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Control in cavity QED with many atoms¹

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Cavity QED in the optical regime has two avenues for dissipation: spontaneous emission of the atoms and escape of the light from the cavity. Control of the dynamics in the cavity QED relies on both channels and in some cases permits the preservation of a quantum state a long time after the expected decay of the system. This talk presents experiments with Rb atoms in a cavity QED system where the single atom coupling and the decay rates are comparable. Single mode and two mode monitoring offer feedback possibilities to preserve atom-cavity oscillatory exchange and ground state superpositions. Work supported by NSF and performed in collaboration with D. G. Norris, H. J. Carmichael, and P. Barberis-Blostein.

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