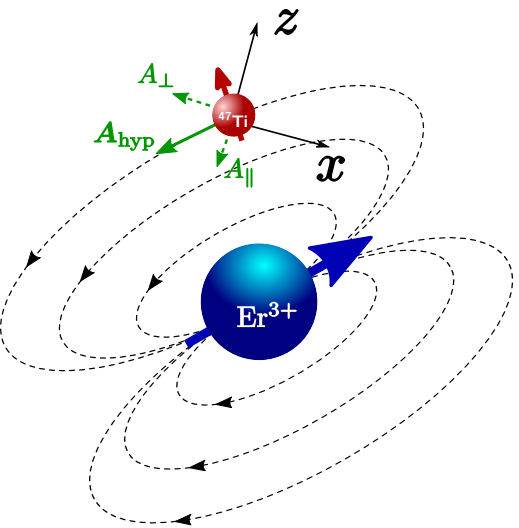
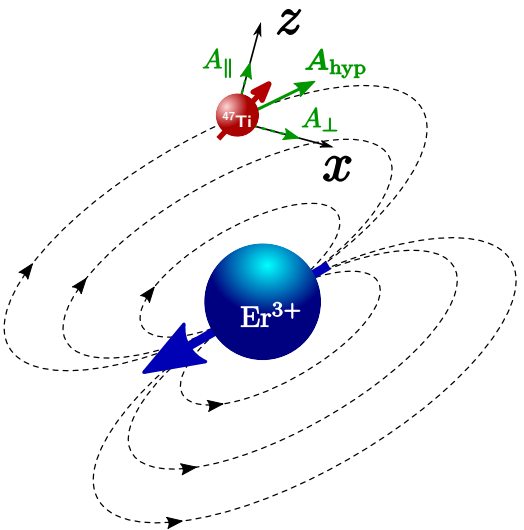
$m_{\uparrow} = \left(\frac{A_{\perp}}{\omega_{\uparrow}}, \frac{\omega_N + A_{\parallel}}{\omega_{\uparrow}}\right)$

$m_{\downarrow} = \left(\frac{-A_{\perp}}{\omega_{\downarrow}}, \frac{\omega_N - A_{\parallel}}{\omega_{\downarrow}}\right)$



$\langle \hat{S}_{z'} \rangle = 1/2$



$\langle \hat{S}_{z'} \rangle = -1/2$