

Self Trapping Triggered by losses in Cavity QED

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Abstract

In a coupled cavity QED network model, we study the transition from a localized superfluid like state to a delocalized Mott insulator like state, triggered by losses. Without cavity losses, the transition never takes place. Further, if one measures the quantum correlations between the polaritons via the negativity, we find a critical cavity damping constant, above which the negativity displays a single peak in the same time region where the transition takes place. Additionally, we identify two regions in the parameter space, where below the critical damping, oscillations of the initial localized state are observed along with a multi peaked negativity, while above the critical value, the oscillations die out and the transition is witnessed by a neat single peaked negativity.