

Fig. 17.1. Polar diagrams of the Wigner functions $d_{m_s, 1/2}^{(1/2)}(\theta)$.

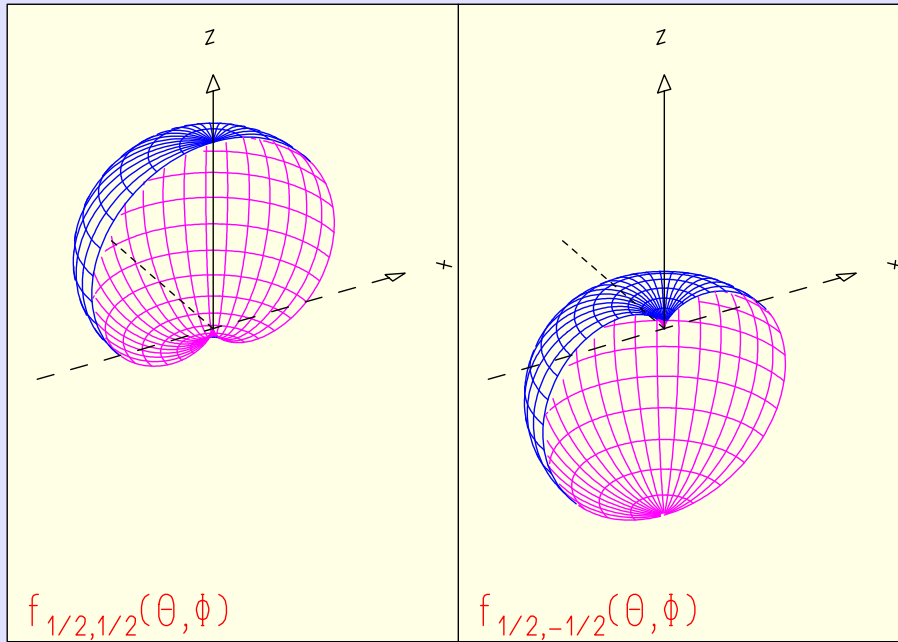


Fig. 17.2. Polar diagrams of the directional distributions $f_{1/2, 1/2}(\theta, \phi)$ and $f_{1/2, -1/2}(\theta, \phi)$.

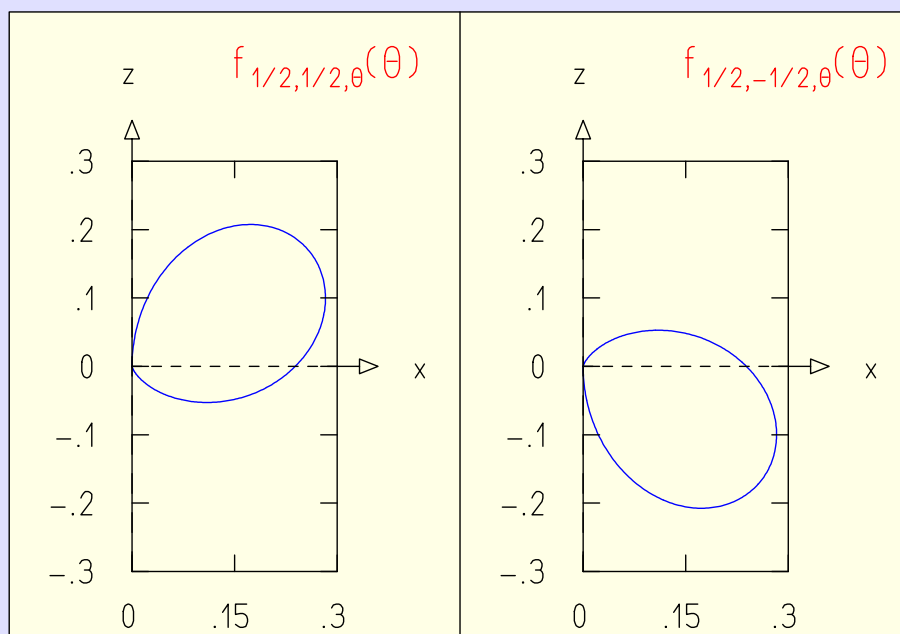


Fig. 17.3. Polar diagrams of the angular distributions $f_{1/2, 1/2, \theta}(\theta)$ and $f_{1/2, -1/2, \theta}(\theta)$.

