

Abstract:

Spins in a bosonic environment: From exotic phenomena to quantum computation

Spins in a bosonic environment provide an ideal system to address important concepts in quantum mechanics and many-body physics such as quantum entanglement, decoherence, dissipation effects at a quantum phase transition, and quantum computation. In this talk, we thoroughly discuss those issues starting from well-defined Hamiltonians, and we suggest realizations of those ideas in solid-state devices and cold-atomic systems.