Non-equilibrium quantum many-body phenomena in coupled cavity arrays

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Recent developments in Cavity QED technology allow us to engineer controllable strong interactions between photons and atoms to create possibilities to use light-matter systems as quantum simulators of quantum many-body systems. Recent interest has focused on the Superfluid-insulator transition of polaritons in an array of coupled cavities [1-6]. Although collective behavior of polaritons has been studied extensively from theoretical point of view during the last few years in the equilibrium case [4-6], there is still little known about the details of the underlying phase transitions when one consider the inherent non-equilibrium nature of these models [3]. In this poster we present our recent results on open quantum many body physics in coupled cavity arrays.

1. References