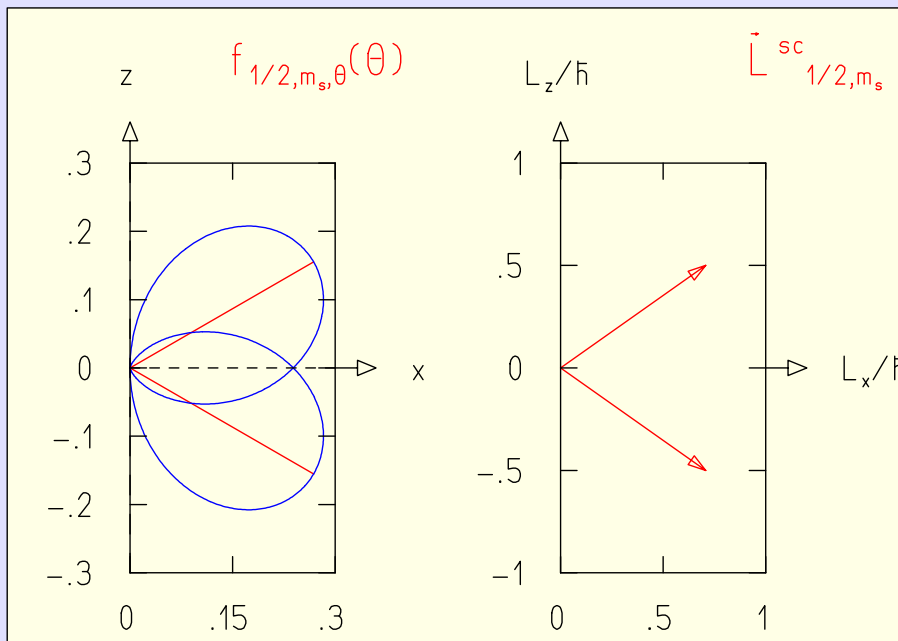


Fig. 17.4. The left-hand plot contains polar diagrams of the angular distributions $f_{1/2, m_s, \Theta}(\Theta)$ for $m_s = \pm 1/2$. Also shown are lines from the origin to the points $f_{1/2, m_s, \Theta}(\Theta_{1/2, m_s})$ where $\Theta_{1/2, m_s}$ is the angle for which $f_{1/2, m_s, \Theta}$ has its maximum. The right-hand diagram shows the semiclassical angular-momentum vectors $\vec{L}^{sc}_{1/2, m_s}$.

