

PHYSIKALISCHES KOLLOQUIUM

Mittwoch, den 13.07.2011, um 17:15 Uhr
Ort: Straße der Nationen 62; Hörsaal 316

**Vortrag im Rahmen des 488. WE-Heraeus-Seminar:
Single Molecule Spectroscopy -Current Status and Perspectives-**



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Spins, Photons, and Diamond

Condensed matter physicists strive for engineering quantum states with a precision formerly only reached in atomic physics or quantum optics. However, usually the many degrees of freedom in solids hamper any fine control. Yet, since a few years a number of attempts have been successful to fabricate solid state systems which allow high precision control of quantum states as well as the engineering of complex quantum states. Among those systems are defects in diamond. By implantation of atomic impurities single defect centers can be created with high spatial accuracy. Those defects show quasiautomatic states which can be electronically paramagnetic being effectively shielded by the diamond lattice from environmental disturbances. Precise implantation allows mutual coupling of defects and the generation of two- or multiple-particle states. Quantum non-demolition and feedback algorithms give full access to enhanced quantum state preparation and measurement methodology. Since diamond defects can be operated in the quantum regime at ambient conditions all those methods can be applied to sensor applications. As an example, diamond defects are very sensitive detectors for external magnetic fields. Eventually this is of use for, e.g., measuring tiny magnetic fields of single-electron or even proton spins in complex environments found in biological media.

Alle Zuhörer sind ab 17:00 Uhr zum Kaffee vor dem Hörsaal 316 (beim Eingang 2. Etage) eingeladen.

Informationen zum Vortrag erteilt Prof. Dr. Michael Schreiber, Tel. 0371/531-21910