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Controlling single defects: Electric and magnetic fields

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Controlling the optical properties of single defects, e.g. its transition frequency and transition properties is an important prerequisite for their broad application. It is shown that external electric and magnetic fields allow for control over a broad range of parameters. The optical transition frequency can e.g. controlled by an electric field. The same field also determines whether the defect is driven cyclic or lambda transition behaviour dominates. The talk will describe out current knowledge of the defect in this respect and show perspectives toward cavity coupling and entanglement of distant defects.