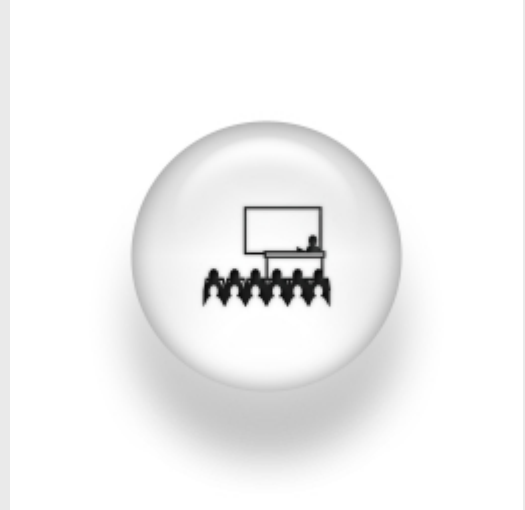


## Microcavity-Mediated coupling of two distant semiconductor quantum dots

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### ABSTRACT:

Coupling of semiconductor quantum dot (QD) excitons to the electromagnetic modes of a photonic crystal microcavity is observed. Simultaneous coupling of two distant (1,4 micrometers) quantum dots to the cavity is demonstrated by Purcell effect measurements. Resonant optical excitation of the p state of any of the quantum dots, results in an increase in the s-state emission of the other one. The cavity-mediated coupling can be controlled by varying the excitation intensity. Besides, continuous control of the linear polarization angle of the emitted light is achieved by varying the QD-cavity energy detuning. These results are experimental steps towards the realization of quantum logic operations using distant solid-state qubits and single photon emitters with controlled polarization.

### References:

E. Gallardo et al. Optics Express, 18, 13301 (2010).

E. Gallardo et al. PRB 81, 193301 (2010).