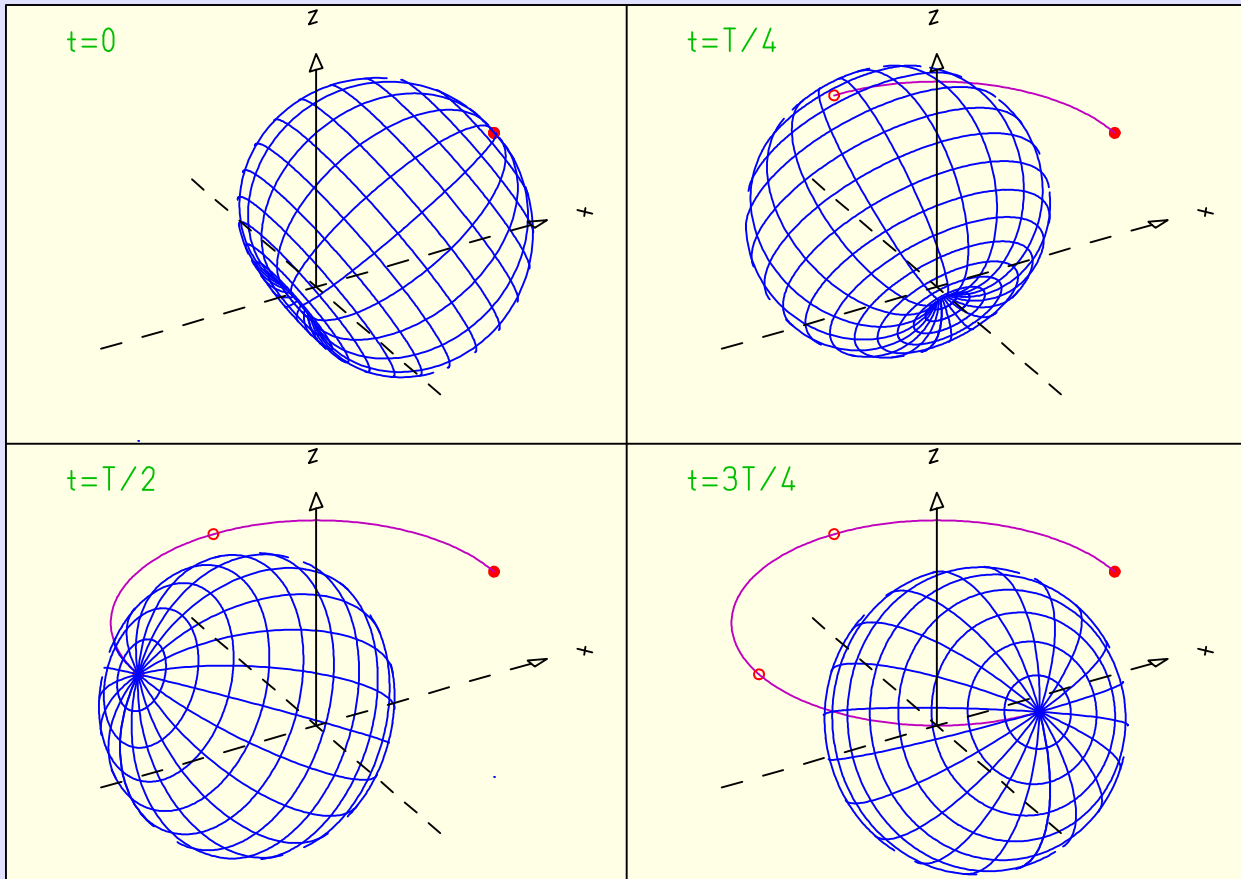


Fig. 17.5. Polar diagrams of the distribution $f_{1/2,1/2}(\Theta, \Phi, t)$ for the direction of the spin of an electron precessing around the z axis which is the direction of a homogeneous field of magnetic induction. The tip of the vector of the spin expectation value moves with angular frequency Ω on a circle around the z axis. The plots show the directional distribution for $t = 0, T/4, T/2, 3T/4$ with $T = 2\pi/\Omega$ being the precession period.

