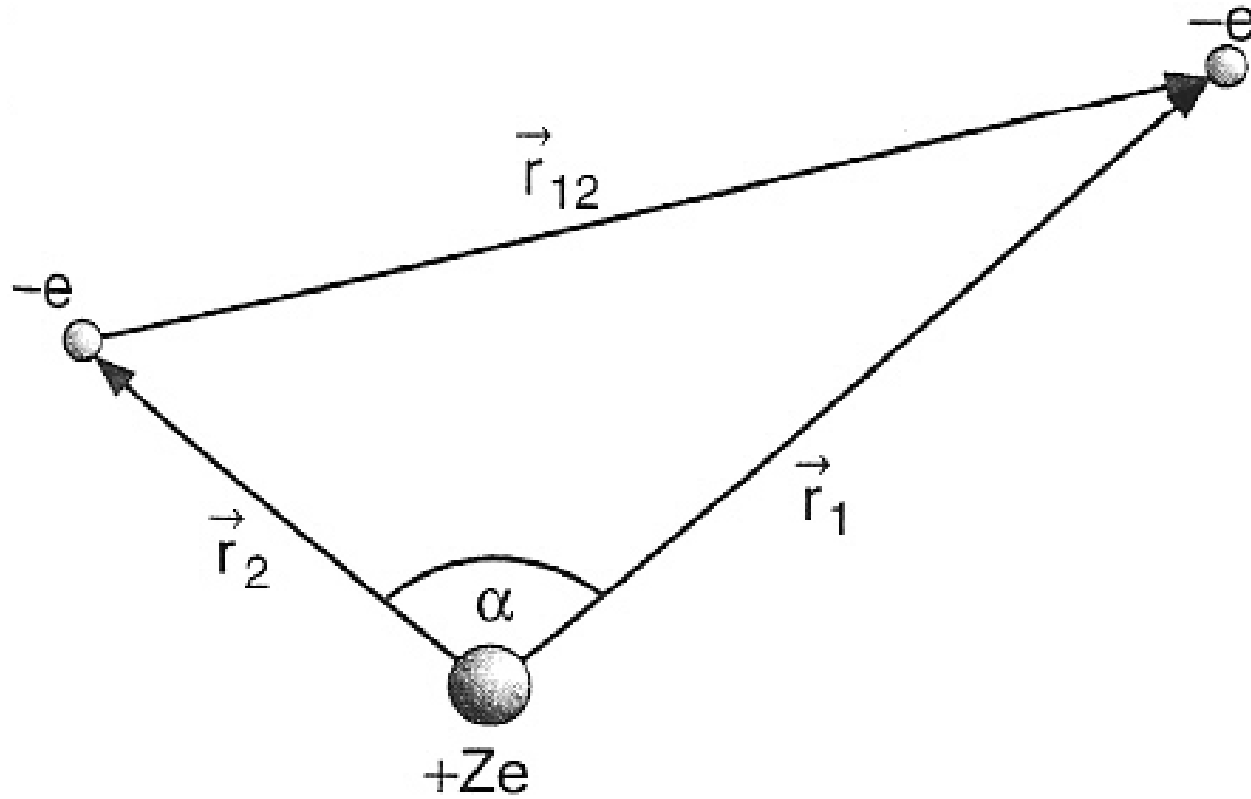


Zeeman-Effekt der Resonanz 1s-2p im H-Atom

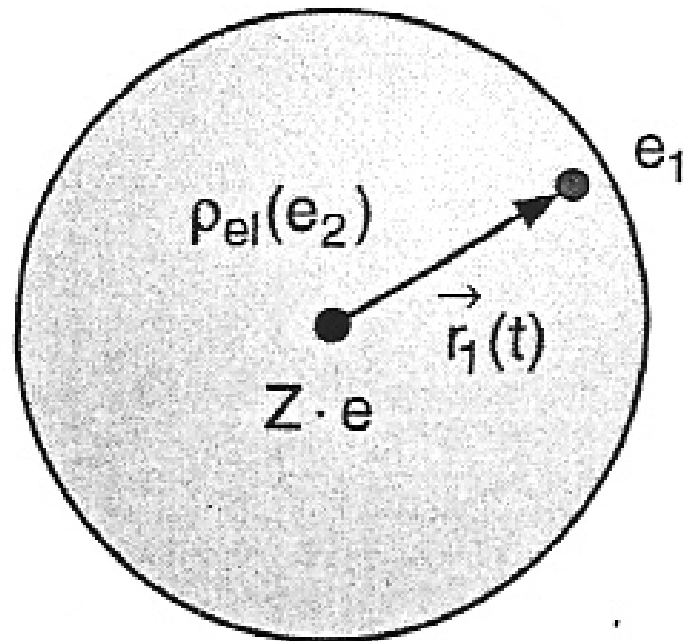


„anomaler Zeeman-Effekt“:
 $g(1s) \neq g(2p)$

Helium-Atom



Helium-Atom



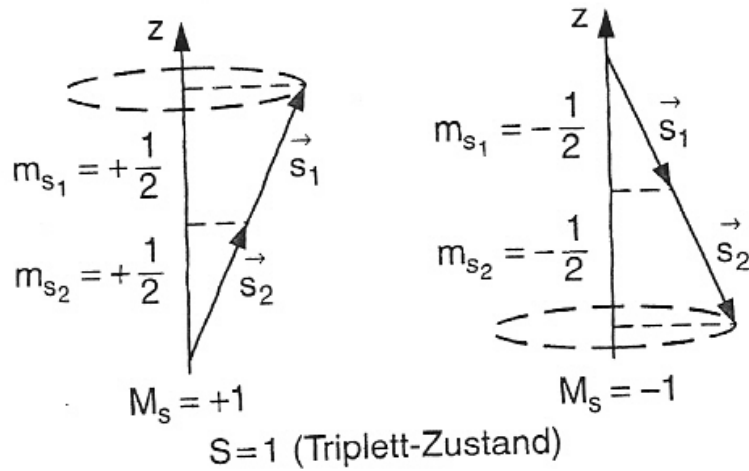
$$\rho_{el}(e_2) = -\psi_{1s}^* \cdot \psi_{1s} \cdot e$$

