

Einladung zum Physikalischen Kolloquium

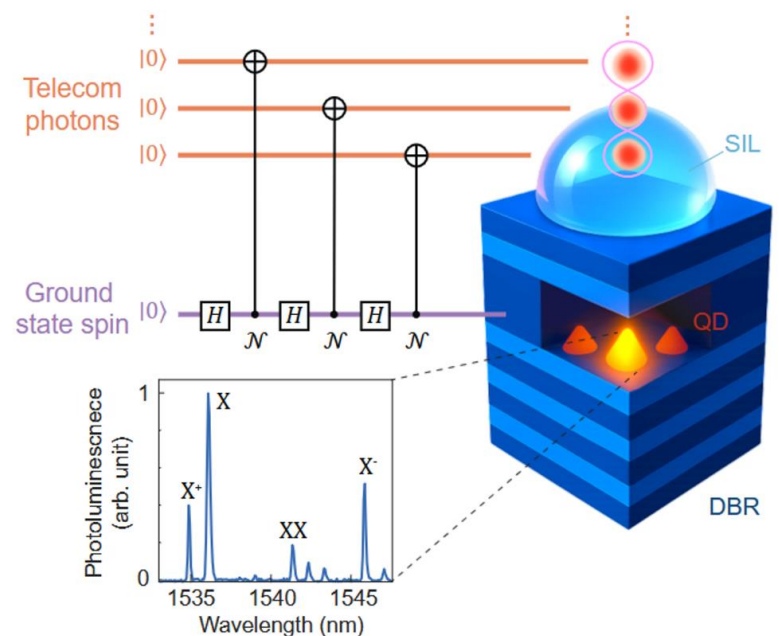
17.07.2026 Tina Müller, Karlsruher Institut für Technologie

»Quantum Networking with Telecom Wavelength Quantum Dots«

Einführung: Th. Schimmel

Quantum Networks will enable a host of applications ranging from quantum key distribution and blind quantum computing to clock synchronization and quantum sensing. Telecom-wavelength photons offer a convenient way to encode quantum information for long-distance transmission. Further, to compensate for the inevitable losses, components such as quantum relays and quantum repeaters need to be developed, for which solid-state based spin-photon interfaces are outstanding candidates.

In this talk, I will discuss telecom-wavelength quantum dots and their potential to be used in quantum repeater schemes. In particular, I will review recent progress towards multiqubit entanglement, starting with the transfer of established methods for manipulation and control of a solid-state spin to control the spin in an InAs/InP QD. With these tools, we can demonstrate entanglement between the electron spin and the frequency of a photon at telecom wavelengths. Further, the established spin-photon interface can be used to produce non-classical correlations between multiple qubits, i. e. the electron spin and two consecutively emitted photons. Finally, I will discuss possible improvements to extend the number of entangled qubits.



Der Vortrag findet **am Freitag, den 17. Juli 2026 um 15:45 Uhr im Otto-Lehmann-Hörsaal**, Physik-Flachbau (Geb. 30.22), KIT-Campus Süd statt.