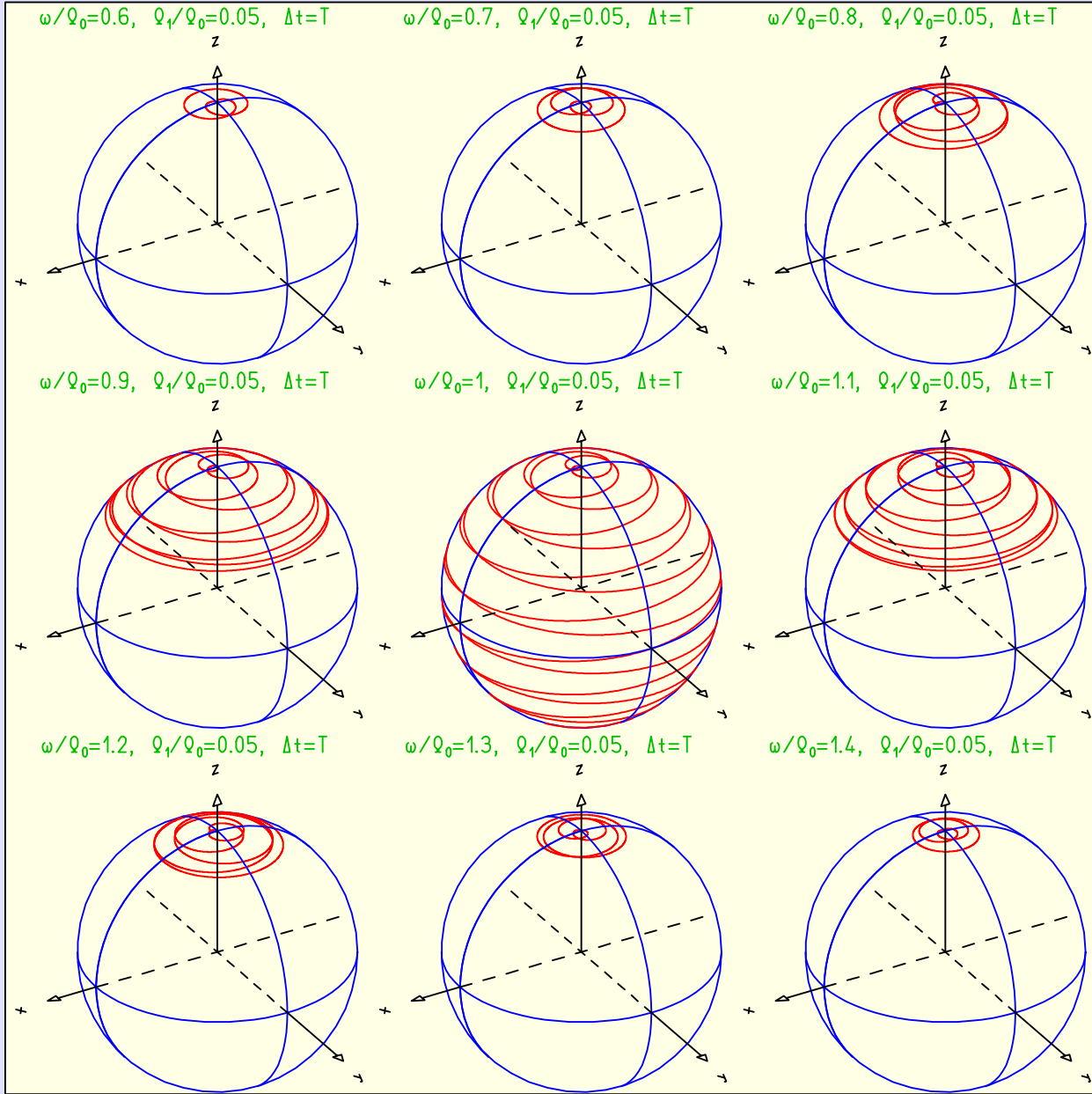


Fig. 17.6. Magnetic resonance. Trajectory of the tip of the expectation value of the spin vector within one period T . The value of ω is varied from plot to plot whereas Ω_0 and Ω_1 are kept constant. The plot in the middle of the figure corresponds to exact resonance frequency $\omega = \Omega_0$.

