



Ground level spin Hamiltonian

$$\hat{\mathcal{H}}_s = D S_z^2 + \gamma_e \mathbf{B} \cdot \hat{\mathbf{S}}$$

$$D = 2.87 \text{ GHz and } \gamma_e = 2.8 \text{ MHz/G}$$

$$\mathcal{H}_s = \begin{pmatrix} D - \gamma_e B \cos \theta & \gamma_e B \sin \theta & 0 \\ \gamma_e B \sin \theta & 0 & \gamma_e B \sin \theta \\ 0 & \gamma_e B \sin \theta & D + \gamma_e B \cos \theta \end{pmatrix}$$

The transverse magnetic field causes state mixing which makes the optical polarization less effective.

→ The photoluminescence decreases with the magnetic field (for non-aligned spins)