



Seminarankündigung

Dienstag, 29. Januar 2019

17:00 Uhr

WSI, Seminarraum S 101

“Cavity-enhanced scattering to create photonic qubits from quantum dots”

Quantum states superposed across multiple particles or degrees of freedom are of crucial importance for the development of quantum technologies. Creating these states deterministically and with high efficiency is an ongoing challenge. A promising approach is the repeated photon scattering from multi-level quantum emitters [1], which has been shown to naturally generate light with quantum statistics. Here I will describe our recent work to generate higher dimensional photonic qubits superposed across multiple time bins using Raman scattering from an InAs quantum dot in a pillar micro-cavity [2]. Phase and intensity modulation can generate arbitrary qubits, and qubits of multiple colours [3]. Finally, I shall discuss an extension of this idea which can generate long strings of entangled photons from a single spin [4].

[1] A. J. Bennett *et al*, *Science Advances* 2(4) (2016)

[2] J. P. Lee *et al*, *Quantum Sci. Technol.* 3 024008 (2018)

[3] J. P. Lee *et al*, *Phys. Rev. X* 8, 021078 (2018)

[4] <https://arxiv.org/abs/1804.11311>

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