



WESTFÄLISCHE
WILHELMS-UNIVERSITÄT
MÜNSTER



FACHBEREICH
PHYSIK

› Allgemeines Physikalisches Kolloquium

› Donnerstag, 30.11.2017 um 16 Uhr c.t.

Prof. Dr. Richard J. Warburton

Universität Basel



The spin-photon interface

Creating an interface between single spins in a solid-state device and single photons is very appealing as nano-technology can potentially add a lot of device functionality. However, a solid-state environment is a source of noise. Reported here is progress on two prominent solid-state emitters, a semiconductor quantum dot and the NV colour centre in diamond. The two emitters have complementary strengths and weaknesses. A semiconductor quantum dot is a source of high quality single photons but single spins dephase rapidly. Conversely, the NV centre possesses a highly coherent spin but the photons are of low quality. What can be done? In the case of quantum dots, a hole spin is presented as a way of decoupling the spin from the main source of noise (the nuclear spins of the host material). For NV centres, a micro-cavity potentially solves all the problems related to the optical emission. A means to secure these benefits in practice will be presented.

This work was performed as a collaboration with the groups of Daniel Loss, Patrick Maletinsky and Martino Poggio in Basel; and Arne Ludwig and Andreas Wieck at Ruhr-University, Bochum.

Kolloquiums-Kaffee
ab 16 Uhr vor dem Hörsaal

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