

Abstract Submitted
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Quantum dynamics for generating non-classical states¹ CARLOS MORAN, California Lutheran University, MANUEL BERRONDO, JEAN-FRANCOIS S. VAN HUELE, Brigham Young University — We study the time evolution of quantum systems including explicit time-dependent interactions. We are particularly interested in quantum control and the generation of non-classical states. We choose non-linear Hamiltonians and apply algebraic techniques to obtain an analytic expression for the evolution operator, which we then apply to special initial states. In particular we study nonlinear oscillators in Kerr media to look for the formation of Schrödinger-cat states from coherent states. We construct the Lie algebras corresponding to the operators of the Hamiltonian. This allows us to separate the complexity of the time-dependence from the complexity of the non-commuting operators. We also consider mean field approximations in the case that the interaction operators do not lead to a closed algebra.

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