

Abstract Submitted
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Localization in systems with long-range interactions¹ LEA SANTOS, Yeshiva University, USA, FRANCISCO PEREZ-BERNAL, Universidad de Huelva, Spain, FAUSTO BROGONOVİ, GIUSEPPE CELARDO, Università Cattolica del Sacro Cuore, Italy — In recent experiments with ion traps, long-range interactions were associated with the very fast propagation of excitations. Here, we show that, depending on the initial state, the evolution of these systems may actually be exceedingly slow. This is justified with the analysis of the density of states and structures of the eigenstates, and confirmed with numerical simulations of quench dynamics. The two sources of restricted dynamics that we discuss are: the presence of an excited state quantum phase transition and the onset of subspaces shielded from the effects of long-range interactions. Both scenarios can be tested experimentally.

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