

Abstract Submitted
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All Optical Method for Positioning Single Quantum Dots in Photonic Crystal Nanocavities¹ SUSANNA THON, MATTHEW RAKHER, JAN GUDAT, HYOCHUL KIM, WILLIAM IRVINE, DIRK BOUWMEESTER, University of California Santa Barbara, Department of Physics, NICK STOLTZ, PIERRE PETROFF, University of California Santa Barbara, Materials Department — Single self-assembled InAs quantum dots embedded in GaAs photonic crystal (PC) defect cavities are a promising system for cavity quantum electrodynamics experiments. Achieving controllable coupling between the PC cavity mode and quantum dot emission is difficult, however, due to the random nucleation locations and spectral properties of individual quantum dots. We have developed a novel, all optical scheme for locating single dots relative to prefabricated markers on the sample surface with sub-10 nm accuracy which should allow us to custom fabricate PC cavities tuned to the exact position and frequency of the quantum dots. Initial experimental results are presented.

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