

Abstract Submitted
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Dynamics of Quantum Control for Bosons in Optical Lattices¹

ANALABHA ROY, Graduate Student, University of Texas at Austin, LINDA REICHL, Director, CQS University of Texas at Austin — We investigate the possibility of quantum control in an ultracold atom Bose gas in an optical lattice by looking at numerical simulations of the dynamics of controlled excitations in these systems. These excitations are mediated by pulsed signals that cause Stimulated Raman Adiabatic passage (STIRAP) from the ground state to excited states. The transition to chaos affects the quantum dynamics of such systems as has been demonstrated for single-particle and mesoscopic-systems in optical potentials. We determine the influence of Bose statistics on this dynamics, as well as the effects of controlling quantum phase transitions in this manner for interacting cold atom systems.

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