

Abstract Submitted
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Quantum Dynamics of Time-Dependent Optomechanical Systems!¹ AMY KERST, Hillsdale College, JEAN-FRANCOIS S. VANHUELE, MANUEL BERRONDO, Brigham Young University — Optomechanical quantum control theory is used in experimental research and various electronic technologies. The ability to construct apparatus on the mesoscopic scale and observe quantum effects has created a need for analytic methods that can accurately predict the time-evolution of these quantum systems. We present such a method, focusing on the time-evolution of driven optical and mechanical oscillators coupled through radiation pressure. We specify the circumstances under which the method yields exact results and propose a mean field theory for when it does not. We explore the behavior of the optomechanical systems as a function of their parameters and the form of the driving forces.

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