Einladung zum Physikalischen Kolloquium
im Sommersemester 2017
Physikzentrum, Mendelssohnstraße 2/3
dienstags, 16:45 Uhr, Hörsaal MS 3.1

Prof. Dr. Guido Burkard
Universität Konstanz

spricht am 27. Juni 2017, über

Hybrid quantum systems: Electron spins interacting with electric fields

Electron spins in coupled semiconductor quantum dots can be endowed with a controllable electric dipole via the Pauli exclusion principle. We show how this effect enables electric control of spin qubits, while also causing deleterious spin decoherence. We then highlight two hybrid quantum systems consisting of spins in a solid and photons in an electromagnetic cavity. The interplay between distinct elements within such hybrid quantum system opens fascinating new possibilities in fundamental physics, sensing applications, and quantum information science. Our theory shows that the three-spin resonant-exchange and exchange-only quantum bits can be efficiently coupled to super-conducting microwave resonator. We also discuss the physical mechanisms that can couple the electron and nuclear spin of defect centers in wide-gap semiconductors to optical cavities, and the implementation of two-qubit quantum gates for defect spin qubits.

Weitere Vorträge bitten wir unserer Website zu entnehmen:
https://www.tu-braunschweig.de/eitp/aktuell

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