Abstract Submitted
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Resonantly driven coherent oscillations in a solid-state quantum emitter[1] EDWARD FLAGG, UT Austin, ANDREAS MULLER, JQI, NIST and Univ. of Maryland, JOHN ROBERTSON, SEBASTIEN FOUNTA, UT Austin, DENNIS DEPPE, Univ. of Central Florida, MIN XIAO, WENQUAN MA, GREGORY SALAMO, Univ. of Arkansas, CHIH-KANG SHIH, UT Austin — The use of a single quantum emitter as a source to generate single photons has been a subject of much interest recently. Incoherent excitation, which is typically used in solid state systems in order to discriminate spectrally between the emission and the large amount of scattered input laser light, does not allow for direct coherent control of an emitter's quantum state, resulting in difficulty when attempting to use it as a single photon source. Coherent resonant excitation is used in pump-probe techniques, but does not enable the collection of the emitter's single photon emission. In this work, we demonstrate resonance fluorescence from a single semiconductor quantum dot in a microcavity absent of any significant background due to laser scattering. Under excitation from a strong continuous-wave laser field, the states of the quantum dot become 'dressed', which we are able to observe from its Mollow-triplet emission spectrum. We are also able to measure its single photon emission characteristics, and observe oscillations in its second order correlation function.

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John Robertson
UT Austin

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