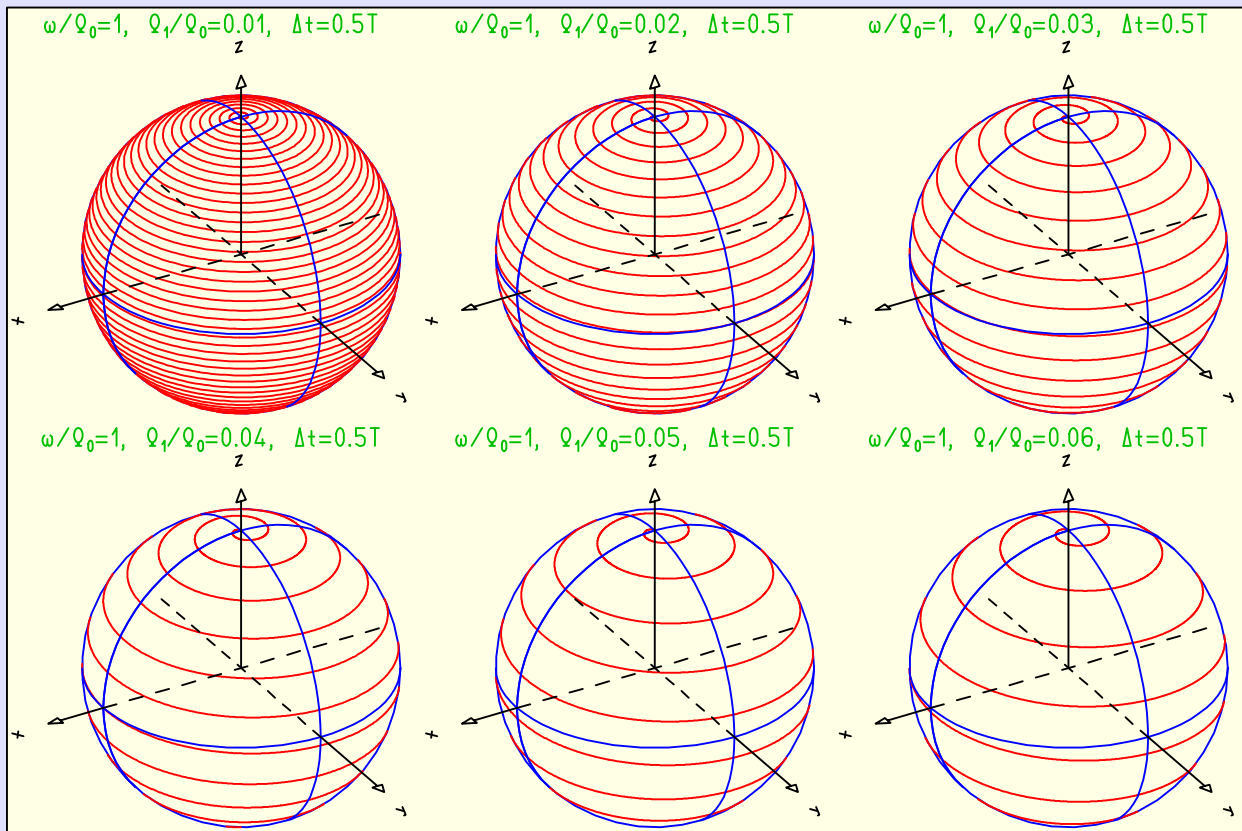


Fig. 17.7. As Figure 17.6 but for ω fixed to the resonance frequency $\omega = \Omega_0$ and for various values of Ω_1 . In all plots the trajectory is shown for one half of a period T .

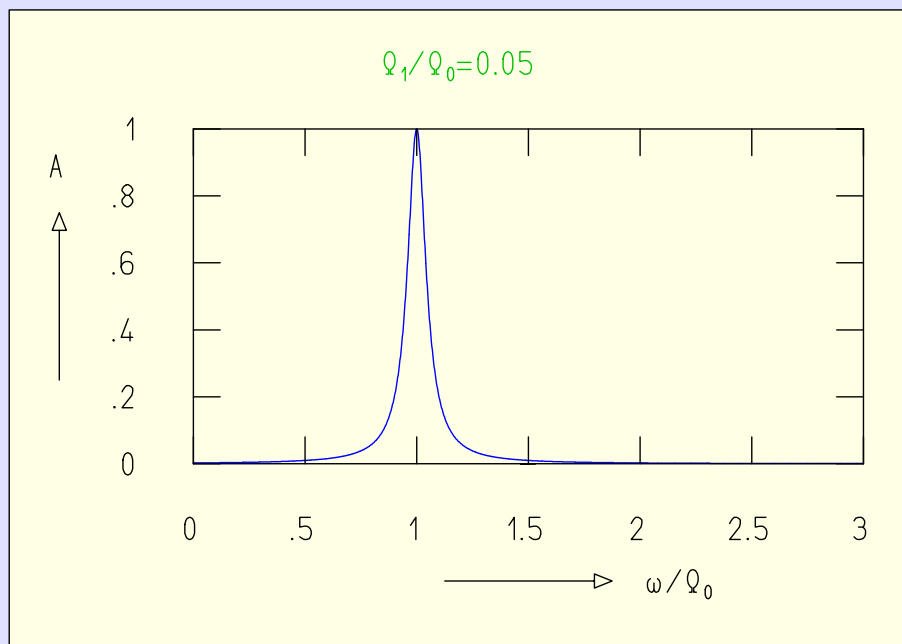


Fig. 17.8. Amplitude A as a function of ω for a fixed value of Ω_1 . For smaller values of Ω_1 the resonance becomes sharper. For larger values it becomes broader.

