

Section 7.12: Fourth Quantum Number or the Electron-Spin Magnetic Quantum Number (m_s)

While n , ℓ and m_ℓ characterize the orbital, the last quantum number characterizes the direction in which the electron is spinning around its own axis.

$m_s = +\frac{1}{2}$ electron is spinning clockwise

$m_s = -\frac{1}{2}$ electron is spinning counterclockwise

Two electrons with the same m_s values are said to have parallel spins. Two electrons with opposite m_s values are said to have anti-parallel spins, or opposite spins. The spin of an electron is often represented by an arrow.

$$\uparrow \Rightarrow m_s = +\frac{1}{2}$$

$$\downarrow \Rightarrow m_s = -\frac{1}{2}$$