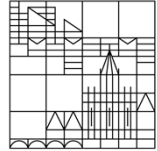


Physikalisches Kolloquium

Universität
Konstanz



Di 11.07.17
15:15 Uhr
14:45 Uhr, Kaffee/Tee
R 513



Prof. Dr. Christoph Becher
Universität des Saarlandes

Color centers in diamond: controlling single spins and single photons

Color centers in diamond, i.e. atomic-scale, optically active defects in the diamond lattice, have received large recent attention as versatile tools for solid-state-based quantum technologies ranging from quantum information processing to quantum-enhanced sensing and metrology. They provide individually addressable spins with very long coherence times, narrow optical spectra and bright single-photon emission. However, identifying a spin impurity which combines all of these favorable properties still remains a challenge.

I will present the example of the Silicon vacancy (SiV) center which allows for optical addressing [1,2] and ultrafast coherent manipulation [3] of its spin states and discuss recent experiments on the spin coherence time. Furthermore, I will present an overview on techniques for spin-photon interfacing by coupling individual centers to optical cavities [4] and nanophotonic structures.

[1] C. Hepp et al., Phys. Rev. Lett. 112, 036405 (2014).

[2] T. Müller et al., Nature Commun. 5, 3328 (2014).

[3] J.N. Becker et al., Nature Commun. 7, 13512 (2016).

[4] J. Riedrich-Möller et al., Nano Lett. 14, 5281 (2014).