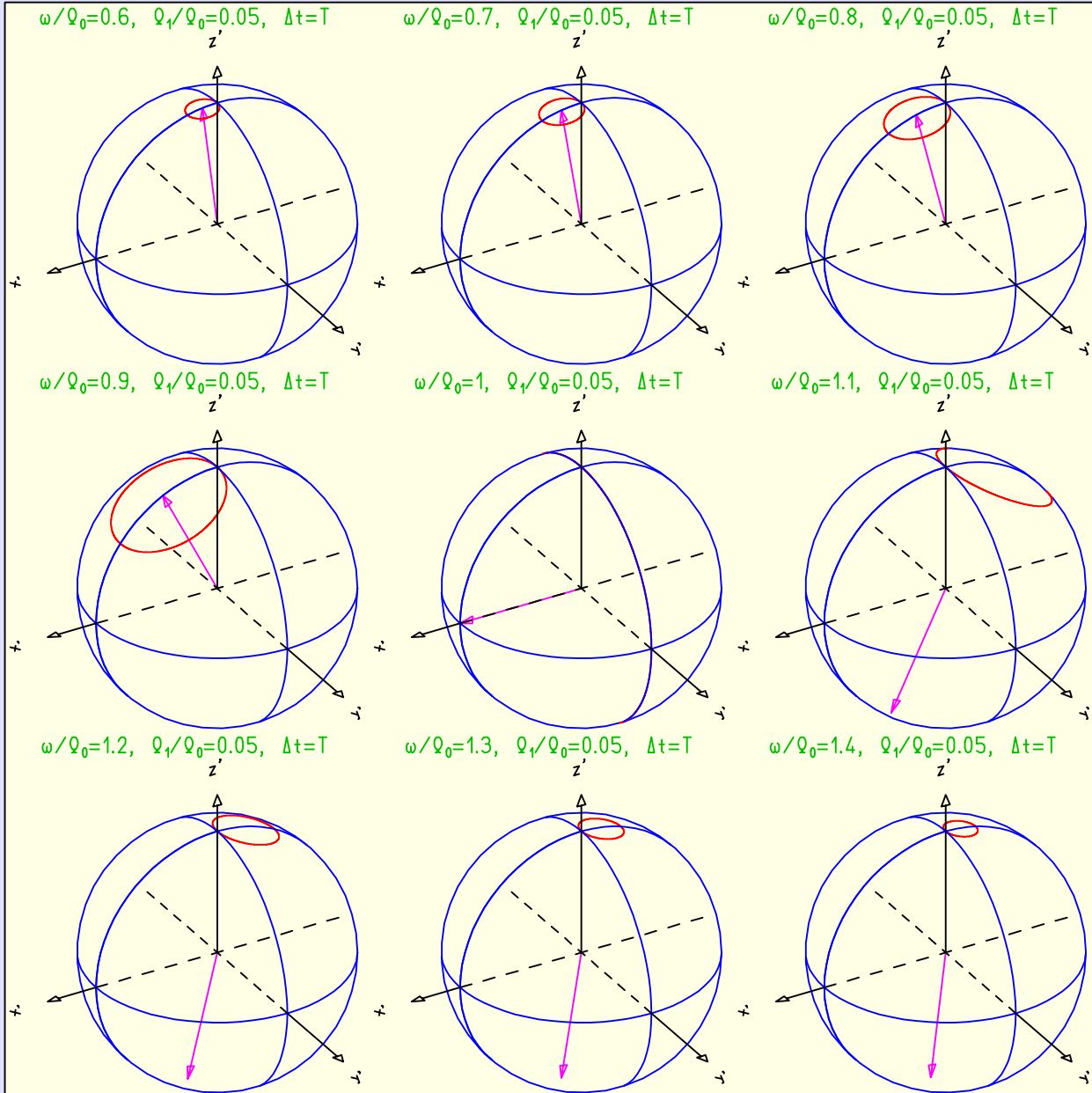


Fig. 17.9. As Figure 17.6 but presented in the rotating frame of reference. The arrow shown in the x', z' plane is the direction of the effective field \vec{B}_{eff} . The tip of the expectation value of the spin vector moves on a circle around that direction. Its initial position is on the z' axis.