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Independent tuning of quantum dot frequencies in a photonic crystal cavity SUSANNA THON, HYOCHUL KIM, University of California Santa Barbara Physics Department, PIERRE PETROFF, University of California Santa Barbara Materials Department and ECE Department, DIRK BOUWMEESTER, University of California Santa Barbara Physics Department and Leiden University Huygens Laboratory — One of the main obstacles to coupling multiple quantum dots (QDs) to a single nanocavity mode in a cavity quantum electrodynamics system is the ability to independently tune the quantum dot frequencies. We demonstrate that in a specially designed GaAs photonic crystal membrane structure with two embedded QD layers, the QD emission frequencies of one layer can be tuned independently of the other by applying a voltage across only one of the QD layers. Initial results on coupling two QDs to a single cavity mode are discussed.

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