

Abstract Submitted
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Quadratically coupled optomechanical systems HAO SHI, MISHKATUL BHATTACHARYA, Rochester Institute of Technology — Typical optomechanical systems are composed of high finesse optical cavities that are coupled to mechanical oscillators, which are promising for classical as well as quantum applications. A well studied optomechanical configuration involves a optical cavity that is linearly coupled to the displacement of the mechanical oscillator. However, a quadratic coupling can also be realized between the cavity and the displacement of the mechanical oscillator using membranes, cold atoms, or microdisk-resonators. In the poster, I will describe our analysis of this new kind of coupling. The results include the exact solution of the corresponding Hamiltonian (in the absence of dissipation), a discussion of the spectrum and the eigenstates, and of the dynamics of the unitary evolution of the system. I will also discuss work planned for the future.

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