

Quantum Control of Spins in Solids and its Application

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Quantum computation provides great speedup over its classical counterpart for certain tasks. Spin system is one of the most important candidates to realize quantum computations. The initialization, readout and quantum gate operations of spin qubits can be accomplished by advanced spin resonance techniques, which include nuclear magnetic resonance, electron paramagnetic resonance and optically detected magnetic resonance.

My presentation will mainly focus on our recent experimental study of quantum control over spins in solids. We concern on several respects such as decoherence suppressing with dynamical decoupling, precise spin control, efficient realization of quantum algorithms and simulation with single spins in diamond.