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Location University of Regensburg, Dept. of Physics
Room PHY 5.0.21

Time Thursday, 20th May 2010
3:15 p.m.

Title Quantum Optics and Quantum Information with Nuclear Spins
in Quantum Dots

Abstract

Nuclear spins in quantum dots are strongly coupled to quantum dot electronic spins but otherwise very well isolated. We show how control of the electronic spin can be leveraged to prepare the nuclear spin state and to induce controlled coherent evolution of the nuclear spins. This is illustrated with two examples: Superradiant-like emission from a single quantum dot and an quantum interface between light and nuclear spins with a quantum dot strongly coupled to an optical cavity.

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