Abb. 6.2. Teilweise Abschirmung der Kernladung $Z \cdot e$ durch die Ladungsverteilung $\rho_{el}(e_2) = -e \cdot |\psi_{1s}(\mathbf{r}_2)|^2$ eines 1 s-Elektrons

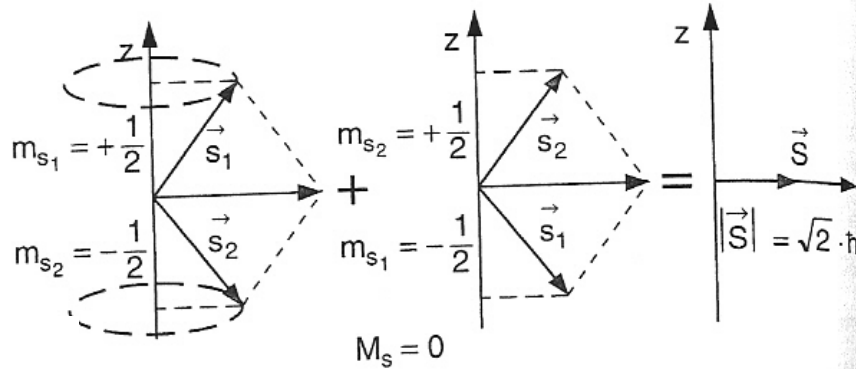
Helium-Atom

Spin-Triplett-Zustände: $S = 1$ ($M_S = 0, \pm 1$)

$M_S = \pm 1$



$M_S = 0$



Helium-Atom

Spin-Singulett-Zustand: $S = 0$, $M_S = 0$

